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Review of Mozambique's Telecom Sector

Mozambique Trade and Investment Program

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DISCLAIMER

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This report is based on information gathered from a variety of public sources and supplemented by personal interviews conducted in Mozambique by Dr. Larry F. Darby from November 1, 2005 through November 14, 2005. The research and analysis on which the recommendations are based are directed to the Confederation of Mozambican Business Associations (CTA) for an agenda of constructive and accelerated change in Mozambique's telecom sector. The author is indebted to Ms. Stelia Narotam for arranging meetings and to Mr. Luis Magaco who provided both guidance and valuable insights for the author's research. The author is solely responsible for the opinions, conclusions, and recommendations expressed in this report.

Electronic copies of reports and materials related to trade, investment and the business environment in Mozambique are available at www.tipmoz.com.

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Contents

1. Introduction	1
Value of Information Networks	1
Report Purpose and Organization	4
2. Legal Framework	5
Telecom Statutes	5
Assessment of Statutes	7
Interconnection Rules	8
Decisionmaking Processes	10
3. Government's Role in Regulation	11
Agencies with Telecom Policy Interests	11
Mozambique Communications National Institute	12
4. Elements of Mozambique's Telecommunications Market	19
Current Market Structure	20
Changes in Market Shares	20
TDM Profile	21
mCel	21
Vodacom	22
Other Providers	22
TDM Backbone Infrastructure	22
Privatization	23
International Market Links	24
Data Communications and the Internet	24
Internet	25
5. Conclusions and Recommendations	27

Proceed Immediately with TDM Privatization	28
Proceed Immediately with Regulatory Reform to Attract Investment	28
Get Businesses Involved in Regulatory Processes	29
Advocate on Behalf of Businesses	30

Illustrations

Tables

Table 3-1. INCM Revenue, 2004	15
Table 3-2. INCM Costs, 2004	16
Table 3-2. Summary of Profit and Losses for INCM, 31 December 2004	16
Table 4-1. Fixed Line and Mobile Subscriptions in Mozambique	20

1. Introduction

VALUE OF INFORMATION NETWORKS

Information networks contribute to economic and social welfare. The relationship between investment in information infrastructure—telecom and computer networks and their components—and a nation’s economic development and performance is well established in principle. A variety of econometric studies confirm the nature and strength of the relationship. Details may vary from one economy to another and among sectors of a particular economy, but investment in information technologies will increase productivity, rates of economic growth, job creation, international competitiveness, and general efficiency in use of resources.

The direct benefits of investing in telecom and information technologies are realized largely through improvement in a country’s businesses and their commercial practices: production, management, marketing, and sales. Secondary benefits include greater efficiency, lower costs, more rapid innovation, lower prices, greater productivity, and more jobs. All of these benefits ultimately affect consumers. A recent literature review and analysis by the World Bank concludes that ¹

There is ample empirical evidence to suggest that [investment in information networks]...: (a) is essential to a country’s growth, productive capacity, competitiveness, and connection to the global economy; (b) contributes to poverty reduction by increasing productivity, providing new opportunities and empowering poor people; (c) is a vehicle for the efficient delivery of public administration, social and other public services; and (d) is important for transparency and good governance.

Similarly, the International Telecommunications Union (ITU) concludes that

Telecommunications became one of the leading engines of economic growth in the 1990s, fuelling activity and trade in all sectors, from manufacturing to the provision of financial services. Now, as the telecommunication sector evolves into a broader “information and communication technology” (ICT) sector that includes elements of telecommunication, broadcasting and computing, it has become not only an economic engine but also an enabler of social, educational and medical progress. The

¹ See Mohsen Khalil *et al*, Operational Guidance for World Bank Group Staff: Public and Private Sector Roles in the Information and Communication Infrastructure Sector, July, 2004. See the bibliography of studies and publications on point at pp. 20-21.

importance of access to ICT systems has grown accordingly. Policymakers are increasingly focusing on transforming the digital divide into digital opportunities.²

The reasons for the robust relationships between information infrastructure investment and indicia of economic well-being are straightforward. As a discrete factor of production, information networks contribute to the productivity of each of their companion resource inputs (land, labor, other forms of capital and, very importantly, entrepreneurship) in production processes. By enabling more extensive, higher quality, and more efficient information transfer, storage, and transformation, networks add value to labor, land productivity, and other forms of capital equipment and machinery. Positive and substantial contributions from information technology have been measured in health care, government processes, education, tourism and hospitality, banking and financial services, manufacturing, and primary undertakings such as agriculture, mining, and fisheries. Again, investment in telecommunications infrastructure is a primary and necessary condition for economic growth and rising living standards in Mozambique. Four issues, however, must first be resolved or dealt with before such investment can be take place or be effective:

- Information networks in Mozambique are “capital intensive.”
- Investing in Mozambican telecommunications infrastructure is risky.
- The government plays a critical role in structuring telecom and IT investment opportunities and incentives.
- Taxes and fees on IT services and products suppress demand and investment.

Capital-Intensive Information Networks

Information networks are capital intensive—it takes substantial amounts of capital to produce modest revenues. Depending on economic geography and demographics, network types and service offerings, it is not uncommon to find ratios of investment to revenue generated in the range of 2 to 5. Given Mozambique’s geography and economic demographics, the top end of that ratio most likely applies to new investment. In view of the limited ability of Mozambique to generate savings and investment capital domestically and the enormous demands on limited capital for other needs, this capital requirement is a major obstacle to infrastructure development. This, in turn, suggests that domestic policymakers should aim to attract and keep foreign investment in domestic infrastructure facilities.

Telecommunications Investment Risk

Moreover, networks’ high capital costs are for the most part sunk and irreversible; once committed, investments cannot be withdrawn or reprogrammed. Capital costs are fixed, of long duration, and very sensitive to uncertainty, risk, and discrimination of all kinds from any source. Investment in telecom/information networks is sensitive to all features of the technological, economic, or regulatory environment that might influence expected returns from the investment.

² Trends in Telecommunications Reform, 2002, International Telecommunication Union , Place des Nations. CH-1211 Geneva, Switzerland 2002.

In the present context, the characteristics of markets (supply and demand) in which services are offered and the features of government regulation that affect expected earnings, growth, and assorted risks are very important to capital formation and the diffusion of telecommunications and information services.

Role of Government in Investment

The Government of Mozambique plays a critical role in structuring telecom and IT investment opportunities and incentives. Some features of the political, technological, and commercial environment are more important than others—but governmental influences are primary. Countless studies by international organizations, NGOs, academics, and private consultants have explored and identified how government action, or inaction, influences the rate of capital formation in telecom network infrastructure. Research has confirmed strong and clear linkages in the chain of (1) government action (e.g., regulation, ownership, taxation), (2) incentives and opportunities to invest in telecom network infrastructure, (3) diffusion and deepening of telecommunications services, and (4) broad macroeconomic objectives related to economic growth and development.

Recognition of these links has motivated dramatic restructuring and redirection of governments' roles in the sector, particularly in developing countries. Government involvement has increasingly tended toward privatization, liberalization, and adjustment in regulatory institutions, procedures, and rules. Two decades ago governments in developing countries owned nearly all telephone companies; by the turn of the century more than half of those companies had been divested and sold, at least in part, to private investors. Privatization continues, though at a slower pace, as countries look for ways to increase opportunities for private investment. For example, most countries are licensing competitive carriers, opening monopoly markets to competition, and instituting regulations to offset the residual market power of incumbent telephone companies, to manage spectrum, and to license carriers and equipment.

Taxes and Fees on IT Services and Products

In general, demand for IT goods is responsive to changes in price (price elasticity greater than one). Thus, price reductions (increases) lead to increases (reductions) in IT sales or IT spending. Thus, anything that reduces prices or increases the productivity of IT equipment will stimulate spending thereon and avail consequent productivity gains that almost always accompany greater use of IT products and services. Taxes on IT equipment are paid partly by business owners and partly by end users. Thus, such taxes have two harmful effects. First, they reduce cash flow available to business to invest in growth. Second, they raise prices and tend to reduce spending on business services using such equipment. This “tax suppression” effect is especially critical because the most IT-intensive businesses and activities are also usually the biggest contributors to job growth and economic performance and the hardest hit by taxes and surcharges on IT spending and equipment. These “taxes” are generally passed on to consumers in the form of higher prices. Thus, they are counter to two important policy goals: encouraging investment in IT activities and keeping consumer prices for IT services low to speed diffusion and serve goals related to universal service.

REPORT PURPOSE AND ORGANIZATION

The purpose of this report is to assist the Confederation of Mozambican Business Associations (CTA) in developing a regulatory reform agenda for the ICT sector. The report identifies barriers to the development of a dynamic, efficient, high quality, competitive telecom sector that will serve the needs of Mozambican business and of national economic development, and recommends how CTA can use its resources to accelerate telecom policy reforms that advance the economic welfare of Mozambique.

Section 2 presents an overview of the statutory and regulatory framework within which telecommunications markets operate. Section 3 describes the government's role in regulating the telecom sector in Mozambique, and Section 4 presents a general assessment of market conduct and competition practices among principal suppliers in the sector. On the basis of available data and information and our analysis of them, Section 5 concludes with our main findings and recommended actions for CTA.

2. Legal Framework

New and evolving market structures and regulatory reform arrangements in all countries are guided by laws that oblige and constrain private sector firms and public sector policymakers and regulators. These laws are patterned after guidelines promoted by the World Bank, variously reflected in the statutes of many developed economies, vetted at the ITU, and taken more or less as best practices by legislative bodies in the developing world. These bodies enact statutes that establish broad guidelines for detailed implementation by one or more administrative or regulatory bodies. This pattern is similar but not identical to institutional arrangements in North Atlantic countries, in particular the United States and Canada.

While statutes from one country to another vary in obvious and subtle ways, most address common elements such as ownership of telecom facilities (e.g., public versus private, domestic versus foreign); socioeconomic goals to guide market ownership and evolution; the role of regulators versus the role of markets; the character of regulations (e.g., entities, funding, independence, procedures); and, generally, but no less importantly, the details of property rights associated with ownership of telecom infrastructure. Another way to categorize these statutes is to consider them in the context of broader trends toward corporatization and privatization of state-owned telecom infrastructure, liberalization of entry (reduced protection of monopoly), and, processes for regulating monopoly and reducing regulation of entrants and competitive markets (regulatory reform).

The World Bank's surveys of the concerns of potential investors in developing countries highlight the importance of laws that shape the investment climate, attitudes toward corruption, taxes and tax administration, aspects of the judicial system, and others. While these concerns and laws may be critical and even overriding, we concentrate here on statutes that address telecom markets specifically and exclusively.

TELECOM STATUTES

Mozambique's current legal framework is the product of nearly 15 years of review and adaptation to internal and external events. The government has undertaken assorted reviews, published plans, announced intentions, and modified the controlling statutes—all in one way or another to address the need to attract capital resources for construction of telecom infrastructure.

Among developing countries, Mozambique was an early innovator in telecom regulatory reform. It created its regulatory body, the Mozambique Communications National Institute (INCM), in 1992. Law 22/92 set out in broad terms the government's role in the telecom sector and laid the

groundwork for more substantive legislation. At about the same time the government-owned telephone company, TDM (Telecomunicações de Moçambique), was “corporatized” and converted to a commercial entity with financial autonomy. The government, however, remained and remains the principal stockholder. TDM was vested with the responsibility for planning, constructing and operating domestic and international networks. TDM was granted a franchised economic monopoly to do so. (See Decree No/ 23/92; September 10, 1992).

In 1998, the government again evaluated the telecom sector. Its reviews and discussions culminated the following year in a new Telecom Law (14/99) whose purpose was to promote investment in and access to telecom and information technologies, and whose most notable provision was to open telecom markets to private investment.³ In 2001, Parliament passed Law 6/2001, launching a revised telecom policy trajectory to

- Promote access to advanced communications services, including the Internet and related capabilities, to facilitate the government’s ICT strategy;
- Promote competition to meet growing demand through liberalization;
- Ensure that the government divests its interest in state-owned telecommunications entities, especially TDM.

In addition to the INCM, current law provides for participation by two other executive bodies at the national level: the Ministry of Transport and Communications (MTC) and the ICT Policy Commission. The law established a telecommunications policy unit at the MTC to oversee and contribute to the development and implementation of telecommunications and information technology. The MTC is responsible in principle for defining “policy and development strategies” consistent with controlling statutes, but has no direct regulatory authority or rulemaking powers. The ICT Policy Commission consists of representatives of the MTC, the Ministry of Education, and the Ministry of Planning and Finance. It reports to the Prime Minister and is charged with leading government IT initiatives and integrating various national plans for the ICT sector and the Internet. It has no direct rulemaking authority over telecom carriers.⁴

The principal regulatory body, INCM, is vested with considerable power, financial and administrative autonomy and, in principle, political independence by virtue of its empowerment of an independent Board of Directors.⁵

Law 8/2004 provides the basic statutory framework for regulating the telecom sector today. It sets out the goals of regulation, delegates certain responsibilities to the INCM, provides general guidance for interpreting those goals and carrying out those responsibilities, and defines to some

³ Decree No. 23/92, issued on September 10, 1992, transformed TDM into a publicly owned firm. TDM was restructured to function as a commercial entity with financial autonomy and was charged with planning, installing and operating the national and international network. TDM offers telephone/fax, telex, leased lines, radio and television transmissions, cellular telephones (GSM) and Internet services.

⁴ While the MTC, the Ministry of Finance, and TDM do not have significant statutory authority over sector regulation, all influence INCM through informal and not entirely transparent channels.

⁵ See “Country Information” an INCM PPT presentation by F. Chate (August 4, 2005).

extent the processes that INCM is to use. Article 9 sets forth the goals of promoting investment, competition, and expanded network access (universal service); of preventing anticompetitive practices (e.g., discrimination, unfair conduct, predatory pricing,); and of guiding the telecom sector to aid achievement of Mozambique's social, political, and economic goals.

Subsequent articles, Article 12 in particular, indicate means for achieving statutory ends while suggesting processes and conferring enormous power and discretion to the INCM to carry out the functions necessary to achieve those goals. Specifically, the INCM is vested with the power to oversee and determine policy, rules, and terms regarding

- Licensing, mergers and acquisitions and hence market structure;
- Registration and license fees; taxes; fines and general assessments;
- Tariffs controlling rates and service specifications;
- Spectrum allocation and orbital assignments;
- Interconnection terms, features and rates;
- Accruals and disbursements of universal service funds;
- Equipment certification;
- Numbering plans; and
- Implementation and negotiation of international telecom agreements.

Later sections of the law elaborate on these and other powers. In more general language the statute makes clear its intent to give the INCM enough power to shape the structure of the telecom sector; to constrain and compel within wide bounds the market conduct of licensees, and to generally work its will to ensure that the performance of the sector comports with broad statutory guidelines and goals. The INCM is able to require operators to provide data on operations, costs, accounting, general performance and other information or documents that the INCM finds necessary to carry out its duties. Without specific reservation, the statute permits the INCM to publish such data and reports.

The statute provides for INCM procedures and general guidance for its general structure and composition. Notably, the INCM is vested with the power to create expert committees for consultative purposes to allow it to avail itself of specific information and analyses useful to carrying out its purposes under the statute.⁶ The INCM is vested with financial autonomy through the proceeds of taxes, fees, and assessments the Law authorizes it to collect. Finally, but by no means least of all, the INCM is charged in Article 11 to discharge its duties in an impartial and transparent fashion.⁷

ASSESSMENT OF STATUTES

The goals of Law 8/2004 are sufficiently clear, focused, and serviceable, as measured by the standards of similar telecommunications reform statutes in other countries. The statutes in

⁶ Here as in several other places in the summary of the statute, we are dependent on the quality of the translations in the English version of Law 8/2004 provided me. Thus, what the Law means and says will ultimately be determined by judicial review.

⁷ See note 3.

general, and Law 8/2004 in particular, are similar to and consistent with statutes in other countries. The provisions set forth clear, if general, national telecommunications policy goals; create a regulatory body and confer administrative duties and rulemaking power thereto; provide procedures and guidelines for the regulator to carry out the will of the legislature; and provide the legal, financial, and political wherewithal needed to implement the national policy.

Statutes providing for reform of the telecom sector must balance legislative guidance with regulatory discretion to implement and administer the provisions. Though legislatures cannot micromanage a government's participation in the sector, they must provide clear policy direction to the regulatory body. In most countries, the legislature gives broad guidance and sufficient power to the regulator to assure achievement of policy goals. Success ultimately depends on the regulator's implementation of the statute—a topic to which we now turn.

Keep in mind that capital goes where it is welcomed and stays where it is treated fairly. Investors require a reasonable degree of certainty and finality about how the government will require or constrain market conduct that affect their costs or revenues. Investors are attracted by well informed, competent regulators; open and transparent regulatory processes; and regulatory independence from incumbents or other government interests. They have numerous options for deployment of scarce cash and capital and prefer opportunities that promise reasonable returns commensurate with technology, market, and regulatory risks undertaken.

Mozambique's statutory framework contains all the pieces needed to create a regulatory environment that will meet investors' objectives. But it lacks coherence and direction. It resembles a "cut and paste" exercise—snipping from consultant studies, statutes from other countries, and ITU reports of best practices. The statutes have the right goals, but provide no means for balancing conflicting goals. This results in a regulatory body with an enormous amount of discretion in determining a preferred course of action and marshalling statutory goals, striking a balance among them, and rationalizing its decision on that basis.

In our review of the limited evidence available to us on INCM decisions, we can find no clear analytical tie between the goals reportedly pursued and the means for achieving them implied by INCM decisions. Public documents from the INCM express clear dedication to statutory goals, but discussion or consideration of cause and effect relationships between alternative courses of regulatory action are not present in agency publications.

INTERCONNECTION RULES

Competition among companies owning different networks and using different technology platforms raises numerous regulatory issues, but none more important than the challenge of establishing efficient and fair conditions of network interconnection. Interconnection rules are critical to end users, to connecting carriers, and to investors. Regulators, therefore, must get interconnection terms and conditions and rates "right." Users on one company's network want to be able to send/receive calls to/from subscribers on other networks and to do so efficiently, cheaply, and seamlessly. If all firms had the same amount of market power and no conflicts of interest vis-a-vis different interconnecting carriers, regulators could trust markets to solve these

problems. However, almost all national regulatory bodies have been required to stipulate in specific and detailed language rates and conditions of interconnection for competing carriers.

Owners of wireline facilities desire to get as much revenue as possible from wireless carriers, while wireless carriers desire to minimize their cost of interconnection as means of keeping their rates low and staying competitive with both the wireline carrier and other wireless carriers. Interconnection proceedings throughout the world have become the forum for competing carriers to try to gain regulator-imposed market advantages over their competitors. As a matter of principle, interconnection rates should reflect the costs incurred by carriers to provide the interconnection.

While simple in principle, the practice of establishing cost-based interconnection rates is very difficult. The challenge lies in defining and measuring interconnection costs in a network environment where (1) many service costs are joint, common, or otherwise contingent on provision of other services carriers; (2) carrier books of account typically are not capable of yielding cost information useful to the task of estimating interconnection costs; (3) technological change is rendering obsolete many categories of book accounting costs; and (4) specific costs are extremely sensitive to the biases of costing analysts. These and other difficulties have caused different regulatory authorities to use different methodologies and, in particular, to seek short cuts through the costing process.

Developed countries with large regulatory staffs have built complex computer models using enormous amounts of data to simulate network operations and thereby “estimate” interconnection costs. Without regard to the efficacy and accuracy of such methods, they are impractical for most developing countries, which usually lack both the data and the skills needed to build and maintain models. Numerous guidelines, handbooks, and workshop presentations and proceedings exist to aid regulators in establishing interconnection rates, but all require more resources than are currently available to the Government of Mozambique.

Reflecting these complexities, INCM has retained a consultant to assist it in estimating interconnection rates for interconnecting carriers in Mozambique that serve the broad goals of the Law. Recognizing that the incumbent wireline monopoly has neither the cost data nor costing models necessary for reliable estimation of interconnection rates, the INCM has turned instead to using “benchmarks” derived from the interconnection rates of other countries.

The theory of benchmarked rates assumes that rates in other countries are reasonable proxies for efficient, cost-based rates in a given country where the requisite cost information is not available. The assumption of “comparability” between benchmark rates and interconnection costs incurred by carriers in Mozambique is critical. That assumption and its limits must be tested because costs vary by technology, age of plant, subscriber density, average fill, mileage, type of service, points of interconnection, numerous service quality characteristics and others. Indeed, unbundled elements of networks on which rates are known to vary may reach into the hundreds.

The point of this brief excursion into the contentious world of interconnection rate making and costing is to highlight not just the complexity, but the extent to which the development of

competition and creation of investment incentives for new firms is depends on getting interconnection rates right.

Mechanical reliance on rates in other countries, no matter how carefully chosen the sample or sophisticated the statistical manipulations of the data, is no substitute for careful analysis of the impact of alternatives on the viability of competition, entry incentives, end user rates, and the ability and incentive of carriers to invest in telecom infrastructure.

DECISIONMAKING PROCESSES

How the INCM makes decisions is not clear. Few stakeholders know how issues get on the regulatory agenda, how they are framed for consideration, how noncarrier stakeholders find out what the issues are and how to participate, or what kinds of evidence the INCM will consider in making a decision. While other countries use a variety of processes with varying degrees of success, the more successful have some common elements:

- Notice to parties of impending decisions or rulemakings
- Clear statement of the issues and regulators' frames of reference for decisions
- Solicitation and full consideration of the views of interested parties
- Some public give and take among rival interests
- Reasonable and known time frames for decision
- Publication of decisions along with clear explanations of their basis.

These are not clearly apparent in INCM processes.

3. Government's Role in Regulation

An organization chart of the telecom policy framework in Mozambique would have a bold line linking the legislature with the Mozambique Communications National Institute (INCM) to make clear that INCM is responsible for regulating telecom, advancing the national interest through promotion of investment in network infrastructure, and carrying out the express provisions of the laws described in Section 2 of this report.

AGENCIES WITH TELECOM POLICY INTERESTS

While the INCM bears the statutory responsibility for making important regulatory decisions, other parts of the government exercise considerable influence. The Ministry of Transport and Telecommunications has broad policymaking responsibilities and is “responsible for the definition of sector policy and development strategy as set out in the statutes.” Similarly, the ICT Policy Commission, reporting to the Prime Minister, is an interministerial body made up of the Ministry of Education and the Ministry of Finance. While focused presumably on broader ICT and specific Internet activities, the evolution of technology and markets is blurring and dissolving any such service-based distinctions. Moreover, as a practical matter the ability or responsibility for making policy cannot be divorced from rulemaking and enforcement authority.

Because the law provides for pursuit of several policy goals with only discrete rulemaking instruments, rulemakers must balance and trade off among the goals. It is axiomatic that one cannot maximize multiple goals with limited policy instruments. A “policymaking” individual or agency can set policy goals and benchmarks, but rulemaking decisionmakers must make the hard choices about how much weight to accord conflicting goals. Actual policy is made in decisions on specific issues that are the result of the push and pull of admonitions to pursue competition, fairness, universal service, investment, efficiency, technological progress, lack of discrimination, financial solvency for the regulator, international harmony, etc.

Thus, determining who makes policy in Mozambique reduces, as it does in other countries, to identifying who has political authority or exercises political power over the regulatory decision makers. While the law gives the INCM the responsibility for making a broad range of detailed regulatory decisions, it does not specify or even reflect on the sources and strengths of political power projected from other government departments and individuals. These “dotted lines” are invisible to outsiders. Consider the very likely real power of the Ministry of Finance. While the results of our interviews will not support a specific and clear definition of the Ministry's role, that

role is not negligible. First, the Ministry has a substantial stake in many of the matters addressed by the INCM—national planning, infrastructure development, taxes and fees, universal service and, notably, the shape of competition among rival telecommunications carriers whose interests the INCM must repeatedly and fairly balance.

The effective locus of real power at the INCM is the Administration Board, which is made up of a Chairman and four members. The Chairman is appointed by the Cabinet Council. The Chairman may in turn propose the nomination of the other four members to the “patron minister.” Ultimately, this Board exercises all powers vested by Law in the INCM.

MOZAMBIQUE COMMUNICATIONS NATIONAL INSTITUTE

Resolution 01/CA/INCM/2004 sets out the structure and powers of entities comprising and establishing the INCM. Article 6 spells out in great detail the powers of the Administration Board—ranging over all payroll, personnel, policy, financial management, regulatory, rulemaking, auditing, taxation and fee setting, human resources, standards and others. While these powers may be and apparently are delegated to the General Manager (Director General), the power of the Board to make rules and implement policy—as opposed to articulating directions and broad brush etc.—is significant in its potential impact on private sector development.

The INCM is structured along technological and functional lines. Its responsibilities are broad and deep, mirroring those of regulatory agencies in most other countries. It may exercise material influence over the structure and commercial practices of all providers of “electronic” communications by wire and radio, domestic or international and without regard to technology (e.g., broadband or narrowband, copper or coaxial cable, satellite or terrestrial) or points of origin and destination (e.g., local, long distance, urban/rural). The similarity of the INCM to other national regulatory bodies is likely the result of the review of various models put forth by the ITU, the World Bank, and varied regional bodies in recent years. One difference is the very substantial and more or less unchecked power vested in the INCM to impose and collect fees and taxes for its own account and without regard to general principles of fair and efficient taxation or contributions of the proceeds to the general treasury.⁸

INCM Annual Report for 2004

The INCM's annual report for 2004 covers the institution's structure, activities, fund sources and uses, personnel practices, and resource use. It notes training activities, administrative details, procurements, and investments. Most important, because it was written presumably by the INCM staff, the report reveals how the agency perceives itself, its priorities and its role in the telecom sector. The report begins by listing the agency's achievements in seven areas: state and administration representation, institutional capacity building, regulation, licensing, radio

⁸ Most countries provide for some fees to be charged to recover legitimate costs; for licenses, for use of public spectrum or for other services. What is different here is the discretion afforded INCM to determine the structure and size and incidence of assorted taxes, fees and charges. All this is of course independent of its directed collection and disbursal of the Universal Service Fund.

monitoring and enforcement, equipment inspections and standardization, and spectrum management.

State and Administration Representation

The agency participated in and attended meetings and conferences outside Mozambique, including multilateral “regional meetings” organized by the Southern Africa Regulating Bodies Association (TRASA) and two bilateral meetings in Portugal and Brazil. In the bilateral context, INCM visited some SADC member countries (Botswana and South Africa) in search of consensus and to share experiences, and visited Portugal and Brazil to reinforce bilateral agreements signed with ANACOM (Portugal) and ANATEL (Brazil) in connection with sending staff of INCM for training in Portugal and Brazil. The agency also participated in and attended general meetings convened by the following institutions: Telecommunications International Union, African Telecommunications Union, TRASA, Community of Portuguese Speaking Countries, Communities Telecommunications Organizations, Portuguese Speaking Countries Association of Post Offices and Telecommunications, Universal Postal Union.

Institutional Capacity Building

Capacity building included reviewing training needs, launching tenders for consultants to assist in spectrum management, developing an internal computer network for information management, and implementing programs related to financial management, administration, human resources, and assorted internal management functions. INCM retained Booz Allen Hamilton to assist in a variety of technical and economic regulatory matters, interconnection, it appears, in particular.

Communications Regulation

The report observes that “the regulation of post and telecommunications sectors, in its different angles, particularly in competition issues, consumer defense, quality of services, inter-linking and others, assumed particular importance in the INCM activities in 2004.” To paraphrase, the law intends, in a transparent and objective way, to create conditions for a major intervention in private investment in the telecommunications sector, without omitting the regulating and controlling role of the State. In brief, INCM cited its promotion of debates among parties interested in producing legislation on sector functioning. Such legislation included the basic postal law, the postal licensing regulation, and the regulation on postal services.

In telecom regulation, the agency reported modest, but important, activities. It assisted the legislature in crafting Law 8/2004 to replace Law 14/1999.⁹ The agency produced four decrees, two on taxes or fees, one on interconnection, and one on registration/licensing. The agency also cited four decrees from the last four months of the 2001 (approving the Organic Statute, approving licensing regulations, approving regulations for interconnection and adoption of a numbering plan.)

⁹ During drafting of the postal regulation, there were ample public and national fact-finding activities and recommendations from TRASA and the UIT.

Licensing of Telecommunications Services and Networks

The agency reported 46 licenses for provision of telecommunications services and networks, but did not indicate when those were issued or how many were issued in 2004. It appears that no major new entities were licensed in 2004. Licensees are as follows:

• Mobile Telephone Service	2
• Fixed Telephone Service	1
• Paging Service	1
• Television Service Through Cable	2
• VSAT Data and Network Services	6
• Internet Service Providers	18
• Internet Cafes	6
• Postal Distribution Operators	8
• Audio Text Services	1
• Internet Exchange Point	1

Radio Monitoring and Enforcement, Equipment Inspections and Standardization, Spectrum Management

The agency monitored FM broadcast stations, aeronautic fixed and mobile service transmissions, signals interfering with TDM in Zambezia Province, and 455 MHZ frequency bands allocated to Fixed Wireless Access network of TDM SARL. It also acted to eliminate some of the observed interferences. INCM inspected and registered assorted telecom equipment, issuing 17,000 stamps and 297 equipment registrations (40 radios, 46 types of terminal equipment, 211 cell phones). In spectrum management, the agency worked to update the national frequency plan, issued 60 new licenses, revoked 51 others, and coordinated frequency use with the Republic of South Africa, Swaziland, Zimbabwe, Botswana, Malawi, Tanzania, and Zambia. It also reported drafting a frequency plan for GSM at 900 and 1800 MHz, and working to harmonize the national frequency plan with the SADC national frequency plan. The report highlighted numerous activities related to inspections and enforcement of licensing conditions and tax remittances—broadcast stations in Maputo, building inspections of licensed entities, public telecommunications operations and others.

Staffing

The actual pattern and structure of staffing of INCM is a useful and informative addition to the agency's own descriptions of activities and accomplishments. INCM priorities and resource utilization is suggested by the following figures provided to the USAID team:

• Operations and Administration	58
— Board Members	2
— Executive Management	2
— Foreign Affairs	4
— Administration and Finance	24
— Fiscal	4
— IT	5
— Market Development	6

— North Regional Office	3
— Central Regional Office	4
— Legal Division	2
• Radio Communications and Spectrum Management	17
• Postal and Telecommunications Regulation	6
• Total	81

INCM Financial Results

The annual report provides a snapshot of the agency's finances—assets and liabilities, sources and uses of cash—as well as an income statement reflecting net results of operations. The agency has used cash surpluses to add to its base of fixed assets, particularly in the form of real estate for regional office facilities, information systems and equipment, assorted equipment, upgrades to office facilities and the like. The INCM fixed asset base increased by 52 percent over the previous year to reach an estimated 20,750,000,000 meticaís by the end of 2004.

The revenue picture was even more favorable as is verified by Table 3-1 (from the report). According to the table, INCM booked revenue of 210,242,763,000 meticaís in 2004—an almost fivefold increase over 2003.

Table 3-1

INCM Revenue, 2004 (thousands of meticaís)

Source	2004	%	2003
Sales of services			
Licensing taxes	76.322.650	70	22.831.608
Annual telecommunication taxes	106.655.462	-	
Tax on the use of radio spectrum	27.124.203	17	22.414.911
Homologation tax	133.676	-73	231.874
Financial revenues	725	-1,594	12.281
Other gains	6.047		
Total revenue	210.242.763	78	45.490.674

According to our translation of the report, this increase was due mainly to growth in telecommunication services in the form of new taxing charges, fees for award of licenses to Vodacom Moçambique, Moçambique Cellular (MCel SARL), and Telecomunicações de Moçambique (TDM SARL). The level and structure of revenue is influenced by the considerable weight of the licensing taxes imposed on the fixed and mobile telephone operators and the annual telecommunication taxes, which, as a whole are the main generators of revenue.

The increased revenue was associated with a modest increase in costs, largely due to increases in wages and salaries per employee (2.5 x increase over 2003), upgrades to employee ranks, consulting expenses, travel, and lodging for employees, building repair, assumption of travel costs of other agencies, and expenditures on professional services and supplies (Table 3-2).

Table 3-2*INCM Costs, 2004 (thousands of meticaais)*

Type of Cost	2004	%	2003
Remuneration to workers	45.544.498	59	18.450.469
Supplies to third parties	3.829.213	38	2.374.248
Services of third parties	8.695.883	45	4.752.657
Taxes and rates	360.843	3	649.431
Amortization of the exercise	2.084.646	49	1.066.298
Other costs	4.681.869	56	2.070.894
Total	65.196.952	55	29.063.997

Liquidity improved enormously. The balance of current assets over current liabilities improved as the result of increased revenue and receivables combined with smaller increases in expenses. INCM's current short-term balance of liquid assets increased to 156.745.423 ('000 meticaais) in 2004 from 16.944.621 ('000 metacais) in 2003—nearly a tenfold increase. The bottom line and its main revenue and cost elements for 2003 and 2004 are presented in Table 3-3. In short, revenue was up about fivefold; labor costs up 2.5 fold; INCM profit up 36 fold from 3.800.210 ('000 metacais) in 2002 to 139.800.802 ('000 metacais) in the previous year.

Table 3-3*Summary of Profit and Losses for INCM, Year Ending 31 December 2004 (thousands of meticaais)*

Revenue	2004	%	2003
Sale of services	210.235.992		45.478.393
Other revenue	6.047		-
Total revenue	210.242.039	78	45.478.393
COSTS			
Remuneration to workers	45.544.498	59	18.450.469
Supply to third parties	3.829.213	38	2.374.248
Services of third parties	8.695.883	45	4.752.657
Taxes and rates	360.843	3	349.431
Amortization of exercise	2.084.646	49	1.066.298
Other costs	4.681.869	56	2.070.894
Total costs	65.196.952	55	29.063.997
Operating profit	145.045.087.00	89	16.414.396.00
Financial results	(165.992)		(24.535)
Extraord. Results of exerc.	(276.987)		(5.074.386)
Imput Results A. previ. ex	(4.801.306)		(7.515.256)
Total Profit	139.800.802		3.800.219

Many countries have been reducing draws from general tax funds and attempting to make their regulatory bodies more financially independent. Better practices limit direct charges on the private sector. These practices include (1) specific cost-recovery measures linked to resources used, (2) spectrum fees that compensate owners of public resources, and (3) contributions to universal service funds. INCM has instituted all these measures and more, in particular taxes on different kinds of communications terminal equipment. These taxes, however, suppress the use of important technologies—something regulation is intended to encourage—and are largely borne

by consumers contrary to the statutory admonition. INCM has accumulated substantial surpluses. If the surpluses are used to improve its focus on telecom policy matters, its analytical capability, its decision making processes and to advance broad public interests, such as investment and consumer choice, they may be justifiable. But, if as has been the case recently, they are used to add administrative and tax collecting capability, that would be the basis for considerable concern and inconsistent with the agency's important statutory responsibilities.

4. Elements of Mozambique's Telecommunications Market

Among African countries, Mozambique was an early reformer of the telecom sector. Since it began liberalization in 1992, however, progress has been spotty and marked by uncertainty. Regulatory reform has been marred by delays, changes in course, and lack of focus and commitment. The promise of privatization is stalled for reasons that are not entirely clear. Key events are as follows:

- In 1992, the government's telecom network and operations were transformed into an independent state-owned company, Telecomunicacoes De Moçambique (TDM). The company was restructured to function as a commercial entity with financial autonomy and responsibility for planning, installation, and operation of the national and international network. The government owns 80 percent of the company. TDM staff owns the remaining 20 percent.
- In September 1997, TDM entered a joint venture with Deutsche Telekom AG to provide cellular services.
- In early 1998, TDM's mobile operator, mCel, rolled out service.
- In 1998, TDM completed a fiber optic backbone link (with financial assistance from the European Union) between Beira and Maputo. The next phase of the project extended the fiber optic link to Queliman.
- In January 1999, the government began drafting legislation to partially open the telecom sector to greater private investment and competition.
- In 2001, the mobile subscriber base surpassed the number of fixed-line users.
- In 2001, the government announced plans to privatize TDM.
- In December 2001, a bill to open the mobile market to competition was passed.
- In mid-2002, a second mobile license was awarded to South Africa's Vodacom; network launch was delayed until late 2003 because of unresolved regulatory and market structural issues.
- In December 2003, Vodacom, the second cellular provider was launched, and Decree 47 ordered the separation of TDM and mCel.
- Plans to create a second fixed line operator before the end of 2007 were announced.

- In May 2003, TDM was converted into a limited company and mCel was spun-off to be an independent company.
- A preliminary call for the sale of shares to a strategic private investor was completed.

All this notwithstanding, Mozambique spends almost 5 percent of its GDP on telecommunications, yet the country's teledensity is among the lowest in Africa.

CURRENT MARKET STRUCTURE

Telecom markets in Mozambique mirror those of other countries in broad terms, but are significantly different in some ways. Three major providers and several smaller niche providers exist. TDM, long the dominant carrier, enjoys a (now temporary) franchised monopoly in the provision of telephone service via wireline, copper-based technology. With about 75,000 subscribers, it has two competitors who use wireless technology to provide local and long distance voice and messaging services. The largest and oldest mobile provider, mCel, is a wholly owned subsidiary of TDM and now has more than 700,000 subscribers. The second mobile carrier, Vodacom MZ, is owned by Vodafone of South Africa and has about 250,000 subscribers.

Table 4-1

Fixed Line and Mobile Subscriptions in Mozambique

Year	Fixed Line	Mobile
1997	65,606	2,500
1998	75,354	6,700
1999	78,072	12,200
2000	85,714	51,060
2001	87,291	89,000
2002	87,367	170,000
2003	77,576	470,000
2004	69,676	610,000
2005	65,000 (est.)	1,000,000

SOURCE: Data provided by INCM and reconciled with TDM Annual Report data

CHANGES IN MARKET SHARES

Data show the dramatic growth in the number mobile cellular subscribers and concurrent decline in the number of wireline subscribers. After several years of significant growth, subscriptions to wireline connections peaked in 2002 and have been in free fall ever since. TDM's operating income and profits have tended to track the decline in subscribers, but have been stabilized in part by a rate increase of 33 percent for basic fixed line service late in 2003. The loss in subscribers is the result of a decline in new installations and subscriber disconnects and migration to mobile services.

TDM PROFILE¹⁰

TDM covers 60 percent of the country. In addition to providing basic fixed line voice services, it provides GSM services, data communications, Integrated Services Digital Network (ISDN), videotext, public phones, Internet access, cable TV, frame relay, paging, and directory books and services. In addition, TDM has entered a variety of joint ventures to deliver value-added and complementary services. These include

- Teleserve, a 50-50 joint venture with Mauritius Telecom that supplies customer premises equipment (e.g., PABXs) and internal wiring services. It also supplies telephones to TDM.
- Teledata, a joint venture with Portugal Telecom that provides data transmission (e.g., leased lines, local connections for ISDN, X.25 and frame relay), Internet services (including an Internet café), and paging services.
- TELEConsultores, a consultancy established as a joint venture with Swedtel that provides management services to the telecom industry.

TDM participates in Intelsat, Inmarsat, Rascom, and global mobile networks via satellite with Iridium, Globalstar, ICO, and Teledesic. TDM has approved a number of “phone-shop” licenses that permit entrepreneurs to resell public voice calls and metered minutes of use in small quantities. Phone cards are available from a variety of retail establishments. By the end of 2005 about 4,900 payphones were operating, up from 900 in 2001. Modest growth in some of these lines has yielded mixed results and has not been sufficient to offset losses in basic, voice telephone business.

MCEL¹¹

Since beginning operations in 1997, mCel has grown dramatically and now serves about 750,000 customers, most of whom pre-pay. The company has invested more than US\$150 million and continues to add base stations (393 in 2004) and signal presence. It connects its switching centers using TDM backbone and VSAT links. Revenue grew from about US\$210 million in 2000 to US\$150 million (estimated) by the end of 2005. Its revenue per subscriber (ARPU) is about US\$15-16 and will decline as incremental users (mainly prepaid low-income subscribers) join the network. Estimates of the total addressable market in Mozambique vary, but it could amount to two times the current subscriber base, reflecting a penetration rate of about 10 percent. Improvements in costs and quality, and growth in users’ income, could increase that amount. The company sells its services vigorously through advertising and branding, while varying service

¹⁰ The market overview in this report draws frequently on factual material contained in an excellent, short summary of telecom markets in Mozambique: [Mozambique Telecoms Market Overview & Statistics](#), Paul Budde Communication Pty Ltd; 5385 George Downes Drive, BUCKETTY NSW 2250 AUSTRALIA. Accessed with permission online on 14/08/2005 at 1:42 AM. We have made reasonable efforts to complement it and verify it, but any errors are ours alone.

¹¹ This summary draws heavily on the “Sector Overview & International Experience Report” prepared by INTELCON and submitted to the Ministry of Transport and Communications, March 10, 2005. The USAID team made repeated, but unsuccessful attempts, to obtain copies of reports required to be filed with INCM. Requests made of INCM, mCel senior managers, and Vodacom senior legal staff were ignored.

features and offering time-of-day and volume discounts. The company uses a handful of distributors serving 10,000 or more retail outlets that offer prepaid cards.

VODACOM

Vodacom competes vigorously with mCel and TDM in the marketplace and for favorable interconnection rates in proceedings at the INCM. It is roughly a quarter of the size of mCel by most measures and its network more or less mirrors that of mCel, but as a newer company its build out has been less extensive and deep. It believes that its service is available to about one-third of Mozambicans. The average subscriber to Vodacom generates less monthly revenue on average (ARPU equal about US\$9) than mCel's average subscriber. The company has been playing catch up to overcome mCel's lead and has aggressively pursued lower income, marginal prepay customers to boost volume and share. Vodacom relies more on VSAT links for transmission than on the more expensive TDM backbone facilities. The company has only one switching center (in Maputo) and is building its own backbone linking some sites. Like mCel, Vodacom uses resellers. It offers some service in all provinces—in the capital cities in particular—and has blanket coverage of corridors between Beira and Manica, and between Maputo and Beira.

OTHER PROVIDERS

Mobile telephony is competitive in both an intermodal (wireline to wireless) and intramodal (wireless to wireless). Further competition is subject to changes in market conduct or an additional carrier should frequency become available and INCM choose to license it. Paging, trunking, leased circuits, data communications, and private networks all offer alternatives to fortuitously located large users (mainly in urban areas). There are 18 ISPs, 10 data operators, 32 private networks, 2 CATV companies, and 5 Internet cafes, as of August 2005. These join the single wireline provider and two mobile operators.

TDM BACKBONE INFRASTRUCTURE

TDM owns and operates the national transmission network linking all provincial capitals. The network is a combination of marine fiber cable (Maputo to Xai-Xai, Inhambane, Vilanculos and Beira), terrestrial microwave links (from Maputo north to Xai-Xai, Inhambane and Vilanculos and from Maputo inland to Chokwe in Gaza province), and satellite circuits (to the Northern capitals).

Though TDM plans to extend the fiber network, progress has been slow. TDM's intercity links rates are very high, but expanding such links requires enormous amounts of capital. External financing is unavailable, due to its ownership by the government of Mozambique, and TDM's internally generated cash flow has been substantially reduced because it has lost market share and normal growth to cellular providers. Meanwhile, TDM is attempting to compete with cellular providers through its CDMA-based wireless access services, but that too commands scarce cash that might be used for the backbone.

Total investment by TDM declined by about 70 percent from its peak of 1.401.417 (10⁶ MT) in 2002 to 660.00 (10⁶ MT) in 2003 to 445.423 (10⁶ MT) in 2004. Figures for 2005 are not

available, but TDM's Chairman J. de Carvalho announced in the summer of 2005 TDM's intention to invest US\$30 million in backbone infrastructure. He indicated success in lining up an additional US\$20 million for use in 2006 to help revive the company. In the first quarter of 2005 he said that

Mozambique has 20 Internet service providers and 10 data service providers ... We saw that the environment had changed, there is competition, yet our financial indicators were declining, our sales were declining and we were losing competence. TDM is now repositioning itself to let rip where we have comparative and competitive advantages.¹²

He indicated that TDM would extend the fiber optic link through another five cities in central and northern Mozambique, but offered no details. The planned 2005 investment was comparable to the \$32.4 million expended on the fiber-optic submarine cable linking the capital Maputo and the second city of Beira in 2002. The Chairman also announced plans to reduce TDM's reliance on satellites by installing a fiber optic link to South Africa through a liquefied natural gas pipeline between Maputo and the border.

PRIVATIZATION

The government has been considering privatizing TDM for some time. According to interviews, finding a strategic investor remains a top priority. A privatization study by the government recommends such a course of action. Despite the government's commitment to and desire for privatization, apparently no deals are materializing. The reasons are many, but the continuing absence of a conduit for external, private capital as a means of encouraging and enabling investment in telecom infrastructure should be a major concern for the government. Officials claim the establishing of such a conduit is "well underway" but others observe that it has been so for some time. The delay probably bespeaks no reluctance to privatize, but rather failure to find a suitable party and difficulties in negotiating terms suitable to all parties.

Valuation of TDM assets and regulatory assurances about rates and franchises and assorted service obligations influencing expected cash flows may well be obstacles to any deal. Potential buyers very likely estimate greater risk, lower growth, and slimmer margins than do government financial analysts. If so, failure to agree on the business's basic financial and economic character and future could well be a stumbling block. All this is complicated by TDM's financial performance since 2002, the introduction of cellular service, the mCel spin off, the introduction of Vodafone, and the imminent growth of voice over internet protocol (VOIP) services. Stagnation in world telecom markets in the aftermath of aggressive bidding on 3G licenses in Europe and the "crash" of the telecom and IT sector in North Atlantic countries in 2000 has no doubt dampened investors' ability to invest and their assessment of the long-term value of fixed wireline networks.

TDM's recent efforts to turn the company around by investing in backbone infrastructure may well be instrumental in the timing and value conferred in any privatization. Delay in the

¹² *Fiber Optics Weekly Update*, April 22, 2005

transaction may reflect the government's optimism that TDM's assets may become more valuable, or buyers' belief that assets will lose value as cellular competition erodes the wireline business and as VOIP strips income from TDM's long-distance services.

INTERNATIONAL MARKET LINKS

Most connections from Mozambique to the international network are achieved via TDM links to satellite. The lone international digital exchange is near Maputo. Plans call for an additional international exchange and a new earth station. Satellites also link domestic callers in regional centers and large cities. Microwave circuits provide regional links to South Africa, Swaziland, and Zimbabwe. A proposed East African Submarine Cable System would also link Maputo with South Africa and Djibouti. Mozambique is linked to South Africa by a 155Mb/s Synchronous Digital Hierarchy (SDH) microwave link, a satellite IDR connection, and an old analogue microwave link that also branches to Swaziland. A joint venture (Motraco) among power companies in South Africa, Swaziland, and Mozambique has constructed fiber optic cable along the power lines to the Mozal aluminum smelter in Maputo, but (by our information and belief) the company has not yet obtained a license to sell capacity on this line to other users or resellers. The South African petroleum company (SASOL) intends to install fiber along a gas pipeline from Inhambane to South Africa. Intercontinental traffic is handled by the Boane Standard A Earth Station near Maputo and offers connections to Portugal, Italy, the UK, France, the United States, Spain, Sweden, Germany, Brazil, Finland, and Malawi. Mozambique is a signatory for five Intelsat satellite earth stations—two in the Atlantic Ocean footprint and three in the Indian Ocean footprint. International direct dialed traffic is routed through the international telephone exchange in Maputo.

DATA COMMUNICATIONS AND THE INTERNET

The main data communications provider is Teledata Mozambique Ltd., a 50/50 joint venture of TDM with Portugal Telecom International. It was established in 1989 as a subsidiary of TDM and now provides data communications and value-added services. It operates a direct link to Portugal. The network uses X.25 to link Mozambique's major cities. Digital leased line services are available in Maputo, Beira, and Nampula. Services are also offered via a VSAT hub in Maputo. Teledata is the only provider of international data services. However, ISPs can use international VSAT for data. In addition, mCel and Vodacom are licensed to operate international VSAT gateways for voice traffic.

Teledata's target market consists of users of local area networks, such as banks (for ATMs), universities, international agencies, financial institutions. Teledata offers basic-rate and primary-rate ISDN services to end users and for resale by ISPs.

The study team heard various assertions about discrimination, cross-subsidies, profiteering, and other abuses from competitors and customers alike. No evidence, however, was presented. While conclusive judgment about such matters would require detailed cost information that probably does not exist, and was certainly not available to us, we have our doubts—based on what is known. First, TDM has no clear or substantial economic incentive to use increasingly scarce cash to subsidize an entity in which it has only a partial interest. Such activity is not without precedent,

but it does not make much commercial sense. Second, so far as the latest available public information shows, Teledata has not been not garnering excessive earnings from the exercise of monopoly power. In 2003, according to TDM's annual financial report, Teledata was just about breaking even and showing rising costs and declining net profit in the previous four years. (The 2004 TDM report did not update those figures.) Of course, TDM and Teledata deny any favorable discrimination. Should this continue to be an issue, the remedy is simple. The INCM has the power to require publication of tariffs and might be petitioned to do so.

INTERNET

Discussions of policy among government officials and interest groups in Mozambique focus largely on “the Internet”—its promise, its sociopolitical and economic value to the country and, most important, how to enable and encourage its diffusion to all parts of the country and to all kinds of users without regard to income or standing. This is a tall order.

While Internet access is technically possible via mobile phones, most phones are optimized for voice or short messages, not data communications. Thus, Internet access is constrained by the availability of wireline connections, which are not present for more than 99.5 percent of the population. More than 90 percent of Internet users and usage originate in the government, educational institutes, NGOs, or businesses. Only the very top echelon of users has wireline access to the Internet from households.

These facts being undisputed, the means for increasing Internet usage and access are limited to increasing wireline penetration, moving to the next generation of mobile (2.5 to 3G), and creating more “community” based access points (e.g., Internet cafes and central community organizations, such as schools). All of these actions will require substantial investment, especially the network solutions, in an economy where average incomes and savings rates are quite low.

Though there are about 20 points of presence scattered throughout all provinces, it appears that roughly three out of four Internet users are in Maputo. Internet access outside Maputo is often available only through long-distance links and rates. The INCM reports about 350,000 Internet users; 70,000 to 100,000 PCs; 18 ISPs; and 141 registered domains. Five ISPs provide about 90 percent of the coverage:

- Teledata (national coverage)
- Tropical Connection
- Virtual Connection (own gateway)
- Centre Informatica de Universidade Eduardo Mondlane (CIUEM)
- Mozambique Online
- Emil
- Net Cabo.

Since May 2002 and with the launch of its Internet Exchange Point (MOZ-IX), Mozambique has had peering arrangements among major ISPs and several smaller ones. That has yielded savings in international bandwidth and network costs.

The CIUEM is the country's key ICT organization. Partnerships are being developed with universities and cooperative agreements are being reached with a number of computing companies. CIUEM and TV Mozambique have agreed to share infrastructure for distance education. CIUEM has established a university LAN that provides e-mail services in Maputo and Internet access from on-campus terminals. CIUEM is also involved in a United Nations Sustainable Development Network Program (SDNP) along with various government and nongovernmental bodies. For many years CIUEM was the only source of low-cost Internet e-mail services. In 1997, services were upgraded from dial-up store-and-forward e-mail to full Internet. CIUEM has an agreement with the Council for Scientific and Industrial Research (CSIR) to establish a hub for 2Mb/s wireless broadband data communications. A cybercafé has also been established in Maputo and is linked by the wireless hub.

On the basis of a Memorandum of Understanding with the U.S. government, the USAID-executed Leland Initiative provides TDM with a high bandwidth Internet link between Maputo and the United States which is then resold to local ISPs. Teledata is another major provider of connectivity. Two pilot telecenters, funded mainly by the International Development Research Centre, with UNESCO, began operating in August 1999. Since then, at least eight more community multimedia centers (CMCs) have become operational in semi-rural locations in the central and southern regions, and two in urban areas. Run by local communities, these centers are an innovative combination of telecenter and community radio and offer IT training, e-mail and Internet access, radio broadcasts, and a range of information and communication services. In September 2003, UNESCO announced plans to establish 50 CMCs in marginalized communities in Mozambique. Several private telecenters and cybercafes have been established in Maputo. TDM has also established telecenters in some secondary cities that offer Internet access.

As the user base continues to expand and with it the volume of email and queries to the WWW, available bandwidth will become increasingly congested and waiting times or interruptions longer. This problem is one manifestation of the larger problem: huge capital requirements for establishing domestic and international connections or bandwidth cannot be easily or quickly met in an economy with low average incomes, low savings rates, and little ability to raise capital for infrastructure development.

5. Conclusions and Recommendations

This consultation and report has concentrated on adducing sufficient intelligence about the market and regulatory environment in Mozambique to permit us to assist the Confederation of Mozambican Business Associations (CTA) in developing an agenda for regulatory reform of the country's information and communications technology (ICT) sector. The report selectively explored the technological, regulatory, financial, and market profile of the ICT sector, paying special attention to the changing structure of markets, laws, institutions, and regulations.

The main barrier to telecom infrastructure development in Mozambique is that developing the ICT sector requires large amounts of risk capital. In combination with the economic demography and geography of Mozambique (i.e., low income per capita, low savings rates, geographically dispersed population, relative inability of businesses to support high-volume telecom networks), the telecom sector is assured slow development even without regard to the legislative and regulatory environment that generally weigh heavily in private investment decisions. Even with perfect government institutions, flawless foresight, unexceptionable policy analysis, the complete absence of self-seeking behavior by public decisionmakers and the like, the rate of infrastructure development in Mozambique would lag most countries of the world. Countries with low gross domestic private savings per capita tend to have limited private capital formation capabilities and, thus, enormous demands for public assistance for a broad range of activities, including provision of basic services.

Such issues, however, are beyond the scope of this study, which concentrates on what the government might do to overcome basic economic barriers and avoid discouraging investment in the sector. To that end, we offer four recommendations: proceed immediately with TDM privatization, proceed immediately with regulatory reform to attract investment, get businesses involved in regulatory processes, and have CTA advocate on behalf of business users.

We are reluctant to make categorical statements about regulatory institutions and processes in Mozambique on the basis of information gleaned from a very limited set of interviews conducted over a short period of time and from limited materials published by various sources and over various time periods. Our recommendations reflect our best effort to balance our concern that we are rushing to judgment with inadequate information with our realization that critics will be able to address any errors by providing missing information.

PROCEED IMMEDIATELY WITH TDM PRIVATIZATION

Despite studies, plans, and schedules for privatization, TDM is still owned by the government. This delay deters investment in three ways. First, the government has a tendency to temporize and/or suppress its financial commitment to investment in view of the likelihood that the company will be sold. Second, uncertainty about the future of TDM—the preferences and plans of its likely owners, the financial commitments to be forthcoming (particularly with respect to backbone infrastructure) and the long-term corporate development strategy of the core wireline player—represents added risk and uncertainty for any potential investor in either wireless or backbone facilities. And third, nagging doubts about the government's neutrality, including that of INCM, in competitive matters leads either to unnecessary (if doubts are false) or added (if true) investment risk. The basis for delay is obscure. Waiting for TDM or the market to “turn around” in directions that will lead to higher valuation and a better deal structure for the government is like rolling dice. Given TDM's recent market performance and slide since 2002, it is equally likely that waiting will result in the government capturing less value from the sale of the assets. Two decades and more of privatization of telecom monopolies and other state-owned assets in other parts of the world have shown that divesting is very advantageous to governments and citizens.

PROCEED IMMEDIATELY WITH REGULATORY REFORM TO ATTRACT INVESTMENT

Take immediate steps to reform main regulatory institutions and processes so they more intently and faithfully focus on the requirements of investors in new or improved telecom infrastructure. If the rate of capital formation in telecom networks in Mozambique is to accelerate or even improve significantly, foreign investment will be necessary. Yet current institutional arrangements and structures almost certainly discourage foreign capital from entering the country.

The telecom regulatory section of INCM is understaffed by almost any measure: number of personnel, training, experience, and understanding of its own power over investment decisions and how best to wield that power. The distribution of personnel in the agency is conclusive testimony as to its priorities. The regulatory section has either five or six staff, depending on the authority, but the administration and finance section has four times as many staff. INCM is administratively heavy. It is unduly focused on licensing and taxing activities that bring in revenue; and key staff appear to spend a substantial amount of time on foreign travel, no matter how well intentioned or conceived, has no identifiable impact on the quality of INCM decision making or the ability of the sector to attract capital.

In addition, INCM's administrative procedures are flawed. Important rulemaking and analytical processes are inconsistent and in important respects nonexistent. While the agency is charged with advancing the interests of users, we detected no interest in or willingness to solicit user input. The staff is not accountable, inasmuch as it appears to avoid responsibility, both *ex post* and *ex ante*, for important decisions. We were told, for example, that the agency did not determine interconnection rates, that rates were negotiated by the parties involved, that rates were based on a consultant's benchmarking study, and that rates were ultimately decided in the Ministry of Finance.

Despite statutory requirements for procedural transparency, the regulatory processes at the INCM are a mystery to most private stakeholders (except the large carriers). Conjecture and speculation about the infirmities of the process are rampant and often result in claims of bias which may or may not be exaggerated. In any event, a major goal of all administrations is to make regulatory processes transparent. The INCM should be encouraged to do so.

The locus of decisionmaking authority between the INCM and other ministries (the Ministry of Finance in particular) and even within INCM is not clear. Study of the law and materials provided by INCM are not enlightening in determining who has ultimate authority to decide important questions that come before it or to determine indeed what kinds of questions it will address and how and when. The law, the organization chart, and the INCM's own regulation (Resolution 01/CA/INCM/2004) declare the primacy of the five-member Administrative Board. The Board is headed by a chairman appointed by the Cabinet and the other four members are nominated by and approved by the chairman. Article 6 of that resolution appears to vest all meaningful powers of the INCM with the Board. The Board is supposedly a public organization, but nobody we talked to had heard of or attended any Board meetings. Indeed, the rules require a forum and until very recently there was only one member – the Chairman – appointed to the Board. For an agency with such important responsibilities and potential for causing harm or creating good for citizens this situation is unacceptable.

By all appearances and by the evidence of its own annual report, INCM is excessively concerned with raising money through taxation and fees. By its own accounts it has been quite successful in doing so as indicated by growth in revenue and profits and the balance sheet and bank accounts. These results may reflect transitional spikes or random events, but that case remains to be made. The very substantial surpluses raised by the agency's aggressive exercise of its fee collecting and taxing authority is cause for concern. First, because taxes and fees are ultimately borne by entrepreneurs and consumers they are a burden on commerce. Second, they siphon funds that might be better used in the private sector to expand telecom networks and contribute to general welfare to INCM, where their uses vary from laudable to questionable.

GET BUSINESSES INVOLVED IN REGULATORY PROCESSES

Improving the investment climate through improved regulation is a complex process, not an event. An important guarantor of regulatory transparency and fidelity to the public interest is public participation. As major stakeholders in regulatory outcomes, business users need to become more involved in—and more competent contributors to—regulatory processes and critical government telecom decisions. Regulatory decisions are evaluated on the basis of their impact (1) on investment incentives and opportunities for suppliers and (2) on users—rates, choices and service quality. The first is necessary for the second. Good faith official commitments to “consumers” or “users” or “universal service” notwithstanding, it is necessary for the INCM to analyze various options in the context of their likely impact on users.

Of course, users are a diverse lot and, frankly, some are more important than others. Business users are particularly important because they use telecom services to cut costs, innovate, improve service, create jobs and incomes—all of which contribute to consumer welfare and, in some ways and instances, more so than direct subsidies to individuals.

Our sense is that officials in Mozambique are neither aware of nor particularly concerned for the interests of business users and the fundamental importance to national welfare of telecom policies and rules that reflect the unique telecom needs of business and how meeting those needs can serve the national interest. Important decisions seem to be (and we emphasize seem to be) made largely on the basis of the general predisposition of officialdom in the context of representations (often on behalf of users no doubt) from large carrier interests—TDM, mCel, and Vodacom. Moreover, we sensed in some quarters outright hostility to business user interests.

That problem is rooted in both the public and private sector. Government needs to know more about business needs, understand how decisions can be shaped to meet those needs, and how doing so advances the country's interests in job creation and economic growth. But, the government can only learn about needs and the impact of its decisions if the private sector is more aggressive, organized, and focused in representing itself to decisionmakers.

ADVOCATE ON BEHALF OF BUSINESSES

In developed countries and increasingly in developing countries, businesses are well represented in regulatory and policy decision making. The ITU has private sector representation in its Development Sector activities and while the bulk of that representation is carrier-centric, the “convergence” phenomenon is attracting non-carrier commercial interests.

Points of entry into telecom policymaking and rulemaking processes are several. The most important, given the adequacy of the structure of applicable laws, is to find ways to project the interests of businesses into regulatory processes and determinations at the INCM. This could be done in several ways:

- Try to have a representative of or a candidate sensitive to the interests of telecom users appointed to the Administrative Board. The statutory requirements for qualifications are quite modest and it appears that political approval at the ministerial level will be required. (See Article 5 of Resolution 01/CA/INCM/2004).
- Participate in INCM processes through a “Committee of Experts.” Article 13 of Law 8/2004 provides expressly for creation of knowledgeable, consultancy committees to advise the INCM. The translation from which we are working appears to allow the committee to be drawn from the community of interested business users.
- Participate in INCM processes through formal participation of members or the CTA in rulemaking. For example, CTA members have a stake in interconnection charges because these influence rates for different kinds of services and investment incentives for new technologies. They also have a stake in fees and assessments, equipment standards, the disposition of universal service funds and others. Law 8/2004 provides (according to our reading of our translation) different approaches for CTA to participate and/or influence INCM's agenda, processes, and terms of reference for decisions, as well as the weight it accords to different statutory objectives.

Availing itself of these opportunities will require the CTA to first caucus and identify its resources, members' interest, and critical issues.

INCM decisions are not made in a vacuum. We have very limited exposure to informal channels for influencing INCM decisionmakers, but we assume that decisionmakers are sensitive to the views and priorities of other government officials as well as to the press. If so, it would be worthwhile (1) to identify political pressure points and (2) to consider ways to use them to the best advantage of CTA members. In addition, CTA probably has enough insight on the basis of its experience in other sectors to suggest approaches that have previously succeeded. CTA should identify successful practices and modify them for use in the telecom sector.

As a representative of Mozambique's business community, CTA has great standing to participate in telecom matters that have a significant impact on the country's ability to create jobs and boost national income.