

Republic of Djibouti

Telecommunications and ICT
Diagnosis and Advocacy Policy Note

Mitigating the Opportunity Cost of Status Quo

March 2009

Jérôme Bezzina
Policy Division
Global Information Communications Technology Department

Content

Content.....	ii
Executive Summary	iii
A promising context to promote investment and economic growth	1
A vision: Djibouti as a regional Hub of reference and as a partner for the promotion of private investments	1
Telecom and ICT ranked as national priorities.....	2
Fiber optic infrastructure projects.....	3
Sector Overview and Challenges	4
A stop in the reform process agenda.....	4
Monopoly Prices on the fixed and Internet sectors.....	6
Operational Bottleneck, congestion and saturation impeding Quality of Services in the Mobile cellular segment.....	9
Mitigating the Opportunity cost of Status Quo: Strategic and Policy Recommendations	11
The Opportunity Costs of Status Quo	11
Policy Recommendations.....	16
Recommendation1 Proposing options for reforms	16
Recommendation 2 Reinforcing the Regulatory Body within the Ministry of Communication.....	17
Recommendation 3 Creating an IXP and a POP to leverage the impacts of fiber optic projects and make Djibouti an international ICT Gateway	19

Executive Summary

This diagnosis and advocacy policy note highlights key issues in the Djiboutian telecommunications sector and suggests possible recommendations for policy and regulatory reform. In Djibouti the sector is fully vertically integrated and the monopolistic position of Djibouti Telecom on the whole market drives the telecommunication sector to global inefficiencies, impacting the whole social welfare. The note identifies the key operational, regulatory and policy challenges and argues that, in persisting with those identified bottlenecks the country would simply trigger a fiscal and economic opportunity cost expected to dramatically impede the development of the sector, and jeopardize the expected developmental impacts of major infrastructure projects currently initiated. Strategic and Policy recommendations to mitigate the opportunity cost of status quo are eventually proposed.

Opportunities. The future of the Djiboutian economy is inextricably service oriented and linked to its geographical location as a controlling access to the Red Sea and gate to market of more than 50-60 million inhabitants. The political will to make Djibouti as a regional Hub of reference and as a partner for the promotion of private investments has been relayed by an ambitious program of Port facilities (Doraleh Port Project) and accompanying measures to promote sustainable growth opportunities, such as the creation of a free trade zone and the Djibouti Ports & Free Zones Authority (DPFZA). In the last decade, Telecom and ICT have been ranked as national priorities to boost economic growth, improve the quality of the work force and encourage private investment. At that time the country appealed to donor communities to support the strategy to design a new legal framework, establish a national ICT agency, and provide funds to modernize Djibouti Telecom. The country enjoyed a relatively modern network thanks to the government's desire to invest in its telecoms industry so as to capitalize on the country's strategic position as the landing point for submarine cables. As a matter of fact, Djibouti Telecom intended to embark on a number of major telecoms projects, designed to establish the country as an international and regional hub (participation in the EaSSY and EIG Submarine cables projects).

Challenge. Amidst the political will to rank telecom as national priorities and to support a national strategy to design a new legal and regulatory framework, very few have been done so far. Djibouti Telecom still enjoys a monopolistic position on the whole market segments (fixed, mobile, Internet) and accordingly drives the telecommunication sector to global inefficiency which impacts the whole social welfare. The fixed telecommunications sector is characterized by excessive prices on the landline and Internet segments (narrowband and broadband). Operational Bottlenecks, congestion and saturation impede quality of services in the mobile cellular segment and inhibit the development of markets. Moreover, ill management of frequency spectrum and numbering leads to an inefficient use, and eventually waste of national highly valuable scarce resources.

Mitigating the opportunity cost of status quo. Many challenges remain from the policy, economic and technical perspectives. Persisting with those identified bottlenecks would simply impede the development of the sector, and jeopardize the expected

developmental impacts of major infrastructure projects currently initiated. The identified opportunity costs of the status quo include:

- Minimization of fiscal revenues, and, more generally spread of stranded revenues from licensing and taxes from private operators.
- Demise of State sovereignty in the Hertzian public domain, inefficient use and, eventually waste of national resources.
- Development of illegal VoIP (Grey Traffic), increase of cybercriminality, reduction of security and apparition of non-licensed operators re-routing traffic and minimizing fiscal revenues.
- Growth of saturation and congestion of networks capacity, bandwidth monopolization, and deterioration of quality of service.
- Diminution of country attractiveness for private investment.
- Persistence of monopoly behavior in terms of prices, quality of service and network dimensioning with negative impacts on market development and, eventually on residential and business consumers.

In terms of policy recommendations, the following three actions are recommended:

(a) *Proposing options for reforms*

Once there is a consensus among Djibouti policy makers that the sector is indeed facing significant problems and there is a critical mass of decision-makers and stakeholders convinced that reforms in the telecom sector are key for Djibouti to capitalize on its hub strategy, it should be recommended most forcefully the opening up of the sector to competition, especially in the mobile cellular segment. Telecommunications markets worldwide have undergone tremendous changes in the last two decades, moving away from monopoly towards a competitive market structure across all segments of the sector. Considerable evidence has accumulated, demonstrating the huge potential benefits of competition on several dimensions. Competition has (i) drastically reduced prices, (ii) improved access, (iii) promoted investments, and (iv) caused significant spillover effects to other sectors of the economy.

While the benefits of liberalization are compelling, concerns of several stakeholders (within the Government and DT) will have to be considered regarding the removal of mobile monopoly. Addressing concerns raised by liberalization should be undertaken in providing solutions to the Gouvernement on two specific matters: (i) empowerment, and (ii) fiscal revenues.

(b) *Reinforce the Regulatory Body within the Ministry of Communication*

Given the small size of the economy and the fixed cost of establishing and running such an institution, organizational option could be to reinforce the unit within the ministry in charge of regulatory affairs “Direction Générale en Charge des Postes, Télécommunications et TIC” (DGCPT). The improvement of capacity at policy and regulatory level would aim at undertaking in the very short term the following:

- Regulate and monitor monopoly behaviors, namely excessive pricing and poor quality of service.
- Design and implement a new numbering plan.
- Monitor and manage the frequency radio spectrum.
- Initiate a national discussion to establish a clear national strategy to eliminate grey traffic and reduce illegal call termination.

(c) *Create an IXP and a POP to leverage the impacts of fiber optic projects and make Djibouti an international ICT Gateway*

A country such as Djibouti investing in numerous submarine cables projects, will need promptly considerable and very specialized skills to be properly managed and monitored. The creation of a Point of Presence (POP) coupled with a Regional Internet eXchange Point (IXP) managed under the principles of *Open Access* and *Infrastructure Sharing* would allow Djibouti to:

- Address environmental concerns or local planning aspects like passage rights or geographic situations.
- Minimize duplication and reduce costs.
- Avoid the country to pay the full cost of international Internet connectivity.
- Ensure the supervision of incoming and outgoing traffic for security and fiscal purposes.

A promising context to promote investment and economic growth

Djibouti, which enjoys relative peace and stability in the region, is at its early stage of ICT development. For adequacy with the regional integration policy and its exceptional geo-strategic location the Government of Djibouti is desirous in exploiting the country's prime access to the internet to develop the port transit services in transforming Djibouti into a regional hub.

A vision: Djibouti as a regional Hub of reference and as a partner for the promotion of private investments

Location is certainly one of the main economic asset of a mostly wasteland country like Djibouti. It occupies a key geographical position, controlling access to the Red Sea and serving as a strategic transshipment point for goods passing to and from neighboring countries. Renewed tensions between Ethiopia and Eritrea have made the Port of Djibouti the basic landlocked Ethiopia's primary link to the sea. The relatively well developed transport infrastructure makes it a good place for countries in the East African highlands to fly their goods for re-export (generating much transit taxes). Djibouti is not only the main corridor of the region; this is also a one gate to market of more than 50-60 million inhabitants.

It is very likely that the future economy will be service oriented and inextricably linked to its location and status as a free trade zone. To answer growing need of maritime companies and shippers, the Port of Djibouti has undertaken for many years an ambitious program of Port facilities such as the Doraleh Port Project covering major activities such as the completion of an oil terminal, a container terminal and a free zone. Moreover, in order to ensure the respect of free zones legislation, and to make the Republic of Djibouti a business centre with sustainable growth opportunities, the Djibouti Ports & Free Zones Authority (DPFZA) was created by the decree n. 2002-0098/PRE. For such a purpose, the Authority in charge of the promotion of private investments has a large panel of incentives in order to attract foreign investment such as (i) Fiscal incentives (exemption from any direct or indirect taxes, warranty of free zone ground property and (ii) non fiscal incentives (One Stop Shop to facilitate the completion of administrative procedures, gateway to all markets in the sub region, skilled human resources).

The combined presence of a Free Zone and a public partner for the promotion of private investment such as DPFZA should make Business Process Outsourcing (BPO) an emerging market to become a key strategic focus area with the support of the ICT sector. The political will to attract offshore services for companies in Europe and North America is a source of favorable environment for business in the BPO sector. As an example, to date, in Mauritius (leading player in BPO activities in the region), over 230 companies are active in this sector, employing around 7,000 people. The main activities are call centers and outsourcing activities such as accounting, finance, sales and marketing. In other countries, call centers have been identified as a major ICT opportunity for the region and this activity is emerging in Kenya, Madagascar and Uganda. For Djibouti, the connection of future submarine cable is expected to make call centers and BPO more

attractive as the country has the key components for an outsourcing hub with an labor force fluent in French, low wages and proximity in terms of time zones.

Telecom and ICT ranked as national priorities

Historically, the Djiboutian Government ranked telecommunications among the national priorities by investing in the installation of a modern infrastructure to meet the needs of the national economy development. Djibouti Telecom (DT) became a company with international vocation. Now, as a landing place for the intercontinental submarine cables, it naturally constitutes a communication route to all the Eastern, central and southern Africa countries.

On the threshold of the decade, the country scored ICT as key to providing new economic opportunities and delivering improvements in basic services. In April 2003 President Guelleh pledged his support to a National Strategy to catapult the country into the digital age by 2010. Access to new technology was expected to boost economic growth, improve the quality of the work force and encourage private investment. At that time the country appealed to donor communities and foreign agencies to support the strategy to design a new legal framework, establish a national ICT agency, and provide funds to modernize DT's. The plan also included proposals to privatize the incumbent and foster market liberalization through the provision of a second GSM operator and private ISPs.

Amidst an institutional reform was undertaken to transform the former 'Société des Telecommunications Internationales de Djibouti (STID)' in a corporation (Société Anonyme) managed by a Board of directors and run by a Director General, the national state-owned operator Djibouti Telecom (DT) has the monopoly on the entire Djiboutian telecom business. In June 2001, a license was awarded to DT, allowing for the installation of a GSM mobile network. Alcatel-Lucent deployed the initial network with a 25,000 subscriber capacity. The commercial launch of the GSM network took place in October 2001 under the brand Evatis. The DT mobile network enjoyed considerable success and initial network capacity was expanded to cater for more than 40,000 subscribers. By the end of 2007 the number of cellular lines outstripped those for fixed connections by a ratio of more than 3:1. In June 2007, due of network saturation and congestion, a new EDGE network supplied by Huawei was inaugurated but operational problems dramatically reduced the level of quality of service (e.g. removal of voice mail services).

As of June 30, 2008, basic telecommunications indicators were the following (source: DT):

- 14,600 fixed lines, i.e. a fixed teledensity of 2.086%
- 94,874 mobile phone subscribers leading up to a 13.553% mobile teledensity.
- 3,869 Narrowband Internet users, i.e. 0.553% of the population.
- 1,517 Broadband Internet users i.e. a proportion of 0.217% of the population.
- Turnover 2007/2008 5,844 million FDJ, Net Result 897 millions FDJ (15% of the turn over).

- Average revenue per user (ARPU) per month: 9 US\$ for mobile services and 26 US\$ for all services (fixed + mobile + Internet).
- The State of Djibouti owes DT the equivalent of 11 months of Turnover.
- Debt service is estimated at 6 million USD per year from 2008 to 2015.

Fiber optic infrastructure projects

There are a number of International cable landfalls in Djibouti and therefore, there is a well established mechanism for obtaining approvals. Initially, Djibouti had access to the SEA-ME-WE1 20Gbps undersea optical fiber cable that travels from South East Asia and through the Mediterranean along North Africa. In March 2003 DT began work on the deployment of optical fiber infrastructure aiming at improving communications services to business and residential users.

In May 2006 the Kenyan government announced it was ready to begin work on an international undersea cable connecting the country with Djibouti, and opening up wider connections to Europe, Asia and other parts of Africa. The planned connection to the Eastern Africa Submarine Cable System (EASSy) fiber optic cable by end-2008, running from Djibouti to South Africa, should help to reduce unit costs for global connections. In addition, the rolling out of a 10,000km fiber-optic network that will link up with submarine cables in Djibouti began in Ethiopia in April 2005. The project is expected to be completed by end-2008.

In 2008 and beyond, DT intends to embark on a number of major telecoms projects, designed to establish the country as an international and regional hub. These projects include:

- (i) A participation in the underwater cable system EASSy, linking eight countries in East Africa (Djibouti, Kenya, Madagascar, Mozambique, Somalia, South Africa, Sudan and Tanzania). DT has purchased a new compound to house the manhole and Terminal Station for the proposed EASSy landfall, approximately 3 km to the south of the existing cable landfalls (including landfalls for SWM1, SMW2, SMW3, Aden Djibouti and other cable system).
- (ii) The creation of an international DT subsidiary in the 'free trade zone' to benefit from tax benefits, exploit its hub in an optimum way and help Djibouti to maximize revenues from its strategic position of transit operator.
- (iii) A participation in the underwater cable system Europe-India Gateway (EIG) linking India (Mumbai) to Western Europe (France, Gibraltar, Portugal, United Kingdom). In such a configuration, Djibouti would be the only African country to have direct access to EIG. Out of total investment of MUS\$ 700, DT would participate in the consortium with an investment of MUS\$ 30, and would be owner of a 145 STM-1 (or 22.5 Gbit/s) full circuit capacity towards London. Djibouti has appealed to donor communities and foreign agencies to support the financing of its participation in the EIG project. The country is currently under discussion with the Agence Française de Développement (AFD) who already conducted technical pre-feasibility studies. This project is expected to cost about US \$ 38 million.

Sector Overview and Challenges

Amidst the political will to rank telecom as national priorities and to support a national strategy to design a new legal and regulatory framework, very few has been done so far, and the very monopolistic position of DT drives the telecommunication sector to a global inefficiency which eventually impacts whole social welfare in Djibouti.

- (i) On the fixed and Internet sectors, outrageous tariffs hamper allocative efficiency by damaging the distribution of social welfare and cross subsidies from consumer surplus to (unique) producer surplus.
- (ii) On the mobile sector, inadequate network configuration planning and ineffective demand side management minimize productive efficiency, lead to congestion and saturation and inhibit the potential of market developments.
- (iii) Excessive monopoly prices both in the fixed and the mobile sector increase the cost of fixed/mobile ownership and usage and therefore have a dampening effect on demand for telecommunication services. Reducing prices may, over the short run, reduce the revenue base of DT and the tax base of the Government but would, in the longer term increase the demand for services both in terms of the number of consumers and the usage of services by existing consumers. In other words, price reductions affect the cost of ownership and are expected to have a greater potential on the penetration of fixed and mobile services.
- (iv) Crucial operational issues such as the management of QoS, the regulation of tariffs for new services using IP network, the eradication of fraudulent communications traffic, and the continuation of the fight against cyber-crime are yet to be undertaken.

A stop in the reform process agenda

Despite expectations created by the Government agenda to reform the sector in (i) realizing a new legal framework, (ii) privatizing the incumbent Djibouti Telecom (DT), and (iii) fostering market liberalization through the provision of a second GSM operator and private ISPs, very little progress have been made in releasing any institutional reform in Djibouti since a decade. Although some telecoms charges have been reduced in May 2007 a stop in the planned institutional reform process of the telecommunication sector initiated in March 1998 spread some doubts about the genuine political will to open the sector to competition to stimulate market growth, quality of service and reduce prices.

- (i) Djibouti Telecom is still wholly state owned. Although the government has hinted at its desire to privatize up to 49% of the company, internal restructuring has repeatedly delayed and there is no official timetable for privatization.
- (ii) The Directorate of Posts and Telecommunications, the unit within the Secretary General's office which is answerable to the Ministry for Communication and Culture (MCCPT) and which is suppose to act as a regulatory Agency does not really play its role.
- (iii) The Djibouti National ICT Strategy and its accompanying Action Plan for Djibouti encouraged strengthening MCCPT's powers, facilitating market

liberalization, and introducing competition is still at the infant stage and there are no current plans to establish an independent market watchdog.

- (iv) Very recently, the country rejected the Common Market for Eastern and Southern Africa's (Comesa) ICT regulatory and policy harmonization program. The regulatory and policy harmonization program, funded by the European Union, was aimed at removing constraints to ICT usage among COMESA member states in order to promote regional integration.

In such a context, how ready is Djibouti to take advantage of the opportunity provided by advances in information technology? It is interesting to consider the position of the country in the United Nations e-Government Survey 2008. The e-government readiness index, which is a composite index comprising the web measure index, the telecommunication infrastructure index and the human capital index, presents an assessment of the new role of the government in enhancing public service delivery, while improving the efficiency and productivity of government processes and systems.

Djibouti showed deterioration in this year's e-government readiness index (see table below). Its e-government readiness ranking in 2005 was 0.2381, compared with 0.2279 in 2008 ranking Djibouti 157 out of 182 countries. Mauritius (0.5086) and the Seychelles (0.4942) continued to lead the region. As for Djibouti, it is interesting to note that the country has a very low Infrastructure Index (0.0202) a medium Web Measure Index (0.1137) and a quite significant Human Capital Index (0.5531).

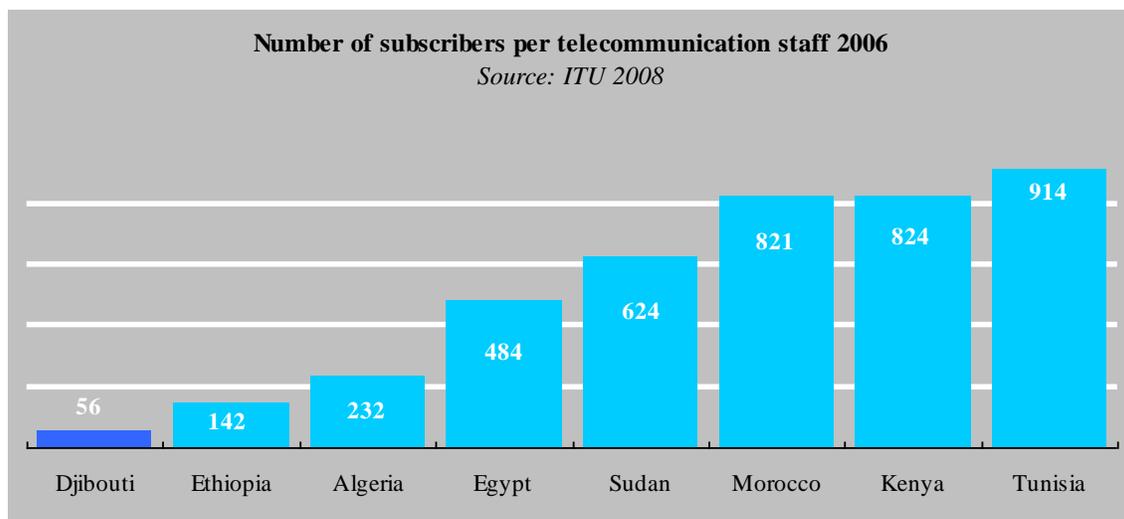
E-Government Readiness for Eastern Africa				
<i>Souce: United Nations e-Government Survey 2008</i>				
Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Mauritius	0.5086	0.5317	63	52
Seychelles	0.4942	0.4884	69	63
Kenya	0.3474	0.3298	122	122
Uganda	0.3133	0.3081	133	125
Madagascar	0.3065	0.2641	135	141
Zimbabwe	0.3000	0.3316	137	120
Rwanda	0.2941	0.2530	141	143
Tanzania	0.2929	0.3020	143	127
Malawi	0.2878	0.2794	146	137
Mozambique	0.2559	0.2448	152	146
Djibouti	0.2279	0.2381	157	149
Zambia	0.2266	...	158	...
Eritrea	0.1965	0.1849	169	157
Comoros	0.1896	0.1974	170	155
Ethiopia	0.1857	0.1360	172	170
Burundi	0.1788	0.1643	174	166
Somalia
Region	0.2879	0.2836		
World	0.4514	0.4267		

Monopoly Prices on the fixed and Internet sectors

The telecommunications sector in Djibouti is characterized by the presence of a public monopoly, unauthorized competition, and overall weak governance and regulation. DT is the sole operator licensed to (i) provide mobile telephony services in Djibouti, (ii) to provide mobile telephony services, and (iii) is the sole provider of internet access services via its ISP DJIBNET (the market for data and internet services is in theory open to competition and licenses for the provision of services are issued by MCCPT. Nevertheless, as of February 2008 the national fixed line PTO Djibouti Telecom was the sole provider of internet services via its subsidiary DJIBNET).

With no competition in the fixed, mobile and Internet segments to provide incentives to the incumbent to enhance its efficiency, DT acts as a monopoly and, while enjoying comfortable margins (in August 2008, it is estimated the net margin represented 15 percent of the turnover) do perform accordingly as regard to allocative, productive and operational efficiency.

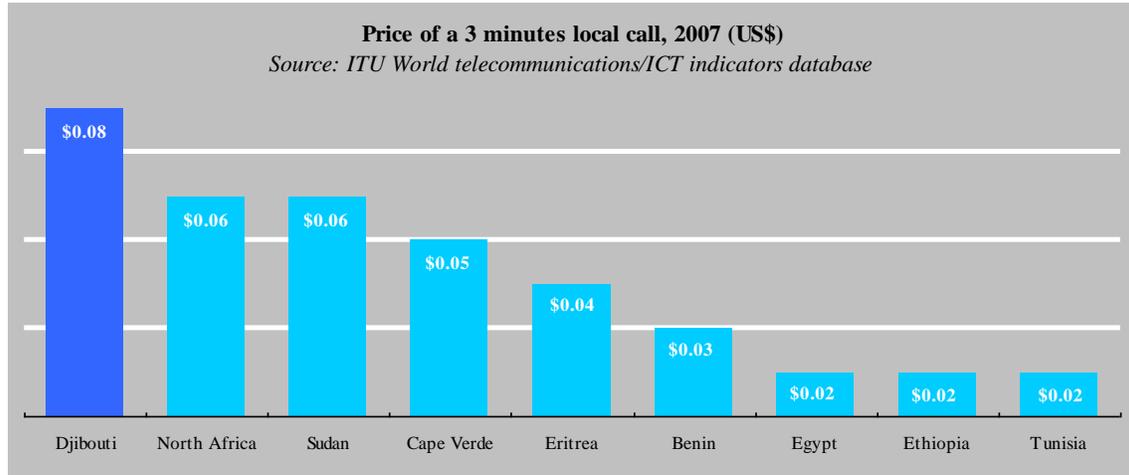
Vis a vis industry standards and best practices, it is interesting to note that DT efficiency, as measured by an indicator such as the number of subscribers per employee is simply the worst in the region. In Djibouti, the number of subscribers per employee was 56 in 2006 as compared to an average of 389 in North Africa and 500 in Sub-Saharan Africa.



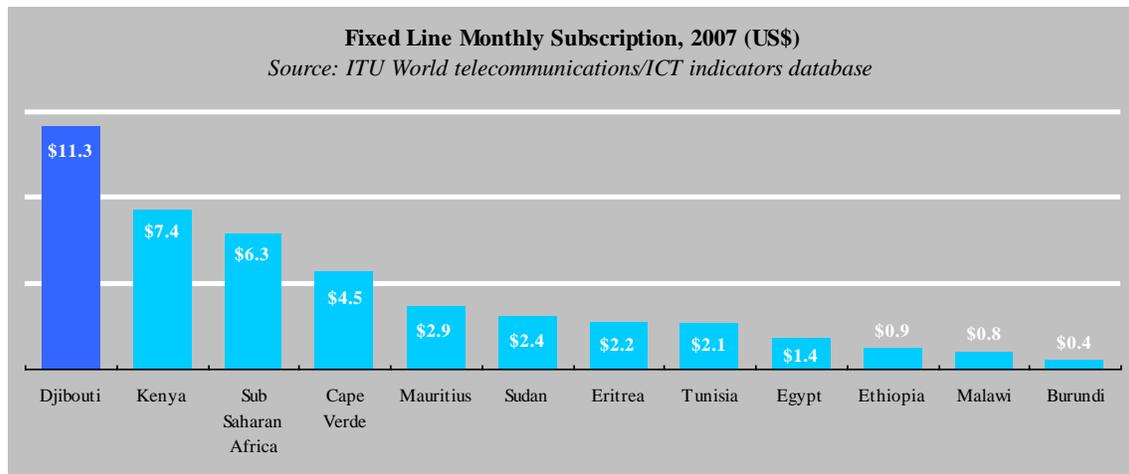
On the fixed segment (landline and Internet), it is true that MCCPT has implemented in the past some initiatives to cut tariffs for land line services: (i) in October 2000 Action No. 8 was adopted to reduce national fixed line monopoly DT's international call tariffs (for the first time the rates had been changed for 14 years), (ii) in February 2003, the Council of Ministers approved a decree covering DT's new pricing tariffs, (iii) in May 2007 monthly subscriptions was halved from DJF1,000 to DJF500 and installation costs were decreased by cutting royalty payments. However, tariffs cutting proposals have always been mitigated in order to take into account the need to ensure DT had sufficient revenues to allow it to modernize and extend its infrastructure. As a consequence, prices

for telecoms services in Djibouti are generally high compared with other tariffs in the region.

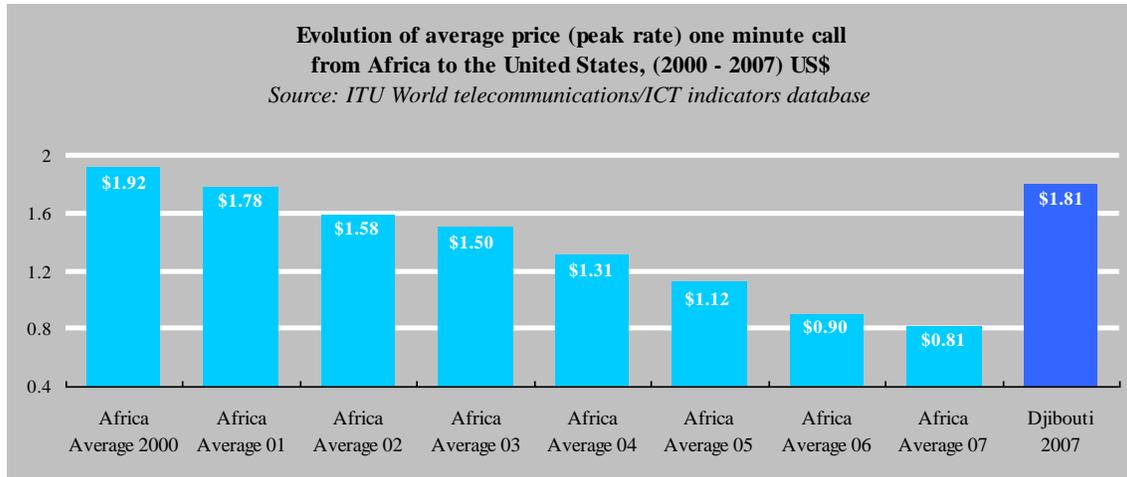
- The price of a 3 minute local call is US\$0.08 in Djibouti as compared to US\$0.02 in Ethiopia, Tunisia and Egypt, US\$0.03 in Benin, US\$0.04 in Eritrea and US\$0.05 in Cape Verde.



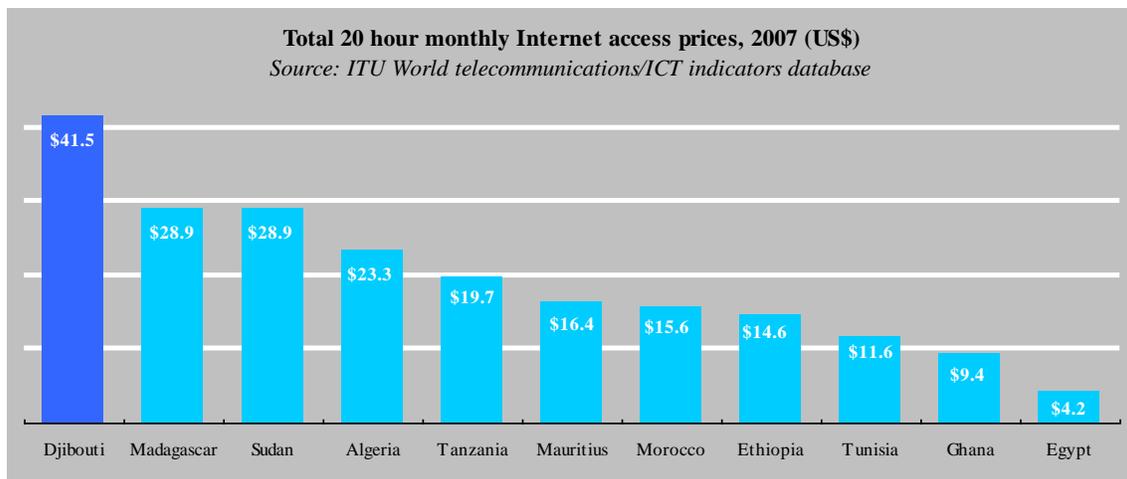
- The fixed line monthly subscription is estimated to US\$11.3 in Djibouti, when the monthly charge is US\$0.4 in Burundi, US\$0.8 in Malawi, US\$0.9 in Ethiopia, US\$1.4 in Egypt, US\$2.2 in Eritrea, and US\$2.4 in Sudan.



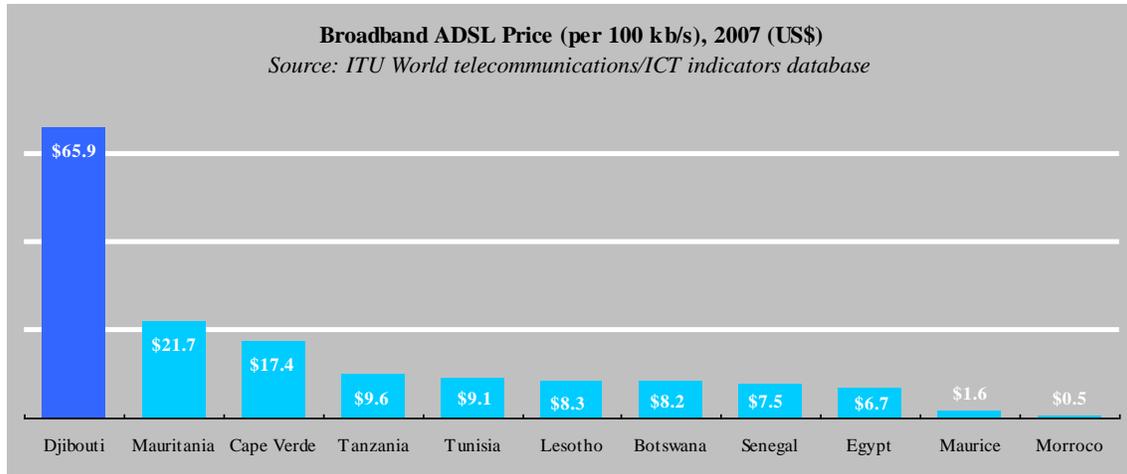
- The Average price of a peak rate, one minute call from Africa to the United States, is US\$1.81 compared to an average of US\$0.81 in Africa where prices for overseas calls have generally declined, as operators move to rebalance tariffs and compete with Internet based calling solutions.



- The total 20 hour monthly Internet access prices was priced US\$41.5 in Djibouti in 2007 as compared to US\$4.2 in Egypt, US\$9.4 in Ghana, US\$11.6 in Tunisia, US\$15.6 in Morocco, and US\$23.3 in Algeria.

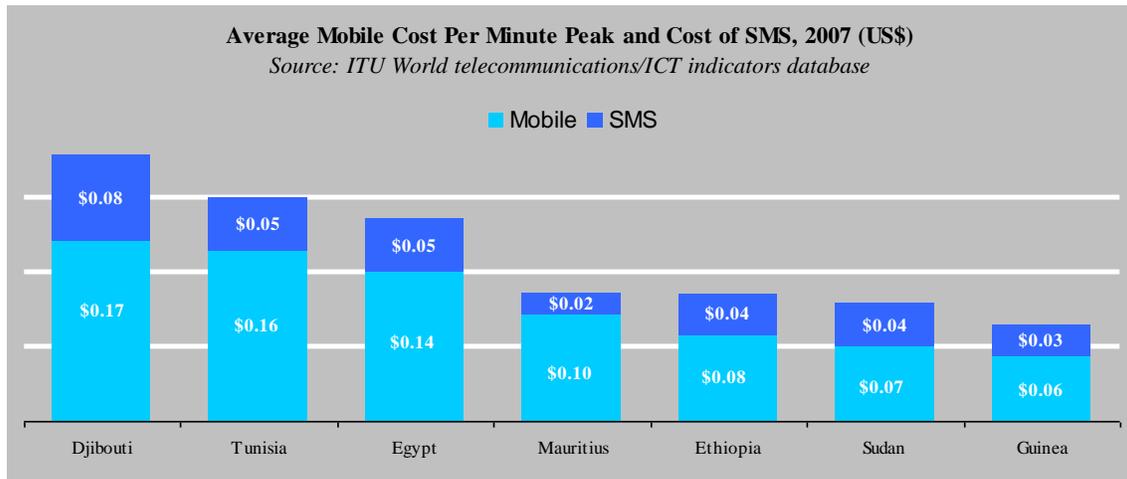


- The Broadband ADSL Price (per 100 kb/s) was priced US\$65.9 in Djibouti in 2007 as compared to US\$0.5 in Morocco, US\$6.7 in Egypt, US\$7.5 in Senegal, US\$9.1 in Tunisia, and US\$9.6 in Tanzania.



Operational Bottleneck, congestion and saturation impeding Quality of Services in the Mobile cellular segment

On the mobile cellular segment, the monopolistic behavior of DT does not really affect the proposed prices. Benchmark on Mobile Prepaid Cellular/SMS Tariffs in 2007 shows that DT do not practice outrageous prices although above regional average.

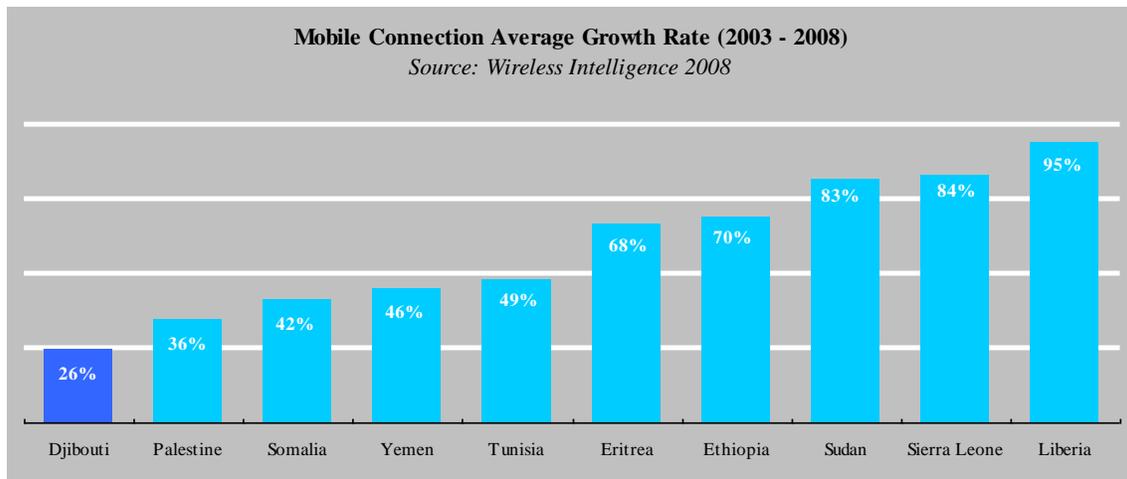


However, operational issues such as lack of numbering resources and poor management of spectrum domain have progressively conducted to network congestion and saturation impeding the development of the market. In 2007 as a result of network congestion issues, DT was prompted to stop selling new SIM cards on the GSM network. Indeed, the progressive fixed – mobile substitution has come at a cost: subscriber numbers also fell roughly 2.8% in the year to mid-2007 as a result of network saturation issues and a decision by DT to stop selling SIM cards. Partly in response to the congestion issues, in June 2007 a new EDGE network for DT inaugurated, but operational implementation issues were reported (voice mail option). From the technical perspective the numbering

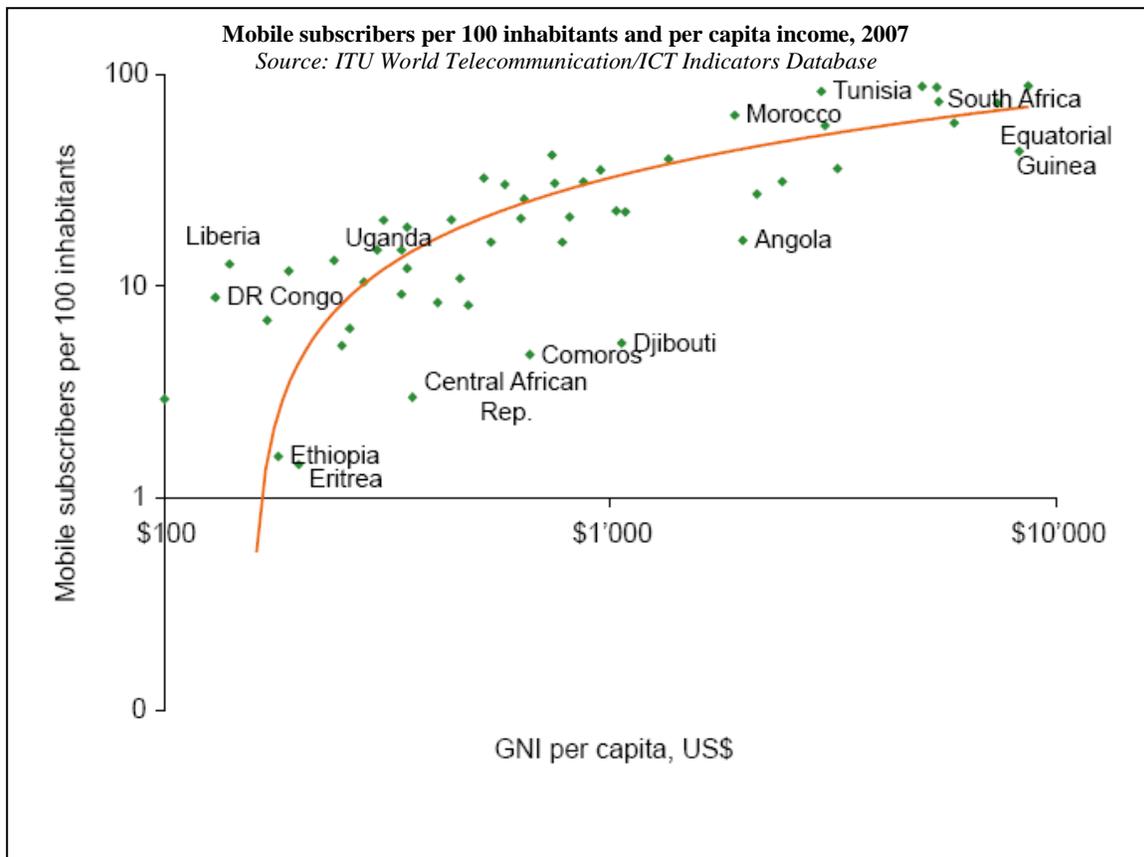
plan should be completely revisited and upgraded from 6 to 7 digits in order to help the sector to meet demand expectations. From the frequency management perspective, it has been observed during the last month overlapping problems with neighborhood countries: namely, mobile operators from Somalia let intentionally their frequency signals extend beyond on the Djiboutian area. This, in turn clearly advocates for a systematic revision of the monitoring of the Hertzian domain in Djibouti in order to preserve sovereignty on a public good such as frequency spectrum.

As a consequence, the ill management of the mobile sector inhibits the potential of market developments:

- GSM traffic decreased in 2007, on the back of a dip in the number of active subscriptions on the GSM network. The number of traffic minutes fell 13.16% to 6.947 million minutes from 8.001 million in the previous year, and lower than the 7.392 million figure reported in the twelve months to June 2005.
- From a regional perspective, Djibouti actually did not meet the unique circumstances to really boost mobile take-up and usage. It is interesting to note that the average growth rate on mobile connection between 2003 and 2008 is only 26% in Djibouti as compared to 42% in Somalia, 46% in Yemen, 68% in Eritrea, 70% in Ethiopia, 83% in Sudan and 95% in Liberia.



- The fact that supply is unable to meet demand on the mobile market in Djibouti is illustrated while considering the Jipp Curve which plots the number (density) of telephones against wealth as measured by the Gross Domestic Product (GDP) per capita and which, in turn, emphasizes the positive correlation between increase in teledensity and increase in wealth or economic development. Clearly, a country such as Djibouti should enjoy much higher penetration rate given its current income levels.



Mitigating the Opportunity cost of Status Quo: Strategic and Policy Recommendations

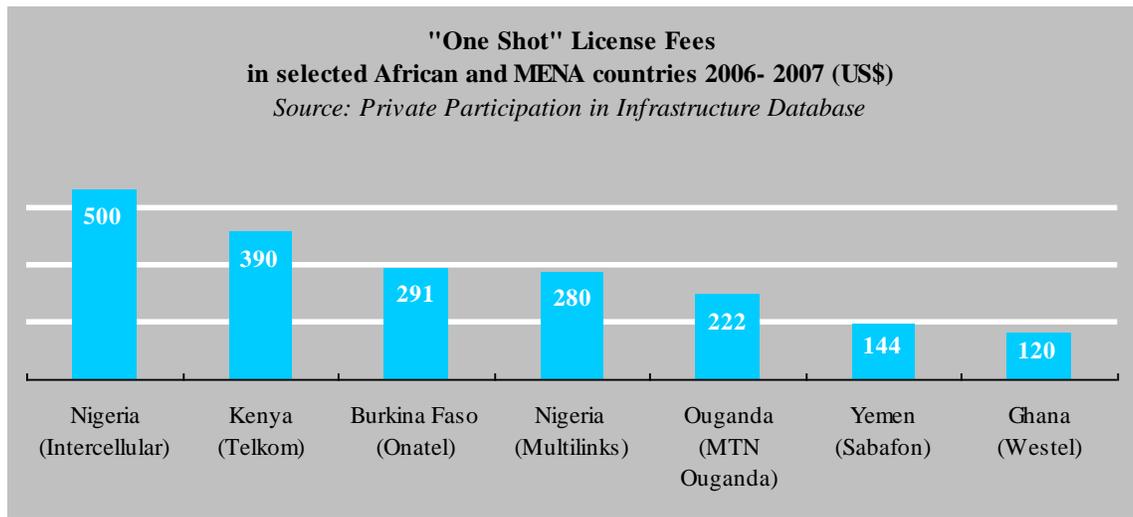
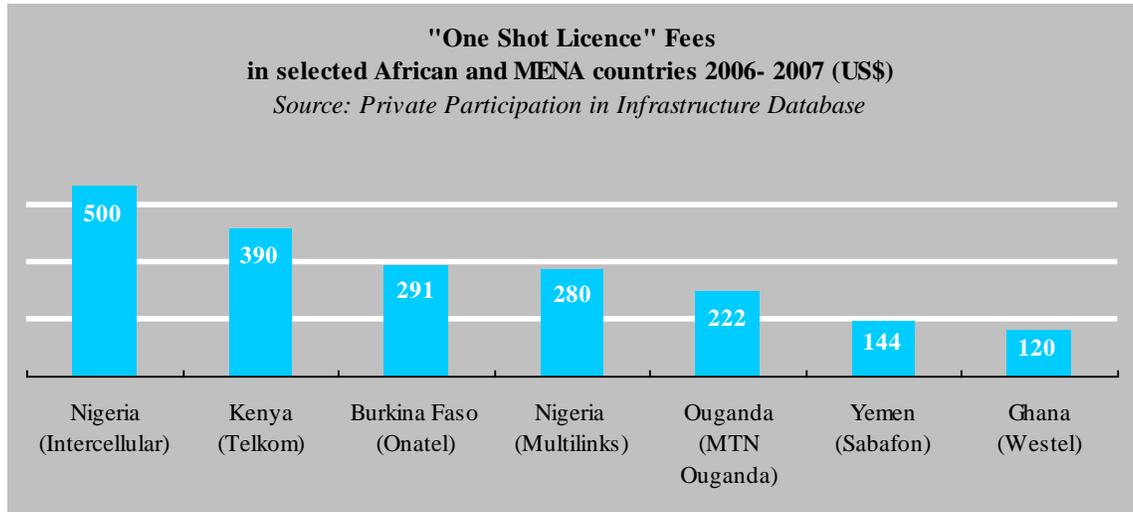
There are indeed many opportunities to make Djibouti a regional ICT Hub of reference in order to fully benefit backbone infrastructures and ICT applications. This would in turn promote new economic opportunities, private investments and, eventually, improve the delivery in basic services. It is however quite obvious that (i) many challenges remain from the policy, economic and technical perspectives and, (ii) persisting with those identified bottlenecks would simply impede the development of the sector, and jeopardize the expected developmental impacts of major infrastructure projects currently initiated.

The Opportunity Costs of Status Quo

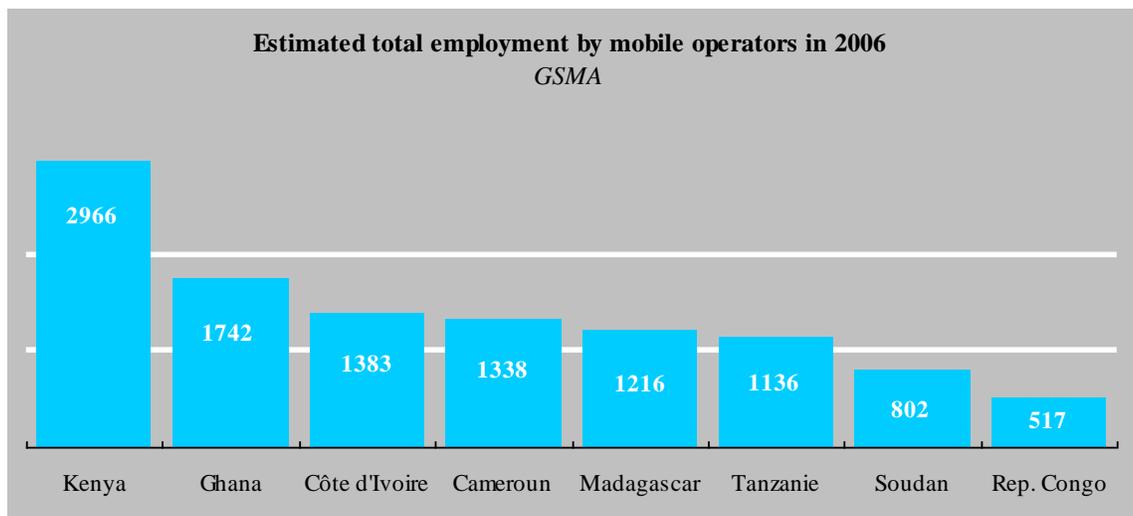
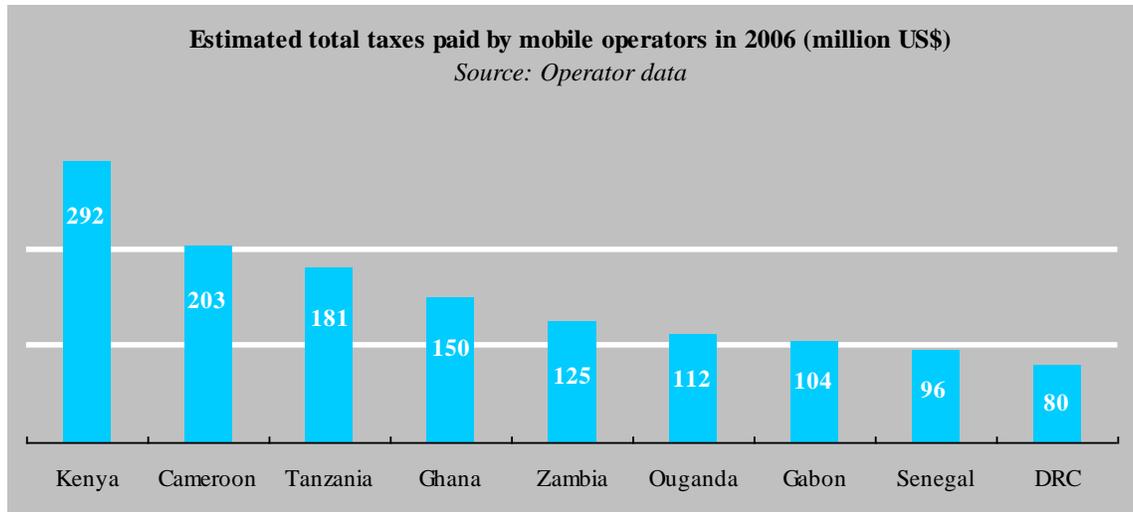
International best practices show that the identified opportunity costs of the status quo can include:

- (i) Minimization of fiscal revenues, and, more generally spread of stranded revenues from licensing and taxes from private operators.
 One shot fees paid by incoming operators as a premium of “rent” to the Government for the right to operate a network, provide a service and use a limited resource (such as radio spectrum or numbering) may come to hundred million dollars in Africa (while also driving to considerable amount of money when

related to the number of users).



On a medium term, experience also shows that the fiscal benefits and labor perspective of the reform are highly valuable.



- (ii) Demise of State sovereignty in the Hertzian public domain, inefficient use and, eventually waste of national resources.
The Government of Djibouti should be fully aware of its primary responsibility and role as the custodian of such a nation's natural resources like radio frequency spectrum. This resource is not only assumed to have great economic value as a result of its direct application in telecommunications, broadcasting, security and defense. As recently experienced with Somaliland, when radio wave propagation does not respect geographical and political boundaries, spectrum issues have security implications and impacts on international relations.
- (iii) Development of illegal VoIP (Grey Traffic), increase of cybercriminality, reduction of security and apparition of non-licensed operators re-routing traffic and minimizing fiscal revenues.
Grey markets can offer cheaper rates because of the high profit margins that may be charged by incumbents that enjoy a monopoly. In a context of high

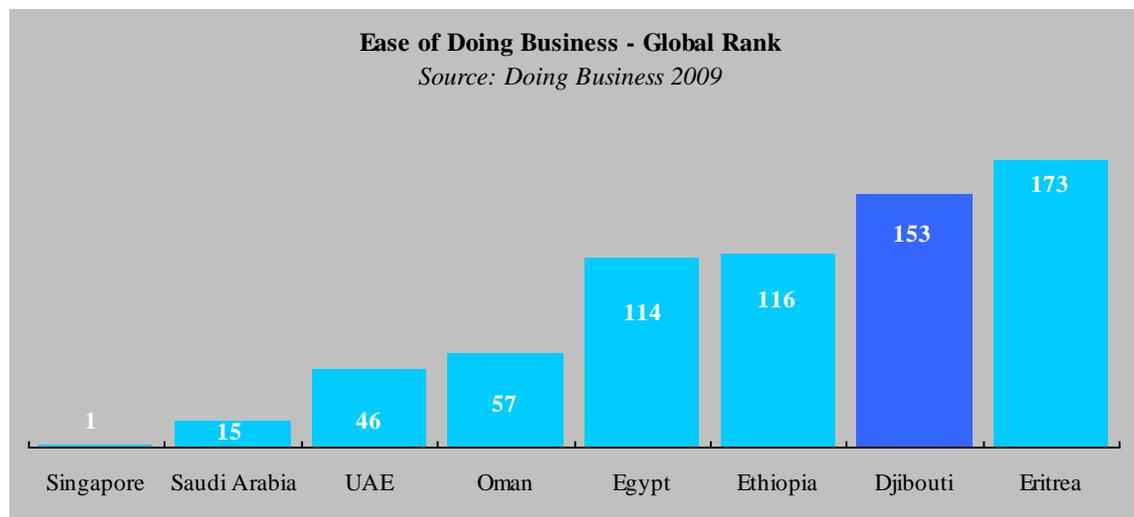
international tariffs such as in Djibouti, Grey Traffic may eventually cause National networks to lose substantial revenues associated with international PSTN traffic (in Pakistan, it has been claimed that grey telephony costs losses of over USD 37 million annually) while also deteriorating the amount and quality of available bandwidth. The principle impact though, is the decline in taxable profits that support local Government and national infrastructure.

- (iv) Growth of saturation and congestion of networks capacity, bandwidth monopolization, and deterioration of quality of service.

In wireless networks, congestion causes overall quality to degrade and loss rates to rise, and leads to increased delays (as in wired networks). As the demand is growing, Djibouti has a new reality to contend with network congestion, poor quality of service and poor customer service. Moreover, high growth in the mobile phones users has increased the demand for numbers. As an increasingly scarce resource (the availability of numbers in Djibouti has been exhausted under the current plan.), numbering requires a more efficient use of and created the need for a new numbering plan facilitating communication in the country taking into consideration roaming challenges, tracing of geographical origination (e.g. emergency calls).

- (v) Diminution of country attractiveness for private investment

In a broader perspective, it is interesting to consider the rank of Djibouti in the 2009 Doing Business report which presents quantitative indicators on business regulations and the protection of property rights compared across economies. In 2009, Djibouti was ranked 153 out of 181 countries (as compared to a ranking of 146 in 2008), while Sudan was ranked 147, West Bank and Gaza 131, Ethiopia 116, Egypt 114, and Kenya 82. The figure below provides a global ranking of Ease of Doing Business, and compares Djibouti to global good practice economy as well as selected economies.

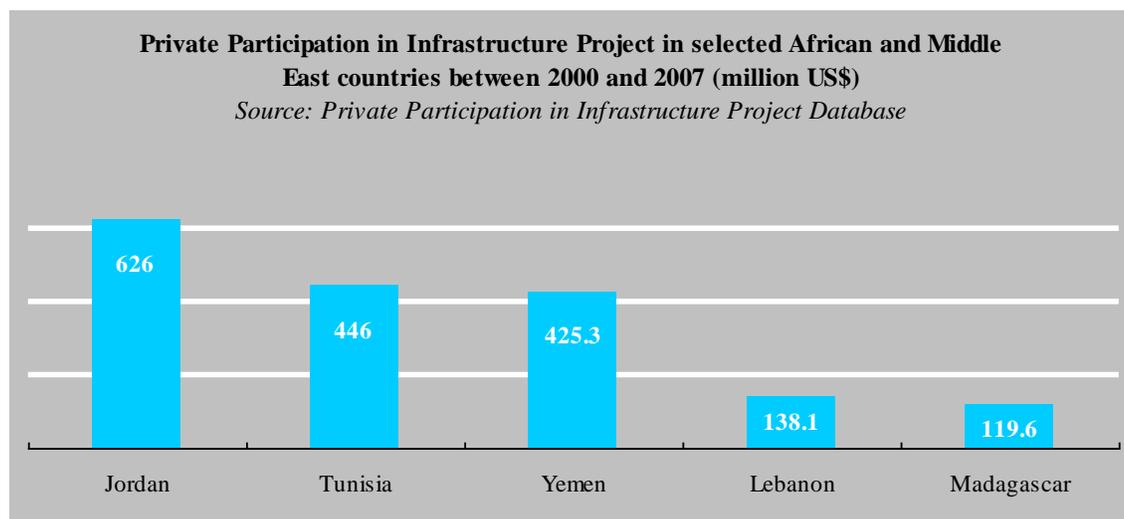


In Djibouti, starting a business implies: 11 procedures, 37 days, a cost representing the equivalent of 206.6% of income per capita, and requires a minimum capital estimated the equivalent of 530.8% of income per capita.

Djibouti is part of the group of country who (i) regulate business start-up cost the most, (ii) has the least credit information, (iii) where investors are the least protected, (iv) where investors protection is weakest.

As far as Djibouti is concerned however, it is important at this stage to put the discussion on general doing business into perspective. The doing business methodology confines the survey to the "domestic" regulatory environment. However, Djibouti's economic growth poles are the "off-shore" zones (free zone and ports) which are governed by a generous incentive regime, a liberal regulatory business environment and very effective administration (managed by Dubai International). Participation in free zone activities is non-discriminatory; local investors are, hence, free to open or shift their businesses to the off-shore zones to benefit from the incentives. Moreover, in light of the steep increase in FDI over the past years, the progress in improving Djibouti's investment climate (including the draft of a new labor code and code of commerce in 2007/08) should be acknowledged.

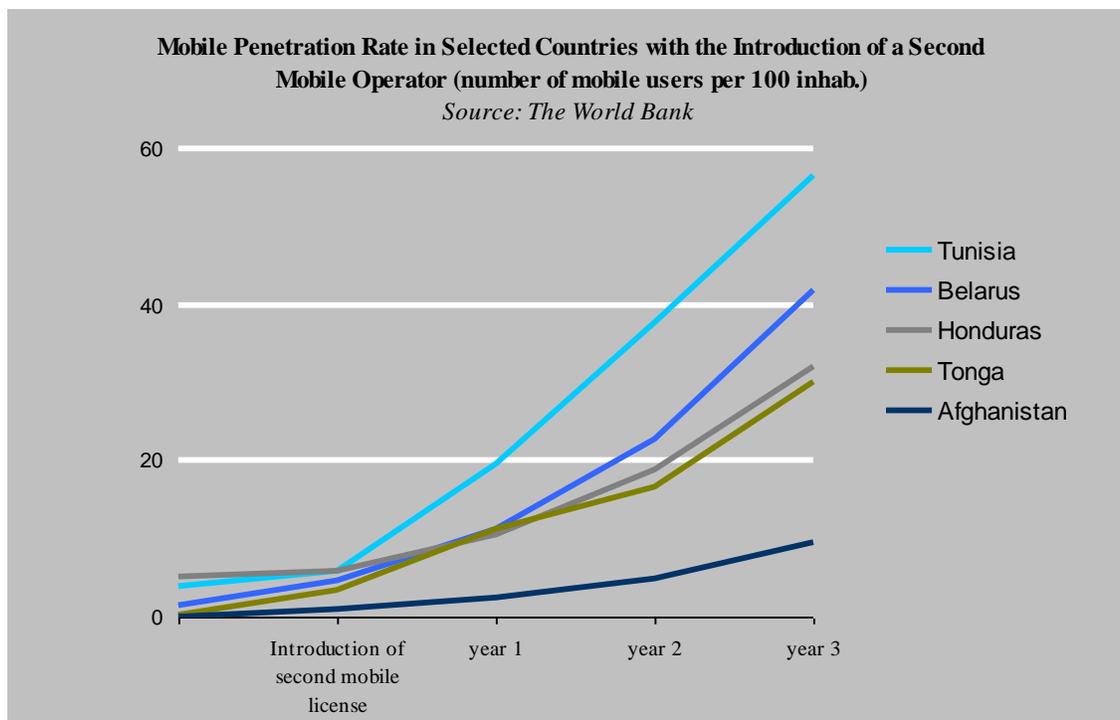
It should at this stage be recalled that the investment commitments to telecommunications projects with private participation in low- and middle-income countries amounted to US\$75 billion in 2007, according to just-released data from the Private Participation in Infrastructure Project Database, stand-alone mobile operators accounting for most of the investment growth. The attached figure displays how substantial Telecom projects with private participation can be in selected African and Middle East countries between 2000 and 2007.



- (vi) Persistence of monopoly behavior in terms of prices, quality of service and network dimensioning with negative impacts on market development and, eventually on residential and business consumers.

A study undertaken by the World Bank (Fink, Mattoo, and Neagu 2002) shows that liberalization can lead to significant improvement in penetration, but also that comprehensive reform program (involving policies and the support of an independent regulator) produces largest gains for the economy. International best practice confirms this. The below figure depicts the development of mobile line

penetration around the respective year in which the introduction of a second license was undertaken for Tunisia, Belarus, Honduras, Tonga, Afghanistan and Kenya, and shows how much the introduction of competition in the mobile telephony market has led to an immediate growth in voice services.



The case of Bhutan proved beyond doubt, that even in small (less than one million) and sparsely distributed population and comparatively difficult terrain, opening the competition in different telecom services helped the sector and the country. In 2006, Bhutan was also one of the last remaining integrated government-owned monopoly in the world. On October 2006, the Tashi Group outbid three other joint venture companies in the auction that was held in Thimphu to operate the license for a period of 15 years. The Tashi Group clinched the deal to operate the first private mobile service in the country with a Nu. 777 million (USD 17.32 million) offer.

Policy Recommendations

To contribute to the further development of the sector, and contribute to the vision of the Government to make Djibouti a in the region, this note identifies three major recommendations for action.

Recommendation1

Proposing options for reforms

Once there is a consensus among Djibouti policy makers that the sector is indeed facing significant problems and there is a critical mass of decision-makers and stakeholders

convinced that reforms in the telecom sector are key for Djibouti to capitalize on its hub strategy, it should be recommended most forcefully the opening up of the sector to competition, especially in the mobile cellular segment.

Telecommunications markets worldwide have undergone tremendous changes in the last two decades, moving away from monopoly towards a competitive market structure across all segments of the sector. Considerable evidence has accumulated, demonstrating the huge potential benefits of competition on several dimensions. Competition has (i) drastically reduced prices, (ii) improved access, (iii) promoted investments, and (iv) caused significant spillover effects to other sectors of the economy.

The case for reform should be built on International Best Practices and similar situation. As an example, Bhutan has almost comparable population and was also one of the last remaining integrated government-owned monopoly in the world. In Bhutan, sector performance has improved with the introduction of competition. With the April 2008 launch of mobile services by the privately owned Tashi InfoCom, Bhutan has approximately 180,000 mobile subscribers and 35,000 fixed line subscribers, bringing total penetration to approximately 30% in August 2008.

While the benefits of liberalization are compelling, concerns of several stakeholders (within the Government and DT) will have to be considered regarding the removal of mobile monopoly. Addressing concerns raised by liberalization should be undertaken in providing solutions to the Government on two specific matters: (i) empowerment, and (ii) fiscal revenues.

- (i) Empowerment: the liberalization of the mobile sector should be conditioned to an improvement of capacity and regulatory institutions. The most empowering attributes of a competitive mobile market is its potential to bring affordable communications to a large number of Djiboutians. To maximize the benefit to the people a technical assistance should be provided to the current regulatory unit within the Ministry (see Recommendation 2) to develop implementation strategies and ensure the development of the sector.
- (ii) Fiscal Revenues: as discussed above (see the Opportunity Costs of Status Quo), from a fiscal point of view, the best scenario is one that maximizes the overall profits and revenues of the telecommunications industry. In other words, with liberalization, the overall volume of the sector is very likely to grow, and this growth could generate additional revenues.

Recommendation 2

Reinforcing the Regulatory Body within the Ministry of Communication

In the past, under the proposals for the adoption of an ICT policy it has been suggested to create of an “Agence Djiboutienne de Regulation des Telecommunications (ADRT)” under the jurisdiction of the Ministry of Communication and Culture, which is currently in charge of postal services and telecommunications. Given the small size of the economy and the fixed cost of establishing and running such an institution, an option to be considered would be to improve capacity at policy and regulatory institution., i.e. the reinforcement of the small regulatory unit within the ministry in charge of

telecommunications and creation of a “Direction Générale en Charge des Postes, Télécommunications et TIC” (DGCPT).

It should be stressed, at this stage, that the above proposal (i) should not be taken as “purely” institutional and, (ii) is not based on an assumption that DT’s monopoly is unlikely to be reformed. In a country like Djibouti, effective independent regulation of a monopoly in a sector as technical as telecoms is probably extremely difficult to achieve. Improving capacity at policy and regulatory institutions

In the context of Djibouti, it is crucial to unconstraint the capacity of the DGCPT to have the technical capacity to develop implementation strategies as well as monitoring and evaluation instruments to ensure the development of the sector. Moreover, in the complex Djiboutian decision-making environment, the proposed re-inforcement could be seen as an empowerment attribute to address potential concerns of the Government.

Certainly, the most empowering attributes for DGCPT to play a critical role in driving the reform agenda would be to undertake in the very short term the following:

(iii) Regulate and monitor monopoly behaviors, namely excessive pricing and poor quality of service, to allow consumers and businesses to benefit from a market-based price for international calls, and Internet and market-based quality for mobile cellular calls.

(iv) Design and implement a new numbering plan, to allow supply meet the demand in the Mobile sector, mitigate congestion, maximize revenues and prepare the sector country to host new services, applications and business opportunities such as Business Process Outsourcing (BPO).

As the current numbering plan cannot cater to the needs of existing and new services for another few years. It is a critical step to rationalize and review the existing National Numbering plan because of introduction of a large number of new telecom services and possible opening up of the telecom sector for private participation. The new National Numbering Plan should be able to meet the challenges of multi- service environment and will be flexible enough to allow for scalability for next three decade without any changes in its basic structure. It is proposed the numbering plan to move from the current 6-digit dialing for calls to a mandatory national 7-digit dialing system to significantly increase the country's number capacity.

(v) Monitor and manage the frequency radio spectrum in order to avoid overlapping and interferences, secure fiscal revenues from big users, prepare digital switch over, and protect national hertzian domain.

The radio frequency spectrum is a rare and precious natural resource. Therefore, the use, operation and management of the radio frequency spectrum should be effective and rational to protect the national sovereignty. Moreover, the demand for spectrum resource is on the increase and will continue to be so in the foreseeable future with the rapid evolution and application of new radio technologies and services. These crucial factors make it mandatory for the government to develop comprehensive and clear-cut policies that will ensure that spectrum resource is optimally utilized for the overall benefit of the nation.

- (vi) Initiate a national discussion to establish a clear national strategy to eliminate grey traffic and reduce illegal call termination. In such a context VOIP should be viewed as a legal and revenue issue and the Government should try to exert control over it, moreover, a public debate should be organized so as to laws regarding unauthorized or illegal use of VOIP vary from country to country. Developed countries regulate the technology to protect consumers and to encourage market development.

Recommendation 3

Creating an IXP and a POP to leverage the impacts of fiber optic projects and make Djibouti an international ICT Gateway

A country such as Djibouti which have only one operator investing in the submarine cables projects identified above, could still be subject to bandwidth monopolization in the short term and takeovers by large telecoms operators from the region in the longer term. While very promising in terms of economic impacts and opportunities for Djibouti, these projects, once implemented will also require considerable and very specialized skills to be properly managed and monitored.

It is therefore recommended to support the country with a technical assistance to be positioned simultaneously as (i) a regional hub for landing submarine cables and (ii) a Regional Internet eXchange Point (IXP). Considering the geographic position of the country and cable projects expected to be completed in the next months, an interconnection hub, namely a Point of Presence (POP) should be based on a principle of “infrastructure sharing”. A common infrastructure (POP) labeled as an Essential Facility could be shared among all parties operating submarine cables landing in Djibouti and would have an open access to the cable under an “Open Access” Regime. In such a context, cooperation could take place in the form of passive infrastructure sharing – e.g. poles, equipment rooms, and passage rights - and active infrastructure sharing of network elements such landing station equipments.

The creation of a POP (coupled with an IXP) managed under the principles defined above would allow Djibouti to:

- (i) Address environmental concerns or local planning aspects like passage rights or geographic situations that encourage the cooperation of providers.
- (ii) Minimize duplication and reduce costs, making ICTs more affordable for a wider segment of the population.
- (iii) Avoid the country to pay the full cost of international Internet connectivity, with Internet traffic often routed via the United States or Europe (resulting in higher prices for ISPs, which are invariably passed onto customers).
- (iv) Ensure the supervision of incoming and outgoing traffic for security and fiscal purposes.

Considering the strategic location of the country from regional hub point of view and also to promote competition in international and Internet services, the Government may consider issuing separate licenses for IXPs and international gateways as in Bangladesh. This could be a revenue earning potential for the Government, establish the regional ICT

For Internal Use Only

hub in eastern Africa, and promote competition benefits to all regional telecommunications and IT services.

A feasibility study commissioned by DT for the establishment of a Regional Interconnection Point (International hu between Djibouti, Somaliland, Ethiopia and Erytrea and IXP) has been carried by Detecon in 2007-2008. The final report has been delivered in August 2008 to the authorities and the feasibility study confirms the commercial and financial viability of the Regional Interconnection point for all configurations studied (IRR is estimated at 39%)

It should be stressed that, as for any regulatory environment, the success of infrastructure sharing will largely depend on the ability of the Government to create trust through transparency, accountability and non-discriminatory actions. This is why Recommendation 3 should be analyzed as conditioned to the implementation of Recommendation 2.