



The Telecoms Sector in Mozambique

Going with the flow

A fast growing country

Mozambique has amongst the weakest telecommunications indicators in Sub Saharan Africa, having less than one fixed telephone per 100 inhabitants and a relatively low mobile penetration rate. These indicators are mostly explained by a long civil war and reflect the country's GDP per capita of US\$ 593 in 2013, making Mozambique one of the poorest countries in the region. However, recent mineral resource discoveries should make Mozambique one of the largest LNG and coal exporters before the end of the decade. These discoveries have created a very favorable economic outlook for Mozambique, with the country's GDP growth expected to surpass 8% this year and average 7.8% in 2015-2019F (source: IMF).

And growing telecommunications

Despite the poor indicators regarding telecommunications, economic development should fuel the sector's growth during the next few years. Notwithstanding the competitive environment in the mobile sector that has driven prices down in the last couple of years, telecommunication costs remain relatively high for the majority of the population. However, economic growth should provide additional purchasing power to the population, increasing the number of telecommunications subscribers and allowing actual subscribers to spend more money in telecommunications services. Moreover, the sector is crucial for the country socioeconomic development and should be one of the authorities' priorities.

New telecommunications law yet to be approved

The country's basic telecommunication law dates back to 2004 and needs to be updated urgently. A new version of the law is under public consultation since 2013, but after several delays, expectations are that the law will only be approved during the first semester of 2015. The proposed law tries to enhance competition, mainly in the fixed segment, through unified licensing, to promote infrastructure sharing and promote quality of service. The new law identifies the sector's main challenges and is a step in the right direction. However, some specific regulation still needs to be created or updated. For the new law to be successful it is necessary to have all specific regulation ready on time and to provide the regulatory authority the necessary means and powers to supervise the market efficiently and ensure that its decisions and all regulations are met.

Research

November 2014

Telecommunications

Guido Varatojo dos Santos

(+351) 211 214 468

guido.santos@eaglestone.eu

EXECUTIVE SUMMARY

Mozambique is, like most of its African peers, a country characterized by a weak fixed telecommunication network and a relatively strong mobile network. The mobile network has been growing since its deployment and accelerated considerably with the introduction of a second and a third mobile operator in the country. On the other hand, the fixed line performance has been quite unstable in the last few years and unable to compete against the mobile operators. The percentage of individuals using Internet is also amongst the lowest in the region, 5.4% in 2013. Mozambique ranks 137th, out of 148, in the World Economic Forum's Network Readiness Index (NRI).

Mozambique is characterized by a poor fixed network and a relatively strong mobile network

Mozambique's poor telecommunications indicators is mostly explained by the country's long civil war. The civil war has taken its toll on country's infrastructures and is also the main explanation behind the country's low GDP per capita of US\$ 593 (source: World Bank). However, recent mineral resource discoveries should make Mozambique one of the largest LNG and coal exporters before the end of the decade. These discoveries have created a very favorable economic outlook for Mozambique, with the country's GDP growth expected to surpass 8% this year and average 7.8% in 2015-2019F (source: IMF).

Mozambique enjoys a very favorable economic outlook with GDP growth expected to surpass 8% this year

Mozambique's current telecommunications basic law dates back to 2004 and its revision is one of the sector's main issues. In the authorities' agenda since 2010, only in 2013 a proposed revision was placed under public consultation and expectations now are that the law may be approved during the first semester of 2015. The new law tries to address some of the sector's challenges and technological changes. The main focus of the new law are: (1) unified licensing; (2) enhance competition; (3) assure networks interoperability and interconnection; (4) promote infrastructure investment and sharing; and (5) quality of service (QoS).

A new telecommunications law is under public consultation since May 2013 and should be approved in the first semester of 2015

The wireline is one of the authorities' concerns with just 0.3 fixed-telephone subscribers per 100 inhabitants. The fixed network has been unable to compete against mobile players, struggling with a poor infrastructure due to a long period of under maintenance and insufficient investment. The fixed operator has been under a restructuring process in an effort to be more market oriented and sustainable and has invested in wireless technologies, like CDMA, to expand its footprint. Nevertheless, until today its efforts to compete against the mobile operators have bear no fruits. For TDM to be able to compete with the mobile operators we believe that the company would have to expand its coverage aggressively and invest in its network modernization. Given the investment needed and unified licensing framework, a more logical scenario would be a selective roll out of the fixed network with modern technologies and a merger with the mobile operator mcel.

Under the unified license regime, a merger of TDM with mcel is a logical scenario

The mobile segment is the most successful segment with a CAGR 2003-2013 of 40%, going from 435,757 to 12.4 million subscribers. The mobile market has benefited from the poor fixed network infrastructure and the fact that it is easier and cheaper to expand a mobile network. Despite the considerable growth of the last decade, the mobile market should continue to be characterized by a strong growth due to: (1) the country's economic growth; (2) favorable competitive environment; and (3) mobile broadband uptake. We expect the Mozambican market to end 2017 with around 18.5 million subscribers, implying 6 million net additions and a CAGR 2013-2017F of 10.5%.

The mobile market should register a CAGR 2013-2017F of 10.5%, with 6 million net additions

Looking ahead, the sector's main challenges are to increase: (1) service coverage; (2) service affordability; and (3) competition in the wireline. The authorities' role is crucial to tackle these challenges. The approval of the new telecommunications act will be an important improvement in the country's regulatory framework. However, it is also necessary to have all specific regulation ready on time. Specific regulation on issues like infrastructure sharing and sharing obligations would probably be one of the best ways to boost services' coverage. At the same time such measures would decrease investment needs and costs, which would also benefit customers.

The regulator's role is crucial to boost service coverage and avoid wasting resources

TABLE OF CONTENTS

Executive Summary.....	2
Mozambican Telecommunications Sector.....	4
Telecommunications Act.....	6
Sector Description	8
Wireline.....	8
TDM.....	8
Mobile	12
MCell	13
Vodacom	14
Movitel.....	14
Internet Service Providers	16
Pay-TV	17
Broadband and Data	19
Regulation.....	22
Going With The Flow	24

MOZAMBICAN TELECOMMUNICATIONS SECTOR

Like in most of its African peers, the Mozambican telecommunications sector is characterized by a strong mobile segment and an increasing popularity of broadband. On the other hand, wireline accesses have been recording a negative performance in the last couple of years. Nowadays the telecommunications sector in Mozambique is composed by one fixed operator, three mobile operators and four Pay-TV operators.

The Mozambican telecommunications sector is characterized by a strong mobile segment and increasing popularity of broadband

TELECOMMUNICATIONS INDICATORS	Angola	Botswana	Mozambique	Namibia	South Africa	Tanzania	Zambia	Zimbabwe
Telephone								
Fixed telephone lines	214,950	174,165	77,568	183,532	4,835,690	164,999	115,762	304,162
Fixed telephone lines (per 100 people)	1.00	8.62	0.30	7.97	9.16	0.34	0.80	2.15
Mobile phones	13,285,198	3,246,787	12,401,290	2,538,584	77,826,065	27,442,823	10,395,801	13,633,167
Mobile cellular subscriptions (per 100 people)	61.87	160.64	48.00	110.21	147.46	55.72	71.50	96.35
Internet								
Internet users (per 100 people)	19.1	15.0	5.4	13.9	48.9	4.4	15.4	18.5
Fixed broadband subscribers	47,704	21,590	17,983	29,776	1,615,210	51,903	10,850	103,574
Fixed broadband subscribers (per 100 people)	0.22	1.07	0.07	1.29	3.06	0.11	0.07	0.73
Secure Internet servers	83	21	41	42	4,575	53	40	45
Secure Internet servers (per 1 million people)	3.87	10.39	1.59	18.23	86.35	1.08	2.75	3.18

Source: World Bank, Mozambican Authorities and Eaglestone Securities.

According to the Mozambican authorities in 2013 there were 0.3 fixed lines, 48 mobile accesses and 0.07 fixed broadband accesses per 100 inhabitants. However, despite the low penetration of fixed broadband, around 5.4% of the Mozambican population uses the Internet on a regular basis.

Mozambique falls behind its African peers in almost all the KPIs, reflecting the country's low income per capita, US\$ 593 (source: World Bank). United Nations ranks Mozambique 178th, out of 187, in its latest Human Development Index (2014).

Mozambique falls behind its African peers in almost all the KPIs

Mozambique ranks 137th out of 148 in the World Economic Forum's Networked Readiness Index (NRI) for 2014. This index measures the degree to which economies across the world leverage on ICT for enhanced competitiveness. The NRI helps policymakers and stakeholders to identify the strengths and weaknesses that each country faces on ICT. The structure of the NRI is composed of four sub-indices: (1) environment; (2) readiness; (3) usage; and (4) impact.

Mozambique ranks 137th out of 148 in the World Economic Forum's Networked Readiness Index for 2014

NETWORKED READINESS INDEX	Angola	Botswana	Mozambique	Namibia	South Africa	Tanzania	Zambia	Zimbabwe
Networked Readiness Index (out of 148 countries)	144	103	137	105	70	125	110	117
Environment subindex								
Political and regulatory environment	145	40	113	37	20	85	59	122
Business and innovation environment	147	107	126	112	53	132	63	133
Readiness subindex								
Infrastructure and digital content	146	109	137	106	68	120	130	128
Affordability	110	142	132	125	112	111	124	24
Skills	141	92	147	104	97	129	117	108
Usage subindex								
Individual usage	133	79	144	101	78	137	123	107
Business usage	143	106	124	68	30	120	77	109
Government usage	131	86	110	116	103	98	79	128
Impact subindex								
Economic impacts	137	120	121	105	49	132	113	129
Social impacts	139	107	124	122	113	117	104	130

Source: World Economic Forum (2014) and Eaglestone Securities.

Mozambique’s low score and ranking reflects the country’s economic profile and the civil war from 1977 to 1992. The civil war led to a long period without investment and under maintenance of the country’s main infrastructures. The telecommunications infrastructure has been one of the most affected and its recovery is a lengthy process that requires considerable investments.

The civil war has led to a long period without investment and under maintenance in the country’s main infrastructures. The fixed network is the most affected by the lack of proper infrastructures with a very limited coverage.

The fixed segment is the most affected by the lack of proper telecommunication infrastructures. The fixed network coverage is very limited, being concentrated in Maputo and other major cities and its services are perceived as unreliable and expensive. Hence, this created a very favorable environment for the mobile segment.

The mobile segment has grown considerably during the last decade from 435,757 subscribers in 2003 to 12.4 million in 2013. The mobile segment benefits from the fact that it is easier and cheaper to expand its coverage, despite the infrastructure constraints, and from the competitive environment created by the existence of three mobile operators disputing the market.

The mobile segment has grown from 435,757 subscribers in 2003 to 12.4 million in 2013.

The telecommunications regulatory authority is the Instituto Nacional das Comunicações de Moçambique (INCM), established in 1992. Its main responsibilities are: licensing, spectrum management, numbering, regulation of tariffs and quality. The INCM is an autonomous entity under the administrative supervision of the Ministry of Transportation and Communications.

The national regulatory authority is the Instituto Nacional das Comunicações de Moçambique (INCM).

The mobile market has been liberalized since 2001, while the fixed market was liberalized in 2007. While the mobile market liberalization has been a success, currently there are three players disputing the market, the fixed market continues to be a monopoly. Even after the government stated that it was ready to study and approve investments in the country’s fixed network, until today no company has shown any interest in doing so.

The mobile market has been liberalized since 2001, while the fixed market was liberalized in 2007.

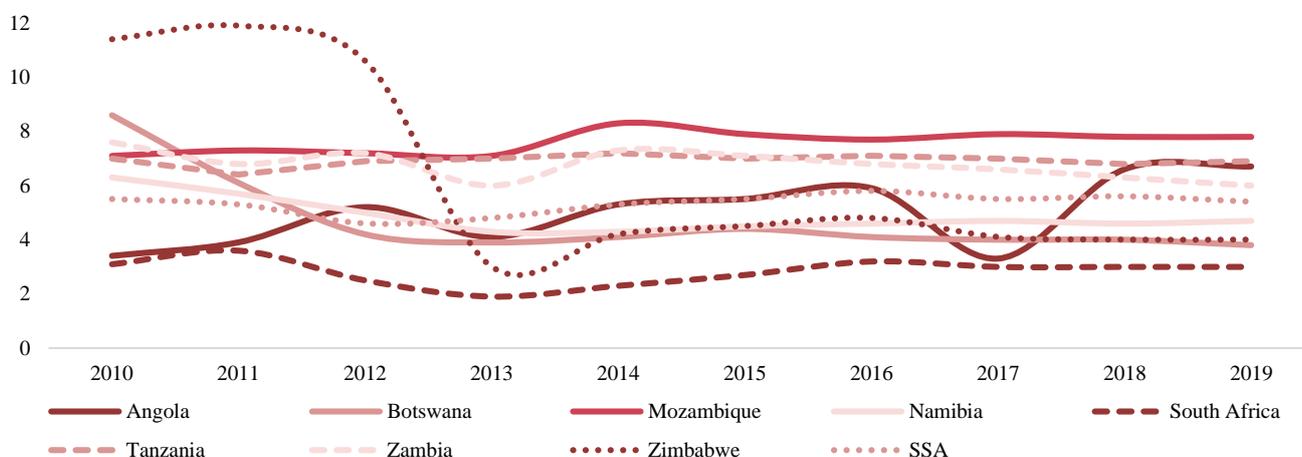
The current telecommunications act dates back to 2004 and a newer version is currently under public consultation. The new telecommunications act aims to develop the ICT sector by addressing, among other issues: (1) the need to assure a competitive environment; (2) a more efficient usage of the telecommunications infrastructure; (3) infrastructure sharing; and (4) quality of service. Expectations are that the new telecommunications act will be submitted to the government and approved during the first half of 2015.

The current telecommunications act dates back to 2004 and a newer version should be approved during the first half of 2015.

Sub-Saharan Africa is considered one of the most interesting regions in the world by the ICT industry, due to its demographic characteristics and growth prospects. Moreover, Mozambique is an especially appealing country given its fast growth, even when compared with its peers. The discovery of coal deposits in the Tete province and huge off-shore gas fields in the Rovuma basin, will make Mozambique one of the largest exporters in the world before the end of the decade. Hence, fueling the country’s growth prospects and creating a very favorable outlook with real GDP growth expected to surpass 8% this year and average 7.8% in 2015-2019F (source: IMF). The telecommunications sector is seen as crucial to support the country’s development and investment in the sector’s infrastructures and services should accelerate in the coming years.

Mozambique has a very favorable outlook with real GDP growth expected to surpass 8% this year and average 7.8% in 2015-2019F.

REAL GDP GROWTH (%)



Source: IMF.

TELECOMMUNICATIONS ACT

Mozambique's current telecommunications law dates back to 2004 and its revision is one of the sector's most relevant issues. The revision of the current telecommunications act has been in the authorities' agenda since 2010, but has been postponed without any explanation, or apparent reason, several times. Only in May 2013 the authorities disclosed a proposed revision for the country's basic telecommunications law and placed it under public consultation. According to some press reports, the new telecommunications act has been discussed by the government in June 2014 and the initial expectations were that it could be approved before the end of the year. Expectations now are that it should be approved during the first semester of 2015.

Mozambique's telecommunication law dates back to 2004 and a new version has been proposed in May 2013

The 2004 telecommunications act's major concerns had to do with the expansion of the telecommunications network, its coverage and the liberalization of the fixed market. In the telecommunications act it was set a transitional period until the end of 2007, in which TDM would be the only operator authorized to provide fixed phone services and to deploy network infrastructures for the fixed services.

Fixed market was fully liberalized at the end of 2007

One of the biggest expectations of the law approved in 2004 was that it would bring competition to the fixed segment that, consequently, would lead to coverage expansion and price decreases. The liberalization of the fixed market was already contemplated in the previous law, but it was conditional to the privatization of the country's incumbent operator. Despite the market expectations, as today the incumbent has not been privatized and it continues to be the only fixed operator in the country.

Despite market expectations, the fixed market continues to be a monopoly

The new version of the telecommunications act focuses on:

- Unified licensing;
- Enhance competition;
- Assure networks interoperability and interconnection;
- Promote infrastructure investment and sharing;
- Quality of service (QoS).

Taking into account the emergence of convergent services and networks, the new telecommunications act abolishes the previous licensing regime, where different licenses were needed for each segment. Instead, the new law will contemplate unified licenses that will only differ depending on the service's geographic coverage. According to the version under public consultation there will be national, provincial and local licenses.

The new law will contemplate unified licenses that will only differ depending of the service's geographic coverage

The interoperability, interconnection and infrastructure sharing are addressed together in chapter V of the version under public consultation. In terms of interconnection and interoperability, the most relevant changes are related with the adaption of the law to the sector's technological evolution. Regarding infrastructure sharing, the proposed law states in a very clear way that infrastructure and investment sharing should be promoted with the goal of creating a more competitive environment and to decrease deployment costs, allowing a quicker and cheaper network rollout. This applies not only to new infrastructures but also to the existing ones.

The proposed law states that infrastructure and investment sharing should be promoted with the goal of creating a more competitive environment and to decrease deployment costs

The proposed law is also more demanding in terms of quality of service monitoring. The current law states that the INCM can demand operators to provide data related with their network's and service's performance. The proposed law demands all operators and service providers to publish and make available to the regulator and to consumers updated information about their network's and service's performance. INCM defines the services' parameters that should be measured and how that information should be published, its format and content. Additionally, it can define quality certification mechanisms to assure that the information provided is clear, complete and comparable.

Operators will have to publish and make available to consumers updated information about their network's and service's performance

It is our opinion that the new telecommunications act can be a big step forward for the sector. However, some details raise concerns about how effective the new law will be. First, the successive delays in updating the law. Since 2010 that the market has been calling for a revision of the previous law, but only in May 2013 a draft version was made available to public consultation and has not been approved until today. There were expectations that the law would be approved until the end of the year, but expectations now are that the law may be approved during the first half of 2015. Second, several items of the new law refer to specific regulation that

The new law can be a big step forward for the sector, but there are some concerns about its effectiveness

still needs to be done or must be revised. We believe that it is crucial for the success of the new law to have all relevant regulation ready on time. Third, it is not clear if the regulator, INCM, has the means and powers to monitor the implementation of the new law and enforce its fulfillment. Fourth, INCM will also have to start monitoring the operators' quality of service, which will demand an additional effort from the regulator.

A final note to a law approved in 2010 that forces mobile subscribers, pre and postpaid, to register their SIM cards. According to the law, its objectives are: (1) to build a database containing the data of all SIM card owners that can be accessed by the operators and the authorities; (2) allow some state related operations to be done through the phone; (3) protect the citizens from criminal acts done through the phone; and (4) promote the responsible usage of the SIM cards and support the public order. The law also states that only persons over 14 years old are authorized to acquire SIM cards and each person cannot have more than three cards of each operator. However, according to local sources, despite the sanctions and penalties in the law, the rule is not fully respected.

Since 2010 that all mobile subscribers must register their SIM cards

SECTOR DESCRIPTION

WIRELINER

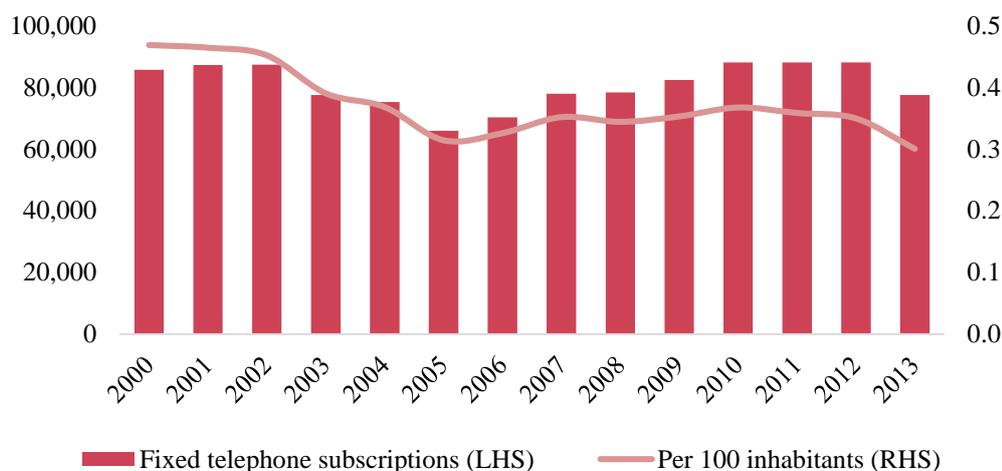
The wireline segment is one of the biggest challenges that Mozambique’s telecommunications sector faces. The wireline is relatively underdeveloped, with a very weak geographic coverage and perceived by users as having very poor quality standards. This is mostly explained by the civil war that led to a long period of under maintenance and low investment, which have taken their toll on country’s telecommunication infrastructures, namely outside urban centers.

The wireline is relatively underdeveloped, with a very weak geographic coverage and perceived by users as having very poor quality standards

According to the national authorities there were c. 77,568 fixed-telephone subscribers in 2013, which means 0.3 fixed-telephone subscriptions per 100 inhabitants. The penetration rate figures in Mozambique are concerning not only because they are among the lowest penetration rates in Sub-Saharan Africa, but also because of the declining trend registered in 2013.

There were 0.3 fixed telephone subscriptions per 100 inhabitants

FIXED TELEPHONE SUBSCRIPTIONS AND PER 100 INHABITANTS



Source: ITU.

Looking at the graph above, we notice that the two periods where the number of accesses declines occurs was when a new mobile player entered in the Mozambican market. First, in 2003, the number of accesses has decreased 11% year-on-year, when Vodacom entered the market. Second, Movitel started to operate in 2012 and in 2013 the number of accesses declined 12% year-on-year.

When new mobile players entered the market, the number of fixed accesses has decreased

The fixed operator has been struggling to compete against the mobile operators and as the number of mobile operators increased the competition has become even fiercer. As we will explain in more detail ahead, each time a new mobile players arrived mobile prices decreased, while the geographic coverage and the range of services available increased. Due to the growing competitiveness of mobile operators some people, and even companies, have chosen to give up their fixed telecommunication services.

The fixed operator has been struggling to compete against the mobile operators

The wireline segment in Mozambique has only one player, the incumbent: Telecomunicações De Moçambique (TDM).

TDM

TDM was created in 1981, from the separation of the telecommunications services from the postal services, and in 1992 TDM became a public company. TDM was the only telecommunications provider until 1997 when mcel was established. However, competition was limited as TDM had a 74% stake in mcel and fully consolidated it.

TDM was created in 1981 and was the only telecommunications provider until 1997

In 2003 TDM’s and mcel’s assets were fully separated by government’s decision and TDM deconsolidated mcel. In the same period, the regulator increased fixed-mobile interconnection rates by 52% and the second mobile operator started its operations creating a more competitive environment. All these effects caused a 27% and 59% year-on-year decrease in TDM’s revenues and EBITDA, respectively.

In 2003 TDM and mcel fully separated its assets

TDM KPI	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Lines in operation	85,714	89,488	83,739	77,576	69,676	69,735	66,968	68,867	72,013	64,956
Fixed access wireless	NA	NA	NA	NA	NA	1,382	1,998	2,861	3,530	3,306
ADSL Subscribers	NA	NA	NA	NA	NA	NA	1,702	5,743	10,191	12,741

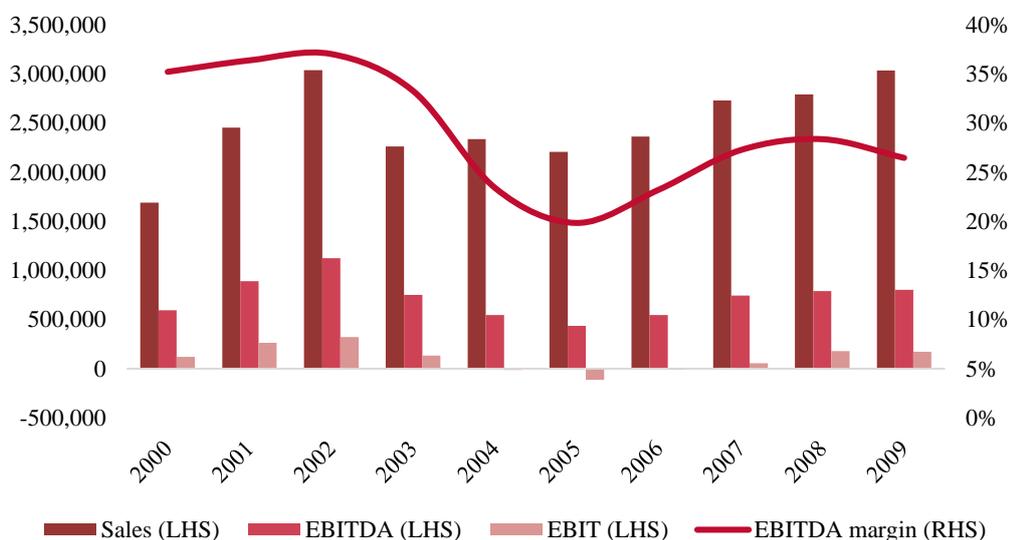
Source: TDM Annual reports.

Since 2003, due to higher costs and more aggressive competition, TDM’s KPIs and financial results started to deteriorate and between 2004 and 2006 TDM registered negative earnings before interests and taxes (EBIT). In 2004, the company announced a strategic plan for the three year period 2005-2007 made in collaboration with Detecon. The strategic plan defined two main objectives:

In 2004 TDM announced a strategic plan to make the company viable and sustainable

- First, “consolidate TDM into a financially viable and sustainable company, fulfilling its role in the market and satisfy the expectation of its shareholders”;
- Second, to “increase the value of the company in order to allow its growth to be sustainable”.

TDM’S REVENUES, EBITDA, EBITDA MARGIN AND EBIT (MZM MILLION)



Source: TDM annual reports.

According to the company’s strategic plan, to achieve these objectives TDM’s priorities were to complete the national telecommunications backbone transmission network and adopt technologies that would optimize the usage of the backbone and allow the creation and development of new products and services. In its 2004 annual report it is stated that it is fundamental that TDM becomes more market oriented and aggressive, being necessary to transform the existing systems, structures and business model.

TDM wanted to be more market oriented and aggressive

The national telecommunications backbone transmission network deployment was initiated in 2000, connecting Maputo to Beira. The first stage aimed to connect all the provincial capitals and was concluded in 2009. The second stage focused on building redundancies through “rings” and has been concluded in 2011. TDM’s backbone is composed by 7,500km of fiber and microwave links. All the provincial capitals are connected through fiber-links, with microwave links being used to connect several secondary cities. Currently, TDM’s voice and data services reach 103 districts, out of 128. The full project implied an investment of around US\$ 100 million.

TDM’s backbone connects all provincial capitals through fiber and several secondary cities through microwave links

TDM'S BACKBONE (APRIL 2013)



Source: TDM and Eaglestone Securities.

In 2005, TDM started to use Code Division Multiple Access (CDMA) technology, in the 450 MHz band, to expand its footprint. CDMA is a wireless technology that enables TDM to provide voice and broadband services to customers that are out of their fixed infrastructure’s coverage. Despite the drawbacks of using wireless technologies and terminals as substitutes of the traditional fixed service, like slower speeds and less bandwidth, it is an acceptable substitute. It is an easy and quick way for TDM to expand its coverage and reach more customers with much less investment than it would be necessary to expand its fixed network. In 2007 TDM announced that it would start migrating from the 450Mhz to the 800Mhz band and to introduce Evolution-Data Optimized (EV-DO), a telecommunications standard that improves data transmission.

In 2005 TDM started to use CDMA to deliver voice and broadband services to customers out of their fixed infrastructure coverage

In 2006, TDM started to commercialize broadband solutions to its customers through asymmetric digital subscriber line (ADSL). ADSL registered a strong uptake, going from 1,702 subscribers in 2006 to 12,741 by the end of 2009. Despite the lack of official figures from TDM since 2009, looking at ITU’s fixed broadband statistics, TDM should have around 18,000 subscribers at the end of 2013. From ITU’s statistics we also notice that the number of fixed broadband subscriptions has been decreasing since 2012 and declined around 12% in 2013, probably due to mobile broadband competition.

In 2006 TDM started to commercialize ADSL, but since 2012 the number of fixed broadband subscribers is declining

We believe that TDM’s priority should be the modernization of its infrastructure and products, given: (1) the fierce competition from mobile operators; and (2) The country’s new regulatory framework. First, mobile operators are in a more advanced development stage and can easily offer products that are almost perfect substitutes of the fixed line services. Second, the new telecommunications act will allow mobile operators to start providing fixed services, through the unified licensing regime, and it is crucial that TDM starts to protect its customer base.

TDM’s priority should be the modernization of its infrastructure and products

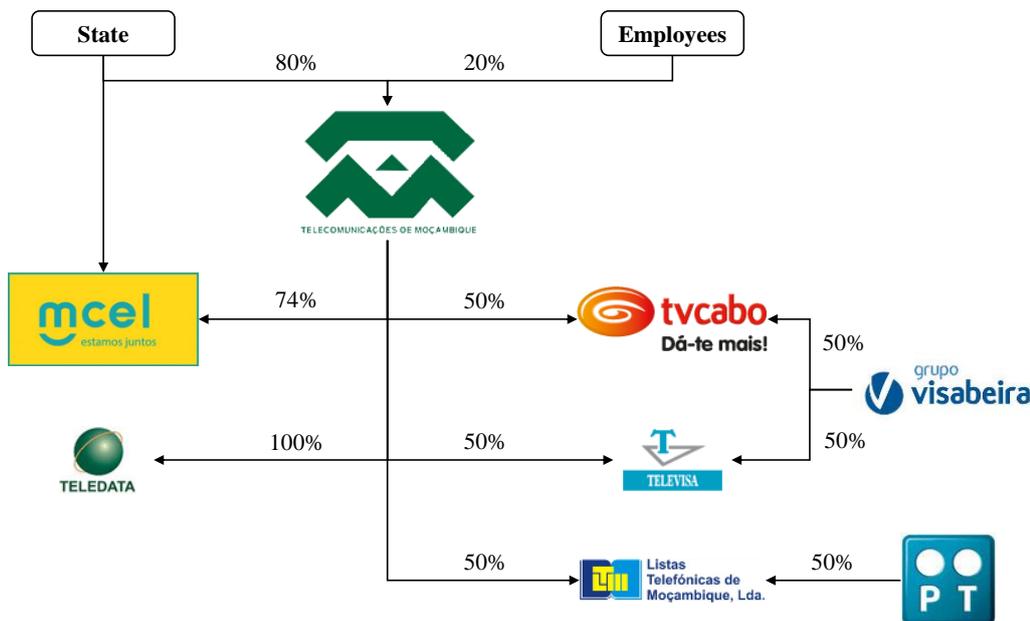
Nevertheless, to modernize TDM’s infrastructure carries two challenges: (1) the technology leapfrogging; and (2) the investment necessary. First, TDM should adopt the most modern technologies without going through prior or intermediate technologies. If not, we believe TDM may be wasting resources as it will be relatively easy for mobile operators to deploy technologies that match or outperform TDM. Technology leapfrogging would also allow TDM to take advantage of less costly technologies. However, technology leapfrogging also carries a high risk of bad implementation and execution. Second, implementing such technologies demands a considerable investment and it is not clear if TDM has the necessary financial firepower. In our opinion, TDM should make a selective roll-out of these modern technologies in the most interesting areas, political and economic centers, focusing in the corporate segment.

To modernize TDM’s infrastructure carries two challenges: (1) the technology leapfrogging; and (2) the investment necessary

TDM has several telecommunication-related subsidiaries:

- **Mcel:** Mobile telecommunications provider;
- **Teledata:** Internet Service Provider (ISP) and data communications services;
- **TV Cabo:** Cable TV and broadband provider;
- **Televisa:** Deployment and maintenance of telecommunication infrastructures;
- **Listas Telefonicas de Moçambique:** Telephone directories;

TDM STRUCTURE AND SUBSIDIARIES



Source: TDM, Eaglestone Securities.

All in all, without a major modernization process TDM seems to have a fragile business case. We believe that if TDM decides to adopt intermediary technologies, it will be easy for mobile operators to match it or to be one step ahead. Moreover, given the new telecommunications act, TDM will be much more exposed to competition. The economic prospects of Mozambique should fuel the demand for modern telecommunication solutions and if TDM is not able to fulfill that demand, it is now much more likely that someone else will.

TDM needs a major modernization process to compete against the mobile operators and be ready for the new telecommunications act

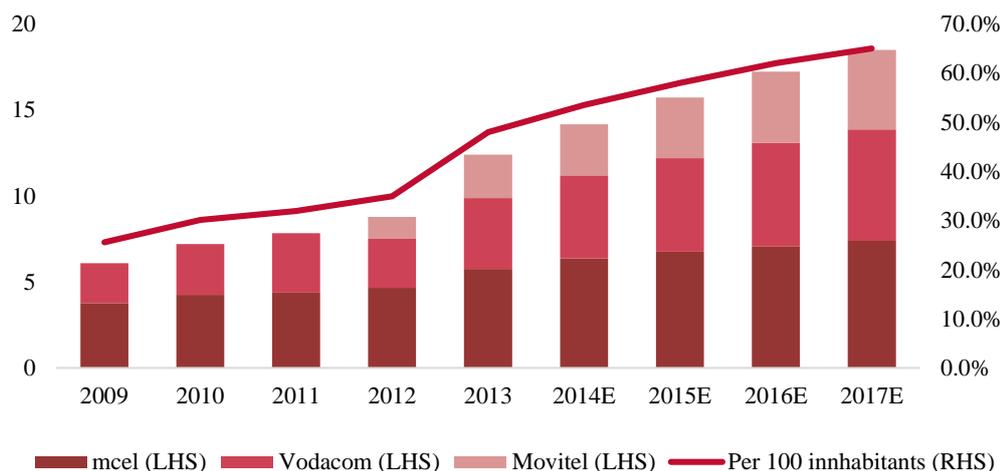
MOBILE

The mobile market is the most successful segment in Mozambique, fuelled by the weak fixed infrastructure and the lower investment needed to expand its coverage and deploy new services. In the last decade this market recorded a CAGR 2003-2013 of 40%, going from 435,757 subscribers to 12.4 million.

The mobile market is the most successful segment in Mozambique, with a CAGR 2003-2013 of 40%

The Mozambican mobile market is composed by three operators: (1) mcel; (2) Vodacom; and (3) Movitel. Mcel was the first mobile operator in Mozambique, founded in 1997, while Vodacom started operating in 2003 and Movitel in 2012.

MOZAMBICAN MOBILE SUBSCRIBERS (MILLION)



Source: Mcel, Vodacom, ITU, INCM and Eaglestone Securities.

Mozambique has one of the lowest mobile penetration rates amongst its peers, around 48% in 2013, which can be partially explained by the country’s low GDP per capita. However, we believe that Mozambique’s penetration rate should increase significantly the in next few years due to the country’s favorable economic outlook and the segment’s competitive environment.

Mozambique has one of the lowest mobile penetration rates amongst its peers

We also believe that the number of subscribers (SIM cards) in the county does not show us the whole picture. The number of subscribers (SIM cards) can be misleading as it is not synonymous with the number of users. According to the GSM Association (GSMA), there were 502 million subscribers in Sub-Saharan African in June 2013, but only 253 million “unique mobile subscribers”, which imply a penetration rate of just 30.8% instead of 61%.

The number of SIM cards does not show us the whole picture

Despite the lack of official figures about “unique mobile subscribers” in Mozambique, we believe there is in fact a great difference between the number of SIM cards and “unique mobile subscribers”. There are two main reasons for this difference: (1) Mozambicans’ are very price sensitive; and (2) the geographic coverage of each operator.

There is a great difference between the number of subscribers and “unique mobile subscribers”

The Mozambican consumers are usually very price sensitive and it is important to bear in mind that the cost of telecommunications in Mozambique is relatively high for the population’s income. Looking at Vodacom’s annual report for the year ended 31 March 2014, ARPU stood at MZM 172 (US\$ 5.5), below SSA and World average of US\$13.6 and US\$25, respectively. However, Vodacom’s ARPU weight over Mozambique’s 2013 Gross National Income (GNI) per capita stood at 11.2%, well above the 3% to 5% values observed in other developing markets. Given the high cost of telecommunications in Mozambique, subscribers try to minimize their expenditures by having multiple SIM cards. This way consumers try to take advantage of the best price plan available for each particular type of calls (for instance one card for “on-net” and another for “off-net” calls) by holding more than one SIM card.

Telecommunication costs in Mozambique are still relatively high, with ARPU weight over GNI per capita standing at c. 11%

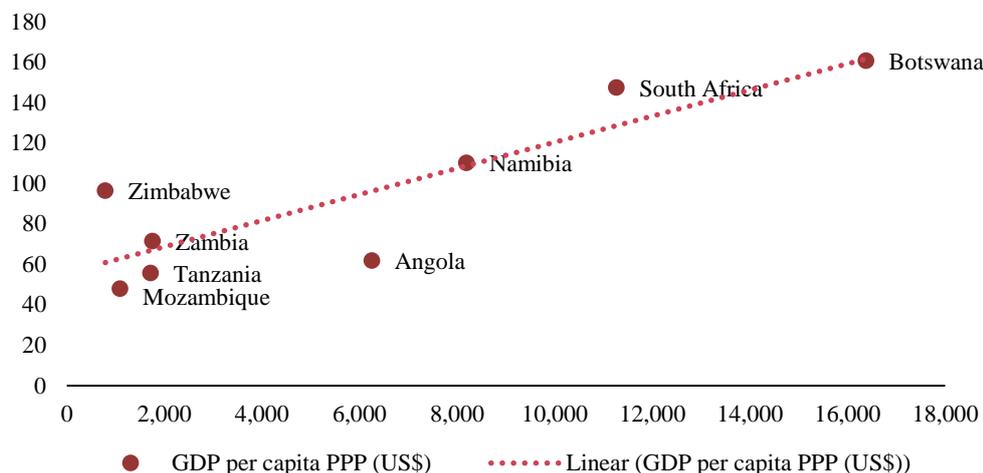
The other main reason is related with the geographic coverage of each operator. In Mozambique none of the operators covers the whole country, thus some subscribers have more than one SIM to be able to reach all their contacts.

None of the operators covers the whole country

Mobile broadband will be another major growth driver for the Mozambican market. As it happened with the traditional voice services, mobile broadband will become the most common and popular way to access the Internet, whether through mobile handsets, tablets or USB dongles. Mobile broadband will also benefit from the fixed network limited coverage and from the fact that it is easier for mobile operators to upgrade to faster technologies like 4G. GSMA estimates that the number of mobile broadband connection in Sub Saharan Africa will register a CAGR 2012-2016 of 47%.

Mobile broadband should become the most common and popular way to access to Internet

MOBILE PENETRATION RATE AND GDP PER CAPITA PPP (US\$)



Source: IMF, ITU and Eaglestone Securities.

We expect the Mozambican mobile market to be characterized by a strong growth in the coming years, backed by the following trends: (1) economic growth; (2) favorable competitive environment; and (3) mobile broadband uptake.

The Mozambican mobile market should register a strong growth in the coming years

According to our estimates, Mozambique should end 2017 with around 18.5 million mobile subscribers, achieving a penetration rate of 65%. This implies around 6 million net additions in 4 years, which means a CAGR 2013-2017 of 10.5%. Nevertheless, taking into account the powerful mix of competition and growing purchasing power, it is possible that the market outperforms our expectations.

Mozambique should end 2017 with 18.5 million subscribers, implying a CAGR 2013-2017 of 10.5%

MCEL

Mcel was founded in 1997 as a joint-venture between TDM (with a 74% stake) and Detecon (with the remaining 26%) called Telecomunicações Móveis de Moçambique (TMM). It started its operations in September 1997 with an initial investment of US\$ 10 million, using the GSM standard and covering the metropolitan area of Maputo.

Mcel started its operations in September 1997 using the GSM standard

Until September 2000 mcel had only post-paid price plans. The introduction of pre-paid price plans was an important growth driver for mcel. The company had 51,065 subscribers at the end of 2000 and during 2001 its subscriber base almost tripled to 152,652 subscribers.

The introduction of pre-paid price plans, in 2000, was an important growth driver

During 2002 and 2003 the company went through a transformation process. First, TMM was fully separated from TDM and adopted a new corporate structure. Second, TMM was renamed mcel – Moçambique Celular. Third, mcel became a limited company and Detecon sold its stake. Mcel is, since then, 74% owned by TDM and 26% owned by Instituto de Gestão das Participações do Estado (IGEPE, “Institute for the Management of the State Holdings”).

Mcel was fully separated from TDM in 2002

Despite the increasing competitiveness of the Mozambican market, mcel has always managed to keep its leadership position. By the end of 2011, before the third operator started its operations, mcel had a market share of c. 56%. In the end of 2013 mcel had a market share of 47%. According to mcel, the company focus is to maintain its leadership position and its biggest growth opportunity lies in the data services.

Mcel as always managed to keep its leadership position

VODACOM

Vodacom Mozambique is part of the South African Vodacom International, which in turn is controlled by the British Vodafone. Vodacom Mozambique shareholder structure is composed by: (1) Vodacom International (85%); (2) EMOTEL (1.99999%); (3) Intelec Holdings (6.5%); (4) Whatana Investments (6.5%); and (5) Other shareholders (0.00001%). In 2008, when Whatana Investments acquired its stake in Vodacom, the press reported that Vodacom was planning to sell more equity, but it would always keep a controlling stake. Nevertheless, no more transactions were made.

Vodacom Mozambique is controlled by the South African Vodacom with a 85% stake and the remaining belongs to Mozambican investors

Vodacom has been awarded a mobile telecommunications license in August 2002 and started its operations in December 2003. According to some press reports, Vodacom was supposed to start operating in early 2003, but several issues related with tariffs and interconnection rates caused the launch to be postponed and some reports even suggest that Vodacom was considering giving up its mobile license.

Vodacom started operating in December 2003 after several delays

Vodacom started its operations announcing lower prices, especially on international calls, which triggered a price reduction by the remaining operators. Since 2003 that Vodacom's subscriber base has been growing consistently. The exception was the period between the last quarter of 2012 and first of 2013 where Vodacom's growth decelerated considerably due to the introduction of the third mobile operator. At the end of June 2014 Vodacom had around 4.6 million customers, growing 39% year on year. In 2010 Vodacom launched its 3G service with an investment of MZM 170 million (US\$ 5.2 million).

Vodacom had 4.6 million customers by the end of the first half of 2014

According to Vodacom's "Annual Results 2014", its growth strategy is focused on increasing penetration rate of data and financial services. Vodacom states that mobile data is the company's biggest growth opportunity given the low penetration levels of smartphones and tablets. Financial services are an opportunity given the high levels of financial exclusion and limited financial infrastructure.

According to Vodacom, its biggest opportunities are data and financial services

MOVITEL

In November 2010 Movitel was awarded the third mobile license after paying US\$ 28 million. Movitel had the second highest bid and ranked first in the technical assessment. Movitel is a joint-venture between the Vietnamese company Viettel, with a 70% stake, and the Mozambican companies SPI and Ivespar with stakes of 20% and 10%, respectively.

Movitel is controlled by the Vietnamese company Viettel, with a 70% stake

When the license was awarded the company planned to invest up to US\$ 465 million and to have around 85% of the population covered in five years. When the operation was launched, in May 2012, Movitel claimed to have already deployed an optical fiber backbone with around 12,500 km and 1,800 base stations, which according to the company were more than 50% of all the base stations in the country. By then, Movitel had invested US\$ 117 million, covered 105 of the 128 districts and around 43% of the population. By the time operations started Movitel already had 415,000 subscribers.

Movitel planned to invest up to US\$ 465 million and cover c. 85% of the population in five years

Movitel entered in Mozambique using an unusual approach. Unlike other operators that focus their coverage in the urban areas, Movitel has begun by reaching the rural populations. This strategy implied the acquisition of subscribers that usually carry lower ARPU, when compared with the urban population. For Movitel's strategy to payoff the company focused on fast customer acquisition, to gain scale and to take advantage of its monopoly in several rural areas. Important for this strategy is the fact that only c. 31% of the Mozambican population lives in urban areas (source: United Nations).

Movitel focused its initial investments in rural areas and in fast customer acquisition

Movitel is said to have set its prices at around 10% below the market average and at the end of 2012 it already had 1.4 million subscribers. According to some news flow, Movitel's success is not only explained by previously unconnected customers, but also by customers switching from mcel or Vodacom to take advantage of Movitel's better coverage. This strategy has been praised by several entities due to its positive impact in the community and Movitel won several international awards: (1) Africom's "Rural Telecoms Award" in 2012; (2) Frost & Sullivan Award for Competitive Strategy Leadership in 2013; and (3) Mobile Innovation Award's "Judges' Award", in 2014.

Movitel's strategy has been praised by several entities and won several international awards

By mid-2014 Movitel had 2,800 base stations and its optical fiber backbone had around 25,000 km. Movitel's aggressiveness is visible on its door-to-door sales strategy and, according to local sources, it currently dominates certain rural areas with c. 80% of market share. Also according to press reports, Movitel signed an agreement with "Electricidade de Moçambique" (EDM, "Electricity of Mozambique"), the national power company, to have access to the rights of way of EDM power lines. Such deal would facilitate and make possible a faster network expansion.

Movitel has 2,800 base stations and an optical fiber backbone of 25,000 km

We believe that Movitel should focus on assuring the current customers' loyalty and gradually shift its commercial aggressiveness to urban areas. Hence, Movitel would increase its customer base and acquire higher ARPU clients, by leveraging on its competitive pricing, coverage and rural market share. Movitel ended 2013 with c. 2.5 million subscribers.

Movitel should shift its focus to urban areas

INTERNET SERVICE PROVIDERS

According to the INCM, there are 27 data service and Internet Service Providers (ISPs) licensed in Mozambique. However, not all licensed operators are currently active and it is unclear how many of them are currently active. Of the active ISPs, the majority is based in Maputo and their offers are mostly directed towards the corporate segment.

Most ISPs are based in Maputo and focused on the corporate segment

Countries like Mozambique with a weak fixed infrastructure have very favorable conditions for the business model of ISPs to succeed. Through the usage of wireless technologies (like WiMax, VSAT, CDMA, etc) these providers position themselves as substitutes of the fixed network in the areas outside its coverage.

Mozambique has very favorable conditions for the ISPs business models

With the success of over-the-top (OTT) applications data providers have the chance to be almost perfect substitutes of fixed operators by offering the same services. Examples of OTT successful applications goes from Voice over IP (VoIP) applications like Skype to simple messaging applications like WhatsApp or Viber and not forgetting the numerous open source applications available. The telecommunications future seems to be about OTT applications, which creates a very interesting opportunity for data providers.

OTT applications allow data providers to be almost perfect substitutes of the fixed operator

In Mozambique two data operators stand out: Teledata and Intra.

Teledata is currently fully owned by TDM, after Portugal Telecom sold its 50% stake to TDM in 2010 for US\$ 174,781. Teledata provides internet through dial-up, ISDN and WiMax. Teledata has dial-up points of presence (POP) in all provinces, an ISDN POP in Maputo and WiMax coverage in Maputo, Matola, Beira, Nampula and Nacala. Teledata also provides VSAT connections, leased lines and data services like webhosting, web design, domain registration and other data related services.

Teledata provides Internet through dial-up, ISDN and WiMax

KWIKNET (TELEDATA) WIMAX PACKAGES

	Price with antenna		Price without antenna		Installation	Bandwidth (kbps) (download / upload)	Traffic (GB)
	(MZM)	(US\$)	(MZM)	(US\$)			
Standard 128	850.0	27.4	500.0	16.1	1,340.0	128 / 64	5
Standard 256	1,370.0	44.2	1,020.0	32.9	1,340.0	256 / 128	11
Standard 512	1,920.0	62.0	1,570.0	50.7	1,340.0	512 / 256	17
Standard 1024	2,550.0	82.3	2,200.0	71.0	1,340.0	1024 / 512	28
Standard 2048	3,920.0	126.5	3,570.0	115.2	1,340.0	2048 / 1024	42

Source: Teledata website.

Intra, one of the main ISP in Mozambique, was founded in 2001 and was one of the first wireless ISPs in the country. In 2009 the South African companies Dimension Data and Convergence Wireless Networks acquired a 68.5% stake in Intra, 38.5% and 30.0% respectively. Intra is since then managed by Dimension Data's subsidiary Internet Solutions, a Pan-African telecoms service provider.

Intra is managed by the Pan-African telecom provider Internet Solutions

The changes in Intra's shareholding structure allowed it to expand its coverage beyond Maputo and to connect to the Seacom African cable system. From Internet Solutions' standpoint, the investment in Intra allowed it to expand its footprint to Mozambique that is an excellent base from which to deliver services to various landlocked East African countries and leverage its investment in the Seacom cable. The brand Internet Solutions is now used for the corporate segment, which is the company's main focus, while the brand Intra is used for the personal consumer segment.

After being acquired the company expanded its coverage in Mozambique and connected to the Seacom African cable system

Internet Solutions has been awarded by PMR.Africa, in 2014 for the fourth consecutive year, the Diamond Arrow for being the best ISP in the business category in Mozambique. According to Internet Solutions, the main reason for their success is the fact that their network is deployed and managed by their own teams, their service is totally transparent and the network's redundancy and reliability.

Internet Solutions has been awarded the best ISP in the business category in Mozambique four years in a row

PAY-TV

The Pay-TV market in Mozambique is disputed by four players: (1) Digital Satellite Television (DStv); (2) TV Cabo Moçambique; (3) Zap; and (4) StarTimes. However, there is few information about the Pay-TV market and operators' KPIs and financials.

According to Mozambique's Instituto Nacional de Estatística (INE), in 2002/3 just 6.3% of the households had a TV set. However, this figure should have grown in the last few years and, according to local sources, nowadays should stand at c. 15% and is expected to reach 30% to 35% by 2020. The Mozambican Pay-TV market seems to have an enormous potential due to the expected growth of TV sets penetration and, despite the existence of 12 free to air channels (FTA), the strong demand for international content that is only available through Pay-TV.

DStv was the first Pay-TV operator to enter Mozambique in 1995. DStv is a product of the South African company Multichoice, fully owned by Naspers. DStv is the biggest Pay-TV operator in Sub-Saharan Africa, having a big array of channels, some of them produced in Africa and dedicated to African content. Moreover, DStv has also the exclusive broadcasting rights of important sports content like the UEFA Champions League, the Premier League and the FA Cup through Multichoice's channel Super Sport. DStv is distributed through Direct-To-Home (DTH), covering the whole country.

TV Cabo Moçambique started deploying its infrastructure in 1998 and started operations in 2000, being the first and only cable TV operator in the country. TV Cabo is a joint-venture between TDM and the Portuguese company Visabeira, each owning a 50% stake. TV Cabo makes uses of TDM's backbone, but it deploys and owns the remaining infrastructure, the last mile. Currently uses a Hybrid Fibre-Coaxial (HFC) architecture, but it should start migrating to Fiber to the Home (FTTH) in a selective way in the short term. Besides other technological advantages, the absence of active elements that need to be connected to the power grid is probably one of the main reasons behind the migration. TV Cabo is currently a double-play operator providing TV and broadband.

Zap arrived in Mozambique in the beginning of 2011, operating through DTH. Zap is a joint-venture between the Angolan businesswoman Mrs. Isabel dos Santo, with a 70% stake, and the Portuguese telecommunications operator NOS, with the remaining 30%. Zap's offer is characterized by a strong presence of Portuguese and Portuguese-speaking content. Moreover, Zap has the exclusive distribution rights of Sport TV Africa, which has the exclusive broadcasting rights of the Portuguese football league and cup in Africa. According to NOS' 2Q14 report, the company has eight own stores in Mozambique and during the first semester Zap, including Angola, had revenues of US\$ 130 million. According to company statements and local sources, we believe that Mozambique should weigh no more than 10% of Zap's results.

StarTimes started its operations in April 2011, through terrestrial digital video broadcasting (DVB). StarTimes Mozambique is part of the Chinese multinational StartTimes International, which owns an 85% stake while the remaining 15% are held by the Mozambican company Focus 21. StarTimes International, founded in 1988, is headquartered in Beijing and started to expand to Africa in 2007. According to the company's website, they are currently present in 12 African countries with over 4 million subscribers. In Mozambique, StarTimes is seen as an entry level Pay-TV solution, with an aggressive pricing but a less interesting content offer.

In the Pay-TV segment, competition is made around pricing and content. TV Cabo due to its service characteristics, smaller geographic footprint and the capacity to bundle broadband and TV, has always tried to differentiate itself from the remaining operators. TV Cabo prefers to be seen as a premium Pay-TV operator and its marketing is centered in its double play offers. DStv and Zap's channel packages are available through TV Cabo, thus content is not a differentiating factor. This also indicates that DStv and Zap do not see TV Cabo as a direct competitor.

Regarding price, StarTimes is the most aggressive operator, with prices starting at MZM 300 (US\$ 9.7). In the case of DStv and Zap, we believe that price is not what drives subscribers' choice. TV Cabo's "only TV" packages have very similar prices to DStv and Zap.

TV sets penetration in Mozambique should stand around 15% nowadays and is expected to reach 30% to 35% in 2020

DStv, the biggest Pay-TV operator in Sub-Saharan Africa, is present in Mozambique since 1995 through DTH

TV Cabo Moçambique is the only cable operator in the country, providing TV and Broadband

Zap is characterized by a strong presence of Portuguese and Portuguese speaking content

StarTimes is the only DVB platform in Mozambique, being considered a more entry level product

Competition is done mostly around pricing and content

In terms of pricing StarTimes is the most aggressive

PAY-TV PACKAGES				
Operator	Package	# Channels	Price (MZM)	Price (US\$)
TV Cabo	Base	50	1,000	32.3
TV Cabo	DStv Grande	65	1,000	32.3
TV Cabo	DStv Bué	100	2,250	72.6
TV Cabo	DStv Premium	105	2,750	88.8
TV Cabo	Zap Mini	55	500	16.1
TV Cabo	Zap Max	104	1,000	32.3
TV Cabo	Zap Premium	139	2,000	64.6
DStv	Fácil	30	325	10.5
DStv	Mini	46	992	32.0
DStv	BuéMais	72	2,208	71.3
DStv	Premium	86	2,656	85.7
StarTimes	Base	12	300	9.7
StarTimes	Completo	32	900	29.1
Zap	Mini	35	500	16.1
Zap	Max	80	1,000	32.3
Zap	Premium	100	2,000	64.6

Source: Company websites.

Regarding content, the main battle is between DStv's African content versus Zap's Portuguese-spoken content. Given the size of the South African and Portuguese expat community in Mozambique, this is one of the most important determinant characteristics. Moreover, there is also a considerable battle around sports content. In this area, DStv has the upper hand as it broadcasts the most important European football leagues and major competitions, like the UEFA Champions League. On the other hand, Zap has the exclusive transmission rights over the Portuguese football league and cup, which are much appreciated by the Portuguese community and by Mozambicans as well.

DStv and Zap competition is mostly done around content's origin and sports content

TV Cabo uses its capacity to deliver Pay-TV and Broadband to position itself as a premium operator and focuses its marketing in its Double Play bundles. We believe that in the short term TV Cabo may start to offer voice, becoming a Triple-Play operator, to be more competitive. Moreover, it represents an opportunity to monetize the existing infrastructure, given that it is not technically complex and would not require a significant investment to start providing voice service. On the other hand, TV Cabo would become a perfect substitute of TDM, one of its main shareholders, in the areas where both are present.

TV Cabo positions itself as a premium operator and focus its market in its Double Play bundles

TV CABO DOUBLE PLAY BUNDLES					
Package	TV Package	# Channels	Bandwidth	Price (MZM)	Price (US\$)
Base 512	Base	47	512 Kbps	1,300	42.0
Base 1	Base	47	1 Mbps	1,600	51.6
Max 1	Zap Max	99	1 Mbps	2,100	67.8
Max 2	Zap Max	99	2 Mbps	2,400	77.5
Base 4	Base	47	4 Mbps	2,600	83.9
Premium 2	Zap Premium	134	2 Mbps	3,200	103.3
Bué Mais 2	DStv Bué	97	2 Mbps	3,550	114.6
Premium 4	Zap Premium	134	4 Mbps	3,700	119.4
Bué Mais 4	DStv Bué	97	4 Mbps	4,050	130.7

Source: TV Cabo website.

We believe that the Pay-TV market should grow considerably in the next few years as the Mozambican households gain purchasing power. Prices are already relatively low in Mozambique, thus the main battle field should be around content. We believe Zap, due to its shareholding connection with NOS, will always be stronger regarding Portuguese content, while DStv, due to its scale, will always have the upper hand regarding international content, like major sport events. In the long term we believe that a deeper relationship between TV Cabo and TDM should also be considered due to its shareholding relationship and the complementarity of their services and network.

In the future a deeper relationship between TV Cabo and DM should be considered

BROADBAND AND DATA

Mozambique’s indicators regarding connectivity and broadband are among the lowest in the world and the improvement of these indicators should be amongst authorities’ top priorities. According to ITU, in 2013 Mozambique ranked 185th, out of 208, in “percentage of individuals using the Internet”. Connectivity and broadband can have a considerable impact on the socioeconomic development of a country and can be an important tool to close the gap between urban and rural areas.

Mozambique’s indicators regarding connectivity are amongst the lowest in the world

We expect Mozambique to witness a substantial growth of broadband subscribers during the coming years mainly due to two factors. First, demand should increase as the population’s disposable income grows fueled by the country’s economic growth. Second, authorities should also try to make broadband services more affordable and accessible to everyone.

The number of broadband subscribers should grow substantially in the coming years

According to Cisco Visual Networking Index, the Middle East and Africa should be the fastest growing region in the world, in terms of IP traffic, registering a CAGR 2013-2018F of 38%. Business IP traffic is expected to register a CAGR 2013-2018F of 23%, while consumer IP traffic should grow 44% in the same period.

Middle East and Africa should be the fastest growing region in terms of IP traffic

The importance of broadband and data services is quantified in several studies that try to measure its impact in a country’s productivity and GDP. For instance, GSMA estimates that doubling mobile data usage leads to an impact of around 0.51% in GDP and a 10% substitution from 2G to 3G has an impact of 0.15% in GDP. The World Bank estimates that a 10% increase in Broadband connections in developing countries has, on average, a positive impact of 1.3% in economic growth. The impact in GDP comes not only from the supply side, but also from productivity gains and social inclusion.

Broadband can have a considerable impact in a country’s socioeconomic development

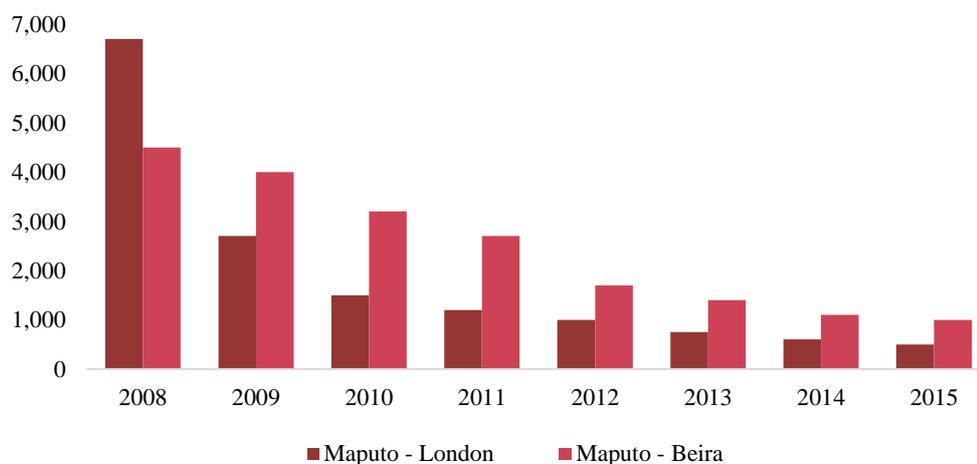
Broadband is key to make information exchange easier, which potentiates entrepreneurship and innovation. It is also one of the most effective ways to close the gap between urban and rural areas and to increase population access to government services easier.

Broadband is one of the most effective ways to close the gap between urban and rural areas

One of the key points that Mozambican authorities must address is the affordability of broadband and data services. One of the reasons why broadband is so expensive in Mozambique has to do with the high cost of domestic and international links. Recently, in April 2014 in the AITEC Southern African ICT summit, Mr. Hermann Woithe, Internet Solutions’ CEO, made a presentation about “Rural connectivity” where it identified cost as the biggest hindrance to rural connectivity. In its presentation, Mr. Woithe has shown the positive impact of Seacom in the price of international bandwidth as well as the impact of Movitel’s in domestic bandwidth prices. From the presentation we see that currently it is much cheaper to have a 1 Mbps link between Maputo and London than between Maputo and Beira.

It is cheaper to have a 1 Mbps link between Maputo and London, than between Maputo and Beira

INTERNATIONAL AND DOMESTIC CONNECTION COST PER MBPS (US\$)



Source: Internet Solutions Mozambique.

The evolution of the connectivity costs per Mbps in Mozambique is characterized by two events. First, the Seacom submarine cable went live in 2009 connecting Mozambique to South Africa, Kenya, Tanzania and Uganda. This event led to a price reduction of around 60% against the previous year. Second, Movitel entered the Mozambican market in 2012 and, due to its 12,500km fiber backbone, caused prices to drop by almost 40%.

According to Telegeography, the median monthly price of a 10 Mbps link between London and New York is around US\$ 652. While the median price of a link with the same characteristics between Los Angeles and Tokyo is c. US\$ 1,863. These figures compare with around US\$ 500 for a 1 Mbps link between Maputo and London. We believe the main reason behind the high prices is the limited competition. Currently there are only two submarines cables with landing points in Mozambique: (1) The Seacom, a 17,000 km route that links South Africa to Mumbai in India and Marseille and London via Kenya, Tanzania, Mozambique and Madagascar, which went live in 2009 with a capacity of 1.28 Tbps; and (2) The EASSy, a 10,000 km submarine cable that links South Africa with Sudan via landing points in Mozambique, Madagascar, the Comoros, Tanzania, Kenya, Somalia and Djibouti, which went live in 2010 with a capacity of 10 Tbps.

The main reason behind the high connectivity prices is the lack of competition

Unlike what would be expected, the cost per Mbps is higher for domestic links than it is for international links. Despite the existence of three backbones in the country and the decreasing prices, a domestic link continues to be more expensive than a link between London and Maputo. Operators tend to protect their businesses and are reluctant to open their networks to competition, alternative operators or ISPs, which explains the high cost of a link between Maputo and Beira. We believe that this is an issue where the regulator may have to step in order to create a more competitive environment.

The regulator should step in regarding the cost of domestic links

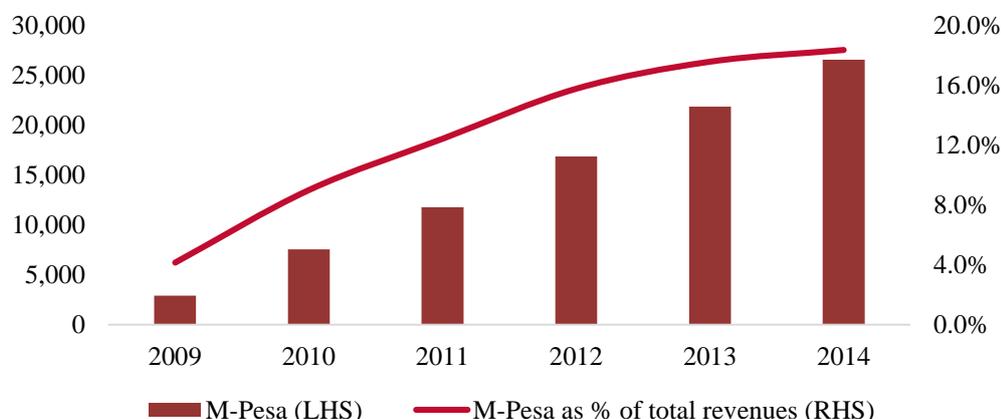
Broadband and data services represent not only an incredible opportunity for the telecommunications sector, but are also a powerful tool to promote economic development. In Mozambique there is a considerable gap between the number of people with a cell phone and the number of people with access to some basic services, like financial services, healthcare or education. This represents an opportunity also for other ICT players, besides operators, that can take part in the development of solutions that can bring further development to rural regions and to the most disadvantaged population.

Broadband and data services can play an important role in the development of rural regions

It is estimated that only about 20% of the Mozambican population has a bank account and in some rural regions the access to financial services is not possible at all or extremely difficult. Given that around 48% of the population has a mobile phone and this figure is expected to increase considerably in the coming years, this represents a very interesting opportunity for mobile money (mMoney) and other mobile financial services. Through mMoney it is possible to do cash transactions, such as payments or transfers in a digital way, which is more convenient and more secure, pushing greater financial inclusion. Probably the best example of the opportunity these kind of services can represent for the operators is M-Pesa. This service was introduced by Safaricom in Kenya in 2007, is the best known mMoney service in Africa and accounts for 18% of Safaricom's total revenues.

Mozambique is a very interesting opportunity for mMoney and other mobile financial services

SAFARICOM'S M-PESA REVENUES (KSH MILLIONS)



Source: Safaricom annual reports and Eaglestone securities.

In Mozambique there are two mMoney services available: (1) mKesh, provided by mcel; and (2) M-Pesa, through Vodacom. Both services try to provide a suite of financial services and to target those that do not have a bank account. In general both services are similar, allowing to deposit and withdraw money, transfer money to other users, top-up the cell phone and pay some bills. However, neither Vodacom nor mcel provide KPIs about their mMoney services in Mozambique.

There are two mMoney services in Mozambique: mKesh and M-Pesa

Data services can also have a very important role in education, healthcare and in the agricultural sector, just to name a few. In education, mobile applications make the distribution of educational content easier, may be used for teacher training or even to address shortage of teachers in rural regions. In healthcare, several applications allow to collect information about patients in remote areas, allowing real-time diagnosis, surveillance and data collection. In the agricultural sector, several applications now provide an easy access to information about production, plagues, demand and product's market prices.

Data services may have an important role in the development of several sector

REGULATION

Regulation is one of the issues that the authorities should tackle in the short term. To increase the affordability and availability of telecommunication services are the sector's main challenges and regulation can play a very important role to achieve these objectives. In our opinion, for the ICT sector to develop it is necessary to have a strong and independent regulator. Hence, it is also fundamental that the government provides the necessary powers and means to enforce the fulfillment of its rules and decisions.

The government must provide the necessary powers and means to the regulator

One important first step would be, in our opinion, the approval of the new telecommunications act. The document tries to address some of the challenges that the sector is currently facing and to adapt the 2004 law to the sector's technological development. The most relevant topics addressed in the new law are:

- Unified licensing;
- Competition;
- Network interoperability and interconnection;
- Infrastructure investment and sharing;
- Quality of service (QoS).

The new law identifies some of the sector's main challenges, but it will not solve them alone. Several points of the new law refer to specific regulation still to be written. It is crucial to have the specific regulation ready on time to avoid loopholes in the new law or references to outdated regulation. The new telecommunications act has been under public consultation since May 2013 and at the time the expectation was that it would be approved before year end. Nevertheless, expectations now are that the law may be approved in the first semester of 2015.

The expectation is that the new telecommunications act will be approved during the first semester of 2015

It is also necessary to increase INCM's powers and means at its disposal. It is not clear if INCM has the means to work on all specific regulation that must be elaborated and updated. Moreover, the market feeling is that independently of the new regulation, INCM does not have the means to supervise if all the market players are complying with the new law and regulation.

It's necessary to increase INCM's means and powers

There are a few topics that must be addressed in the specific regulation that seem, in our opinion, fundamental for the sector's development. Regarding the unified licensing, we believe that its main objective is to boost competition in the fixed network since the mobile segment already has a competitive environment. Additionally, it is important to recall that both TDM and mcel are owned by the Mozambican government. Given this, with unified licensing one of the most logical scenarios may be the merger of the two companies.

With unified licensing the merger of mcel and TDM is a logical scenario

If authorities really want to promote competition in the fixed network, more than a unified licensing scheme is needed. If the only change is the legal framework of the operating licenses, few things will change since deploying a fixed network demands a huge investment. In the best case scenario, current mobile operators would take advantage of the unified license to try to address the corporate segment selectively. To promote competition in the fixed network, we believe that authorities must create regulation regarding network sharing obligations, like local-loop unbundling (LLU) and stipulate a fair price for the use of the incumbent's network. However, it is important that the fair price stimulates competition but also allows an appropriate return on investment.

Authorities should create regulation regarding network sharing obligations and prices

Also related with infrastructure, we believe that further regulation about its deployment is urgently needed. It would be in the best interest of the country and the sector that authorities create legislation in order that all new construction is prepared to receive telecommunication infrastructures. This would allow an easier, faster and cheaper deployment of telecommunication services. New legislation should also contemplate transport infrastructures, like highways and railways, given the role that these infrastructures can play in connecting the country by being equipped with telecommunication ducts. The access to existing ducts must also be regulated to allow access to competitors' ducts, at a fair price stipulated by the regulator. These measures would allow a faster and quicker deployment of telecommunication infrastructures, making easier to expand coverage and would avoid wasting resources in duplicated investments. This would mean less cost for the operators, hence for the subscribers.

Regulation about infrastructure deployment and sharing would allow quicker roll outs and avoid duplicated investments

At last, under the scope of the regulator is spectrum management, which is especially relevant now that Mozambique is starting the migration from analogue to digital broadcasting. The migration to digital broadcasting allows a better usage of the radio spectrum currently occupied by analogue transmissions, as each analogue channel uses as much spectrum as it is needed for six digital channels. Besides, digital broadcasting has better quality and allows to implement extra features like video guide. The migration to digital will free up spectrum currently in use by the analogue transmissions, the “digital dividend”, that can be used for other purposes, namely to mobile broadband.

The migration to digital broadcasting will allow to free up spectrum that can be used to mobile broadband

The migration process is being conducted by StarTimes Software Technology, a subsidiary of StarTimes International. After several delays, the contract for the migration has been awarded in April 2014. Despite the delays, authorities claim that digital broadcasting will be available to the whole country by June 2015, the deadline set by ITU. However, it is still unknown when the analogue switch off will take place. It is important to bear in mind that it is necessary to inform the population about the migration process since that after the switch off it will be necessary to have a digital TV or a digital decoder to watch TV.

Authorities state that digital broadcasting will be online by June 2015

The analogue switch off process is complex, lengthy and can also be extremely bureaucratic given the necessary cooperation and coordination between several players and entities in the region. Moreover, the process should be monitored very closely by the regulator to assure that the migration is a smooth process, that the service coverage is adequate and, in the end of the process, that the whole population is ready for the digital broadcasting.

The analogue switch off must be monitored very closely by the regulator

According to some news flow, the authorities will license the digital dividend (the 700MHz and 800MHz band) to mobile operators that should allocate it to mobile broadband. In fact, during 2013 INCM announced an auction of rights of use of frequencies in the 800MHz band. However, none of the operators has shown interest in the auction due to: (1) the lack of visibility about when those frequencies would be available; and (2) the operators think it is too soon to invest in frequencies for 4G, when not even 3G is available in the whole country nor its usage consolidated.

Authorities will allocate the digital dividend to mobile broadband

The Mozambican regulator seems to be on the right track and to know which topics must be addressed to promote the sector’s development. To increase competition in the fixed segment, expand the coverage and affordability of telecommunication services, as well as to assure minimum quality levels, are the regulator’s top concerns. However, despite the regulator’s good intentions we believe that INCM lacks the necessary means to supervise effectively the sector and monitor the fulfilment of the sector’s regulation, its decisions and the analogue switch off.

The regulator seems to be in the right track but should need more means to supervise the sector

GOING WITH THE FLOW

Mozambique is a fast growing economy with several opportunities ahead and the telecommunications sector is no exception. The development of telecommunications networks and services should be one of the country's priorities given its importance to support the country's growth and its socioeconomic development. However there are also some challenges ahead.

The development of telecommunications networks and services should be one of the country's priorities

Mozambique has amongst the weakest telecommunications indicators in the region and in the world, ranking 137th, out of 148, in the World Economic Forum's Network Readiness Index. These indicators reflect the country's poor infrastructures and its economic development. Today the main challenges that the sector faces are to increase: (1) service coverage; (2) service affordability; and (3) competition in the wireline.

The sector's main challenges are to increase: (1) service coverage; (2) service affordability; and (3) competition in the wireline.

We believe that the authorities' role is crucial to tackle the sector's challenges and is key to achieve the sector's objectives. One of the first steps should be the approval of the new telecommunications act that seems to deal with some of the sector's key issues, but awaiting for approval since 2013. Specific regulation on certain issues, like infrastructure deployment and sharing, represents an effective way to boost coverage and expansion and to decrease costs and investment needs.

The approval of the new telecommunications act should be a priority

Despite the authorities' intentions to boost competition in the fixed segment, we believe that further measures are necessary. The unified licensing regime will not bring major changes as the biggest reason behind the lack of interest to invest in the fixed segment is only one: the necessary investment. We believe that a measure that could attract mobile operators or some new operator to address the fixed segment would be to create sharing obligations. The unified license regime makes a merger between TDM and mcel a logical scenario and would allow to improve their cost structure.

Creating sharing obligations may attract new operators to the fixed segment

On the mobile segment, the entrance of the third operator gave the sector an important boost. Movitel created a very competitive environment that made prices come down and increased the country's coverage considerably. We do not expect to see more entrants in Mozambique, as three operators seems the right figure for a country with 23.4 million inhabitants. The number of subscribers should register a CAGR 2013-2017F of 10.5%, implying 6 million net additions.

The mobile segment should register 6 million net additions in the next four years

We believe that the sector's biggest growth driver will be the country's economic growth. As the population's purchasing power increases we believe that the demand for telecommunication services will increase considerably. Mobile ARPU in Mozambique, using Vodacom as a proxy, stands at US\$ 5.5, which is a relatively low level. However, when we calculate its weight on GNI per capita, standing at 11.2%, we see that telecommunication prices are still relatively expensive for the majority of the Mozambican population.

The country's economic growth will be the sector's biggest driver

All in all, we expect the telecommunications sector's growth to accelerate in the coming years backed by the country's positive economic prospects and favorable regulation. Regulation is crucial to maximize the sector's potential by decreasing costs and avoiding duplicated investments, which in turn benefits final consumers and allows a greater proportion of the population to benefit from the sector's development. Moreover, we believe the sector will become more strategic for the authorities given its role in the country's socioeconomic development and importance to close the gap between urban and rural populations.

The sector will become more strategic for the authorities given its socioeconomic importance

This document has been prepared by Eaglestone Advisory Limited which is authorised and regulated by the Financial Conduct Authority of the United Kingdom and its affiliates ("Eaglestone"), and is provided for information purposes only.

The information and opinions in this document are published for the assistance of the recipients, are for information purposes only, and have been compiled by Eaglestone in good faith using sources of public information considered reliable. Although all reasonable care has been taken to ensure that the information contained herein is not untrue or misleading we make no representation regarding its accuracy or completeness, it should not be relied upon as authoritative or definitive, and should not be taken into account in the exercise of judgments by any recipient. Accordingly, with the exception of information about Eaglestone, Eaglestone makes no representation as to the accuracy or completeness of such information.

This document does not have regard to specific investment objectives, financial situation and the particular needs of any specific recipient. Recipients should seek financial advice regarding the appropriateness of investment strategies discussed or recommended in this document and should understand that the statements regarding future prospects may not be realised. Unless otherwise stated, all views (including estimates, forecasts, assumptions or perspectives) herein contained are solely expression Eaglestone's research department.

This document must not be considered as an offer to sell or a solicitation to buy any investment instrument and distribution of this document does not oblige Eaglestone to enter into any transaction. Nothing in this document constitutes investment, legal, tax or accounting advice. The opinions expressed herein reflect Eaglestone's point of view as of the date of its publication and may be subject to change without prior notice

This document is intended for is made to and directed at (i) existing clients of Eaglestone and/or (ii) persons who would be classified as a professional client or eligible counterparty under the FCA Handbook of Rules and Guidance if taken on as clients by Eaglestone and/or (iii) persons who would come within Article 19 (investment professionals) or Article 49 (high net worth companies, trusts and associations) of the Financial Services and Markets Act 2000 (Financial Promotions) Order 2001 and/or

(iv) persons to whom this communication could otherwise be lawfully made in the United Kingdom or by respective home jurisdictions regulators for non UK countries. None of the investments or investment services mentioned or described herein are available to "private customers" as defined by the rules of the Financial Conduct Authority ("FCA"). It should not be disclosed to retail clients (or equivalent) and should not be distributed to others or replicated without the consent of Eaglestone. Eaglestone name and the eagle logo are registered trademarks.

Additional information is available upon request.



AMSTERDAM - Herengracht 450-454 1017 CA - T: +31 20 240 31 60

CAPE TOWN - 22 Kildare Road Newlands 7700 - T: +27 21 674 0304

LISBON - Av. da Liberdade, 131, 6th Floor - T: +351 21 121 44 00

LONDON - 28 Dover Street - T: +44 20 7038 6200

LUANDA - Rua Marechal Bros Tito n° 35/37 - 9th Floor B- Kinaxixi, Ingombotas - T: +244 222 441 362

MAPUTO - Rua dos Desportistas Edifício JAT 5, 4th Floor - T: +258 82 055 17 04

Disclosures

Eaglestone was founded in December 2011 with the aim to be a committed partner for the development of businesses located primarily in Sub-Saharan Africa and to support the development of renewable energy projects on a global basis.

The company has three business activities - financial advisory services, asset management and brokerage - and currently has offices in Amsterdam, Cape Town London, Lisbon, Luanda and Maputo

Eaglestone is committed to operating and behaving according to the highest standards of corporate governance. Its subsidiary in the United Kingdom is authorized and regulated by the Financial Services Authority. The first of its six Luxembourg based funds has received approval from la Commission de Surveillance du Secteur Financier.

Eaglestone operates with a clear vision and mission to act on behalf of and in the best interests of all its stakeholders, whether they are investors, employees or users of its services.

EAGLESTONE SECURITIES

Business Intelligence

Caroline Fernandes Ferreira

(+351) 211 214 430

caroline.ferreira@eaglestone.eu

Research

Tiago Bossa Dionísio

(+351) 211 214 431

tiago.dionisio@eaglestone.eu

Guido Varatojo dos Santos

(+351) 211 214 468

guido.santos@eaglestone.eu