

Published by:

Creamer Media's

RESEARCH CHANNEL

A F R I C A

TELECOMS

DECEMBER 2018

Sponsored by:

ZEST
WEG Group





A review of South Africa's **TELECOMS** SECTOR

Picture by Creamer Media

The material contained in this report was compiled by Chanel de Bruyn and the Research Unit of Creamer Media (Pty) Ltd, based in Johannesburg.

The information in this report is correct as of December 4, 2018.

Report edited by Sheila Barradas, David Shepherd and Ria Theron.

Ordering information

To subscribe to *Research Channel Africa* or purchase this report contact:

Creamer Media (Pty) Ltd

Tel +27 11 622 3744

Email subscriptions@creamermmedia.co.za

Cover picture by Creamer Media

Sponsored by:

ZEST
WEG Group





Table of Contents

○ List of abbreviations and acronyms	4
○ Key developments	5
○ Market Overview	6
○ Telecommunications companies	8
• Cell C	8
• MTN	10
• Rain	14
• Telkom	15
• Vodacom	16
○ Industry trends and challenges	19
• Mobile broadband	20
• Spectrum crunch	24
• 5G	27
• Fixed-line broadband	28
○ Policy and regulatory developments	30
• IMT Roadmap	30
• National Integrated ICT Policy White Paper	30
• ICT sector code	31
• Call termination regulations	31
• Number portability review	32
• End-user and subscriber service charter regulations	32
• Priority Markets	33
○ South Africa Connect	34
○ International connectivity	35
○ Prospects	37
○ Main sources	39





List of abbreviations and acronyms

2G	second-generation
3G	third-generation
4G	fourth-generation
5G	fifth-generation
ADSL	asymmetric digital subscriber line
BDM	broadcasting digital migration
Ebitda	earnings before interest, taxes, depreciation and amortisation
ECA	Electronic Communications Act
capex	capital expenditure
FTTH	fibre-to-the-home
Icasa	Independent Communications Authority of South Africa
ICT	information and communication technology
IMT	International Mobile Telecommunications
IoT	Internet of Things
IPO	initial public offering
ISP	Internet services provider
ITU	International Telecommunications Union
LTE	long-term evolution
LTE-A	long-term evolution-advanced
MoMo	MTN Mobile Money
MVNO	mobile virtual network operator
OTT	over-the-top
SACS	South Atlantic Cable System
SMEs	small and medium enterprises
SMMEs	small-, medium-sized and microenterprises
WACS	West African Cable System





Key developments

April 2018: The Independent Communications Authority of South Africa publishes the final End-user and Subscriber Service Charter Regulations, which require licensees to allow consumers to roll over unused data and prevents operators from charging consumers out-of-bundle data rates without their prior consent.

May 2018: South African mobile company Cell C enters into multibillion-rand long-term roaming agreement with multinational mobile telecommunications company MTN for the provision of third- and fourth-generation coverage in areas where Cell C does not wish to self-build infrastructure.

May 2018: The US says it plans to re-impose sanctions against Iran, a move that could prevent MTN Group from repatriating billions of rands of dividends and loans from that country.

June 2018: South Africa's Directorate for Priority Crime Investigation approaches MTN and its legal counsel to obtain documents connected to a lawsuit initiated by Iranian company Turkcell Iletisim Hizmetleri, regarding allegations that MTN had engaged in bribery and corruption to secure a telecommunications licence in Iran in 2004.

June 2018: Stellenbosch-based Rain, which offers data-only telecommunications packages, is launched.

June 2018: African mobile communications company Vodacom Group announces a new R17.50-billion black economic-empowerment ownership transaction.

June 2018: Submarine cable operator Seacom expands the capacity of its submarine cable system to 1.5 Tb/s.

July 2018: MTN agrees to sell its MTN Cyprus business to Monaco Telecom.

August 2018: The Nigerian central bank alleges that MTN Group subsidiary MTN Nigeria sent \$8.10-billion of profits out of the country illegally.

September 2018: MTN Nigeria threatens to cancel its planned listing on the Nigeria Stock Exchange amid a dispute with the Nigerian central bank.

September 2018: South African integrated communications company Telkom denies it is in talks with MTN regarding a potential merger.

September 2018: MTN Group subsidiary MTN Ghana successfully lists on the Ghana Stock Exchange.

September 2018: The Electronic Communications Act (ECA) Amendment Bill, which covers the proposed establishment of

a national wholesale open access network in South Africa, is published in the Government Gazette.

September 2018: The 40 Tb/s South Atlantic Cable System, which connects Angola to Brazil, is opened to commercial traffic.

October 2018: South Africa's Competition Commission holds public hearings as part of its market inquiry into data services, which is aimed at determining if the country's data costs are indeed high and what factors may be contributing to those costs.

October 2018: South Africa's final 2018 Call Termination Regulations, which are an amendment to the 2014 Call Termination Regulations and provide for revised wholesale voice call termination rates, come into effect.

October 2018: News agency Bloomberg reports that South Africa's Telkom is in talks to enter into a joint venture with Zimbabwe State-owned telecommunications operator NetOne.

October 2018: The South African government announces that the long-delayed auctioning of fourth-generation spectrum will finally get under way in April 2019, and will be followed by the auctioning of spectrum for fifth-generation licences in 2020.

November 2018: The Independent Communications Authority of South Africa (Icasa) publishes its draft International Mobile Telecommunications (IMT) Roadmap, which sets out Icasa's findings regarding the radio frequency spectrum required for IMT for 2020 and beyond.

November 2018: The Independent Communications Authority of South Africa reaches a settlement with mobile operators Cell C and MTN South Africa to only start implementation of the End-User and Subscriber Service Charter regulations at the end of February 2019.

November 2018: The Independent Communications Authority of South Africa says it will conduct a market inquiry into mobile broadband services.

November 2018: MTN Group joins the Internet of Things (IoT) World Alliance, which aims to simplify and promote the adoption of IoT communications across the world. MTN is the first African telecommunications company to join the alliance.

November 2018: Telkom starts to implement the End-user Subscriber Service Charter Regulations – the first telecommunications company in South Africa to do so – by allowing for the rollover of unused data.





Market Overview

Internet use globally continues to grow and the number of Internet users has surpassed four-billion, social media firms We Are Social and Hootsuite reported in their 'Digital in 2018' report, published in January 2018. The report highlights that people are spending more time on the Internet and are increasingly accessing the Internet through smart devices; the use of social media is also on the rise, with such platforms mostly accessed from mobile devices.

According to the report, South Africa's Internet penetration was 54% by January 2018, slightly above the global average of 53%, while the number of Internet users had increased by 7% compared with the number of users in January 2017.

South Africans spent about eight hours and 43 minutes a day, on average, on the Internet, of which about three hours and 17 minutes a day, on average, constituted access through mobile devices.

The Independent Communications Authority of South Africa's (Icasa's) third 'State of the ICT Sector' report, published in March 2018, shows that the country's telecommunications industry's revenue increased by 10.20% year-on-year to about R163.99-billion for the 12 months to September 2017 (2016: R148.85-billion). The total telecommunications revenue for the year

comprised R90.74-billion in mobile service revenue (2016: R82.21-billion); R39.40-billion in other revenue (2016: R40.30-billion); R20.43-billion in fixed-line Internet and data revenue (2016: R12.61-billion); and R13.42-billion in fixed-line voice revenue (2016: R13.74-billion).

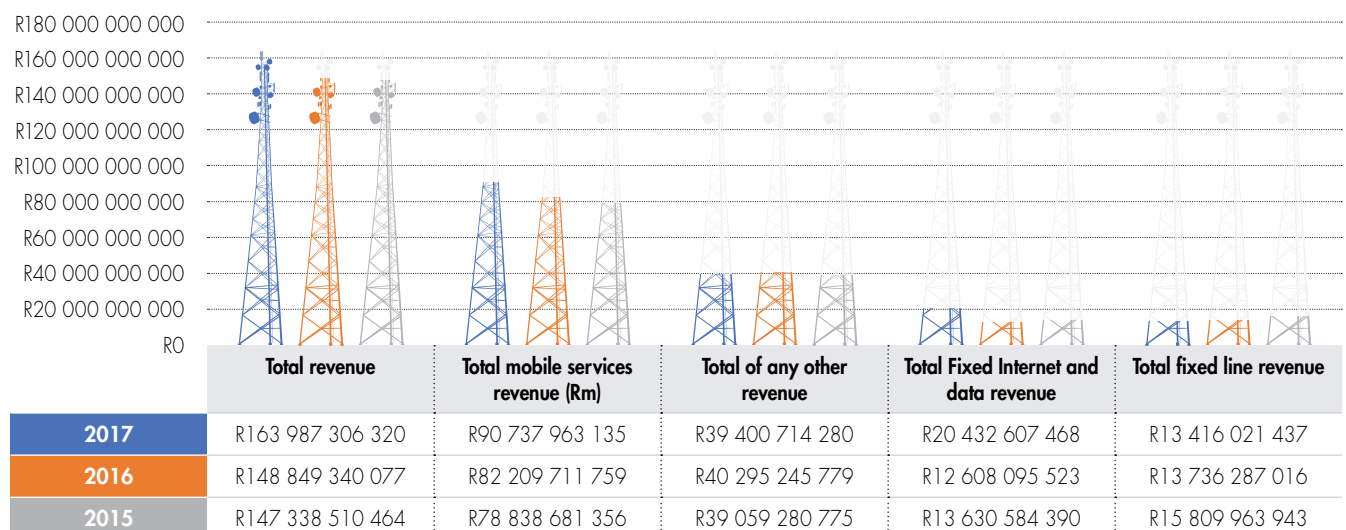
There is growing demand for mobile communications services in South Africa, particularly for more data.

The demand for traditional mobile and fixed-line voice services continues to decline, while consumers are increasing their use of smart devices with more data-intensive applications. To offset lower voice revenues, operators are developing new products and services to attract customers to their networks. New research also shows that operators are starting to embrace and partner with over-the-top service providers they once considered as competition as a means of offering consumers the products and services they want.

Consumers are seeking not only good-quality service and sufficient data speeds but are also calling for operators to decrease the cost of data, which many regard as being too high.

Telecommunications operators, meanwhile, continue to invest in expanding their networks and improving service

Telecommunications revenue, for the 12 months ending September 30 each year



Source: ICASA Electronic Communications Questionnaire

Note: Includes revenues from: telecommunication services earned from retail fixed-telephone, mobile-cellular, internet and data services offered by telecommunication operators (network and virtual, including resellers) and interconnection, equipment sales and any other revenue





provision, but their expansion plans are being held back by the lack of additional high-demand spectrum to roll out newer technologies, which they argue is, in turn, preventing them from lowering data costs.

Government is taking steps to lower the cost to communicate in the country, and various entities, including Icasa and the Competition Commission, are undertaking programmes and inquiries to establish ways of lowering costs to the consumer, as well as improve competition in the telecommunications sector and ensure that operators do not take advantage of consumers.

Meanwhile, there is renewed momentum by South Africa's government under the leadership of new President Cyril Ramaphosa to ensure that the required spectrum is made available to operators. Questions, however, remain about the way in which the spectrum will be allocated to operators and how government's proposed wholesale open access network will fit into those plans.

Rural areas often remain underserved in terms of telecommunications services, and government and operators need to seek ways of providing access to broadband in remote and rural areas.



Sponsored by:

ZEST
WEG Group





Telecommunications companies

The South African telecommunications market is dominated by mobile operators Vodacom and MTN. Mobile operator Cell C is much smaller, but is growing its presence, while Telkom, the country's largest fixed-line telecommunications provider, is also offering mobile services. The latest addition to the country's telecommunications sector is Rain, which is focused solely on the provision of data products.

CELL C

	FY 2017	FY 2016	H1 2018	H1 2017
Revenue	R15.70-billion	R14.60-billion	R7.80-billion	R7.40-billion
Ebitda	R7.80-billion	R3.10-billion	R2.40-billion	R2.05-billion
Subscribers	16.30-million	15.30-million	16.30-million	15.70-million
Data customers	12.60-million	12.50-million	12.10-million	12.60-million

Source: Compiled from Cell C interim and full-year financial reports.

FY – full-year; H1 – half-year

Ebitda – earnings before interest, taxes, depreciation and amortisation

Cell C, which launched in 2001, is one of South Africa's smallest mobile operators, but continues to make great strides in increasing its subscriber base.

During 2017, the company underwent a recapitalisation, with JSE-listed Blue Label Telecoms buying a 45% stake in the operator for R5.50-billion and Net1 buying a 15% stake for about R2-billion. Following the transaction, 3C Telecommunications, in which the Employee Believe Trust holds 29.40%, Oger Telecoms 45.60% and broad-based black empowerment group CellSAf 25%, holds a 30% interest in Cell C. The remaining 10% stake is held by Cell C's management and staff.

The recapitalisation was aimed at reducing Cell C's net debt to about R6-billion.

Prior to the recapitalisation, the operator was not obliged to publish its financial results; however, as a subsidiary of a JSE-listed company, it has started to provide more detailed information on its financial performance.

Cell C recorded 6% year-on-year growth in subscriber numbers to 16.30-million for the financial year ended December 31, 2017 (2016: 15.30-million). Revenue increased by 7% year-on-year to R15.72-billion (2016: R14.65-million), with service revenue 12% higher year-

on-year at R13.15-billion (2016: R11.75-million), mainly as a result of higher data sales, with data revenue up 29% year-on-year and data use up 90% year-on-year. Cell C reported in February 2018 that the number of smartphones on its network had increased by 21% year-on-year to 9.20-million devices. By the end of the financial year, data revenue accounted for 40% of service revenue, compared with 34% at the end of the prior financial year.

Earnings before interest, taxes, depreciation and amortisation (Ebitda) increased by 151% year-on-year to R7.79-billion (2016: R3.11-billion), while net profit improved by 660% to R4.11-billion (2016: R541-million).

Further, for the six months to June 30, 2018, Cell C increased its revenue by 5% year-on-year to R7.78-billion (2017: R7.71-billion), with service revenue up 11% year-on-year at R6.86-billion (2017: R6.32-billion). Data revenue increased by 20% year-on-year, while data use increased by 62% year-on-year.

By the end of the interim reporting period, data revenue accounted for 52% of Cell C's mobile revenue, compared with 46% at the end of the prior comparable period.

Ebitda increased by 16% year-on-year to R2.40-billion for the interim period, while Cell C's net loss of R645.15-million was a 33% improvement on the R968-million reported for the first half of 2017.

Blue Label has, meanwhile, come under fire for its investment in Cell C. Business Day reported in August 2018 that Blue Label had indicated that Cell C would require a further R2.80-billion in funding before it would be self-funding. The news article pointed out that shareholders were worried that Cell C's net debt had increased again to R7.30-billion in the six months to June 30, 2018, as it continued investing in its network.

Cell C CEO Jose dos Santos indicated in February 2018, with the release of the company's financial results for the 2017 financial year, that Cell C's network investment had slowed down during the year, as a result of the recapitalisation transaction, but that investment would increase again to ensure that the operator was able to meet infrastructure and capacity needs.

Blue Label had, meanwhile, during its financial year ended May 31, 2018, provided Cell C with R1-billion in funding to be used for capital expenditure.





Blue Label joint CEO Brett Levy defended the investment in Cell C, stating that the required additional investment was lower than what Blue Label had expected. He was quoted by Business Day as stating that Cell C would be self-funded from about the third or fourth quarters of 2019. He also noted that about R1.40-billion of the additional investment required had been raised.

Bloomberg, meanwhile, quoted Dos Santos as saying that the company was considering a potential initial public offering (IPO) by the first quarter of 2020. The August 2018 news article stated that funds raised through the potential IPO would be used for acquisitions, with the operator moving into the media and content, as well as fibre-to-the-home (FTTH) sectors.

Cell C had launched its entertainment platform, called black, during the fourth quarter of 2017. It plans to offer unlimited and uncapped fibre, mobile voice, and data and entertainment services through the platform.

Further, its existing FTTH service, C-Fibre, which was launched in 2016, continues to grow, with connections having increased to 16 425 in the first six months of 2018, compared with 3 733 in the first half of 2017.

Meanwhile, Cell C is working to improve its network coverage and quality, with the operator having entered into a multibillion-rand long-term roaming agreement

with MTN to complement its own network. The agreement, announced in May 2018, will enable MTN to provide third-generation (3G) and fourth-generation (4G) services to Cell C in areas where Cell C has decided not to self-build infrastructure – mainly areas outside of the main metros.

Dos Santos noted in August 2018 that the agreement enables Cell C to meet the needs of customers while allowing for increased investment in those areas where it does want to self-build coverage and capacity.

By August 2018, the company's second-generation (2G) and 3G population coverage reached 99% and 96% respectively. Cell C's roaming agreement with MTN was concluded in November 2018, increasing its 4G coverage to 80%, from the previous 33%.

New CFO

In November 2018, Cell C announced the appointment of Zafar Mahomed to succeed Tyrone Soondarjee as CFO. Soondarjee had resigned in May 2018.

Mohamed was most recently CFO of McDonald's South Africa. Prior to that he was CFO of Ellerines Holdings and FD at Johnson & Johnson and has held various senior positions at Tongaat Hulett.

Source: TechCentral



Picture by Creamer Media





MTN

	FY 2017	FY 2016	H1 2018	H1 2017
Revenue	R132.82-billion	R147.92-billion	R62.78-billion	R64.82-billion
Ebitda	R46.96-billion	R40.75-billion	R22.34-billion	R24.78-billion
Capex	R31.38-billion	R34.92-billion	R11.46-billion	R10.31-billion
Subscribers	217.20-million	240.40-million	223.40-million	217.20-million
Data customers	69-million	*	71.20-million	72-million

Source: Compiled from MTN Group financial results for the year ended December 31, 2017, and interim financial results for the six months ended June 30, 2018

Ebitda – earnings before interest, taxes, depreciation and amortisation

MTN Group was launched in South Africa in 1994 and has since expanded into more than 20 countries across Africa and the Middle East. It manages its operations through five segments – South Africa, Nigeria, the Southern and East Africa and Ghana (Seagha) region, the West and Central Africa (Weca) region, and the Middle East and North Africa (Mena) region.

The Seagha region includes Ghana, Uganda, Zambia, Rwanda, South Sudan, Botswana and Swaziland, while the Weca region covers Cameroon, Côte d'Ivoire, Benin, Congo-Brazzaville, Liberia, Guinea-Conakry and Guinea Bissau. The Mena region includes Iran, Syria, Sudan, Yemen and Afghanistan. It also previously included Cyprus.

Shareholding

South African State-owned pension fund, the Public Investment Corporation increased its interest in MTN Group from about 15% to about 23.60% in November 2018.



Picture by Bloomberg

Source: Reuters

The group has, in recent years, faced many regulatory challenges, particularly in Nigeria, which resulted in the group's posting its first annual financial losses in 20 years for the 2016 financial year.

The group posted a R1.41-billion headline loss for the 2016 financial year after agreeing to pay a \$1.10-billion, or N330-billion, fine to the Nigerian authorities. The fine, which was reduced from \$5.20-billion, was as a result of the group's failure to disconnect unregistered SIM cards. The \$1.10-billion fine reduced MTN's headline earnings for the financial year by R10.50-billion.

The group reported in March 2017 that the 2016 financial year had been its "most challenging year" ever. As part of efforts to turn the business around, MTN launched its Ignite strategy in South Africa and Nigeria during the fourth quarter of 2016. The strategy was aimed at improving the group's financial performance.

The group managed to return to profitability during the 2017 financial year, posting a profit after tax of R4.54-billion, compared with a loss after tax of R3.10-billion in the prior financial year.

Group service revenue in constant currency increased by 7.20% year-on-year on the back of 11.20% year-on-year growth in service revenue in Nigeria and 3.90% year-on-year growth in service revenue in South Africa. While group revenue decreased by 9.90% to R132.31-billion, compared with R147.92-billion in 2016, revenue had increased by 6.80% year-on-year on a constant currency basis.

The group attributed the increase in group revenue to strong growth in data and digital revenues, along with stable voice revenue.

Data revenue increased by 34.20% year-on-year, while digital revenue increased by 14.20% year-on-year as a result of mobile financial services.

MTN Group invested R31.46-billion (2016: R34.92-billion) in capital expenditure (capex) during 2017 for the roll-out of 8 583 third-generation and 8 611 4G co-located sites.

Meanwhile, its subscriber base grew to 217.20-million during 2017.

Its active MTN Mobile Money (MoMo) customers also grew by a further 5.70-million during the year.





Mobile money services



MTN and Vodacom are investing in expanding their mobile money offerings, which enables customers to use mobile networks to transfer money, pay their bills or buy extra airtime, among other features. This is particularly useful for customers who do not have bank accounts. TechCentral reported in April 2018 that MTN had about 21.80-million MoMo customers, while Vodacom's mobile money service M-Pesa had more than 33-million customers by late 2017. The news article quoted GSMA as stating that mobile money services provide mobile operators with a source of direct revenue.

Source: Techcentral

MTN's overall subscriber base increased to 223.40-million by June 30, 2018 – the end of the first half of the group's 2018 financial year. Group service revenue for the interim period increased by 10.20% year-on-year on a constant currency basis, as a result of a 17% year-on-year increase in service revenue by MTN Nigeria; a 27.90% year-on-year increase by MTN Ghana; and a 2.90% year-on-year increase by MTN South Africa.

Data revenue increased by 26.70% year-on-year during the interim period. The group had invested a further R11.46-billion in capex in its network during the period, rolling out a further 3 603 3G and 3 660 4G sites, which contribute to an increase in active data users to 71.20-million.

Regional performance

MTN South Africa, which is the second-biggest mobile operator in South Africa, had 29.50-million subscribers at the end of the 2017 financial year. Revenue increased by 3% year-on-year, as a result of a 3.90% year-on-year increase in service revenue, a 25.80% year-on-year increase in data revenue and a 22.30% year-on-year increase in digital revenue. The company increased its capex investment in the network by 4.40% year-on-year to R11.47-billion.

For the six months to June 30, 2018, MTN South Africa reported a 2.20% increase in subscriber numbers to 30.20-million, compared with the 29.50-million at the end of 2017. Revenue increased to R21.16-billion, with data revenue up by 13.50% to R6-billion. Ebitda increased by

5.70% to R7.45-billion, while capex increased by 12.50% to R3.91-billion.

MTN South Africa also reported in November 2018 that it had achieved 90% long-term evolution/4G coverage after having deployed its 11 000th LTE site in the Eastern Cape. The deployment of LTE in the 900 MHz band has enabled it to expand its coverage in rural areas.

MTN Nigeria, which is Nigeria's biggest mobile operator, lifted its subscriber base to 52.30-million during the year. Revenue increased by 11.40%, with data revenue up by 86.60%, but digital revenue down 3.50% year-on-year. This was despite a 27.20% increase in active MoMo customers to two-million. MTN Nigeria's capex increased by 38.20% year-on-year to R8.95-billion.

Its subscriber base increased by a further 5.60% from December 2017 to 55.20-million by June 30, 2018. Revenue increased to R17.23-billion, with data revenue 63.70% higher at R2.55-billion. Ebitda increased by 31.50% to R9.09-billion, while capex was up 0.50% to R2.32-billion.

The Seagha region's customer base was 38.70-million as at December 31, 2017. Revenue increased by 17.30%, as a result of a 38.10% increase in data revenue and a 29.70% increase in digital revenue.

MTN Ghana's subscriber base stood at 15.70-million by the end of the financial year, while Uganda's subscriber base stood at 10.70-million.

MTN Ghana recorded a 25.70% increase in MoMo subscribers to 7.10-million in 2017, while MTN Uganda's MoMo subscriber base increased by 27.60% to 5.20-million.

MTN Ghana's subscriber base expanded further to 16.50-million as at June 30, 2018, while its MoMo subscribers increased to 7.90-million. MTN Uganda's subscriber base decreased to 10.50-million during the six months to June 30, 2018, while the number of MoMo subscribers increased to 5.30-million.

The Weca region's subscriber base was 29.10-million as at December 31, 2017, with MTN Cameroon's subscriber base at 7.10-million and MTN Ivory Coast's subscriber base at 10.90-million.





Revenue for the region increased by 2.80% year-on-year, driven by a 32.10% increase in data revenue and a 32.50% increase in digital revenue.

MTN Cameroon grew its MoMo subscriber base by 194.20% to 1.10-million, while MTN Ivory Coast achieved a 75.10% increase in MoMo subscribers to 2.20-million.

MTN Cameroon's subscriber base decreased to 6.60-million by June 30, 2018, while its MoMo customer base increased to 1.20-million. MTN Ivory Coast's subscriber base expanded to 11.30-million and its MoMo customer base to 2.50-million.

MTN had 67.60-million subscribers in the Mena region at the end of 2017. Revenue, excluding Iran, increased by 7.50% year-on-year, on the back of a 33.80% increase in data revenue and a 21.30% increase in digital revenue.

MTN Iran had 43.30-million subscribers as at December 31, 2017. This increased further to 44.60-million by June 30, 2018.

Regulatory and legal matters

MTN Group and its subsidiaries are facing many regulatory and legal challenges across its African markets, most notably in Nigeria, which is its largest market, as well as in Iran.

MTN Nigeria's trouble started in October 2015, when it was given a massive \$5.20-billion fine by the Nigerian Communications Commission (NCC) for failing to deactivate millions of unregistered SIM cards. After months of negotiations, the fine was reduced to \$3.90-billion and, in June 2016, the company reached a settlement with the NCC to pay \$1.67-billion over three years. This contributed to the MTN Group posting a significant loss for the 2016 financial year.

As part of the settlement with the NCC, MTN Nigeria also agreed to pursue a listing, or initial public offering (IPO), on the Nigerian Stock Exchange. MTN Nigeria was on track with its plans to list on the local bourse when, in August 2018, the Nigerian central bank alleged that the company had, in breach of foreign exchange legislation and without final approval from the bank, sent \$8.10-billion of profits out of the country. The bank demanded that MTN Nigeria repatriate the money. MTN Nigeria is also facing a claim for \$2-billion from the Nigerian attorney-general for back taxes.

MTN Nigeria and the MTN Group have disputed the claims and have threatened to cancel the planned IPO.

Further, Bloomberg has reported that the group is experiencing an exodus of senior executives amid its regulatory challenges. In a November 2018 news article, it reported that chief innovation officer Herman Singh was expected to leave the group to start his own business, following the resignation of chief technology officer Babak Fouladi and another senior executive Stephen van Coller, who left in August 2018 to take up a position at EOH Holdings in South Africa.

The mobile operator and the central bank have since met several times to try to come to an agreement. By mid-November 2018, media reports suggested that the Nigerian government might reduce the proposed fine to \$800-million.

Elsewhere in Africa, the group has, during 2018, agreed to pay the government of Benin \$126-million in a licensing dispute and the government of Cameroon a \$6.60-million penalty in a similar dispute.

MTN Ghana has also successfully listed on the Ghana Stock Exchange as part of a 2015 agreement with regulators in that country when MTN Ghana secured the right to use 4G spectrum. MTN Ghana raised C1.10-billion in August 2018, in an initial public offering (IPO). Bloomberg reported at the time that the company had sold only 1.50-billion of the 4.60-billion shares put on offer as part of the IPO. Nevertheless, the IPO was the largest to date in the country. The shares started trading on the Ghana Stock Exchange in September 2018.

Meanwhile, MTN's 49%-owned Iranian operation MTN Irancell is again facing challenges to repatriate money to South Africa amid US sanctions against that country. It is also in ongoing litigation launched by Iranian company Turkcell Iletisim Hizmetleri. The lawsuit, currently under way in South Africa and launched in 2013, is the fifth lawsuit brought by Turkcell against MTN over allegations that MTN had, through alleged bribery and corruption, cost Turkcell a 2004 licence bid in Iran. After failing to win the matter in other jurisdictions, this is the first lawsuit against MTN to have been launched by Turkcell in South Africa. Turkcell is seeking \$4.20-billion in damages from MTN.

As part of the lawsuit, South Africa's Directorate for Priority Crime Investigation, also known as the Hawks, approached MTN and its legal counsel in June 2018





to obtain documents pertaining to the lawsuit, which is before the South Gauteng High Court. While MTN opposes the lawsuit and says there is no merit in Irancell's allegations, it says it continues to work with the authorities regarding the matter.

Meanwhile, the US announced in May 2018 that it would re-impose sanctions against Iran. This may hamper MTN Group's ability to repatriate about R3.40-billion of dividends and loans due to it by its subsidiary in the country.

Market review

MTN Group is also reviewing its operations and the markets in which it operates and, in July 2018, reached an agreement to sell its MTN Cyprus business to Monaco Telecom for R4.50-billion. The transaction was finalised in September 2018.

MTN Cyprus, which was acquired by MTN as part of its acquisition of telecommunications holding company Investcom in 2006, was the group's only business in the European Union and did not form part of the group's core focus on Africa and the Middle East.

Media reports have suggested that MTN may sell more of its businesses following the sale of MTN Cyprus. Bloomberg reported in July 2018 that the group might consider selling its operations in Liberia, Guinea and Guinea-Bissau, where subscribers numbers were said to be among the lowest of the group's operations. The report further suggested that an exit from those markets could allow MTN Group to focus on entering other more lucrative African markets, including Angola and Ethiopia.

Analysts at Fitch Solutions also expect MTN Group to consider further disposals to reduce its debt, minimise its regulatory risks and increase its margins. The company stated in a July 2018 release that the sale of MTN Cyprus formed part of a broader strategy by MTN to scale back its operations by exiting some of its more challenging and "nonessential" markets.

Fitch Solutions included Liberia, Guinea-Bissau and South Sudan as the most likely markets from which MTN would exit. It also noted that MTN could also consider exiting Guinea and Cameroon.

Growth prospects

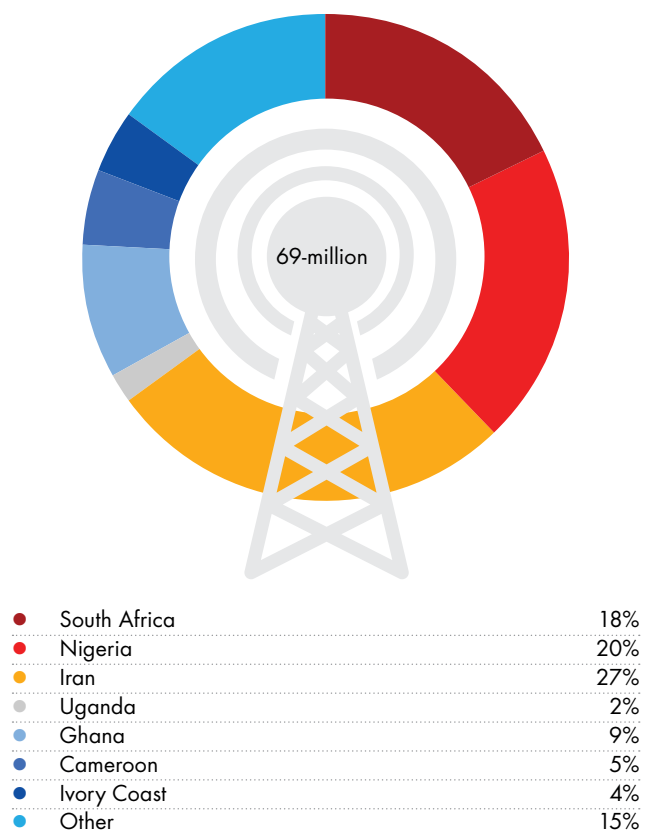
MTN Group believes it is well positioned to take advantage of growth opportunities in Africa and the Middle East. Its capex investments have been aimed at ensuring it is able to provide competitive data networks to meet the needs of customers. The group is focused on a dual-data strategy to ensure its future growth.

The group pointed out in its Integrated Report 2017 that it plans to grow its data subscribers to 200-million and its digital subscribers to 100-million, including 60-million MoMo subscribers.

To achieve these goals, it will target the urban, high-end smartphone users and the rural low-cost handset users; position the group as a media and entertainment gateway; and increase its mobile financial services offering.

MTN Group had 69-million active data users as at December 31, 2017.

Active data users in 2017



Source: MTN Group Limited Integrated Report 2017





The group's MoMo business had 14-million subscribers by the end of 2017 and was available in 14 markets. The number of MoMo subscribers had increased further to 24.10-million by June 30, 2018.

Corporate activity

MTN Nigeria concluded a partnership with US-based technology company PayJoy and Nigerian financial services provider Sterling Bank in November 2018 to offer consumers in Nigeria flexible smartphone financing options. The parties believe the offering will provide financial inclusion for persons who cannot access credit through the formal financial system to buy smartphones and, thereby, broaden financial inclusion.

IoT alliance

MTN Group in November 2018 became the first African telecommunications company to join the Internet of Things (IoT) World Alliance. The alliance aims to simplify and promote the adoption of IoT communications.

Source: IT News Africa



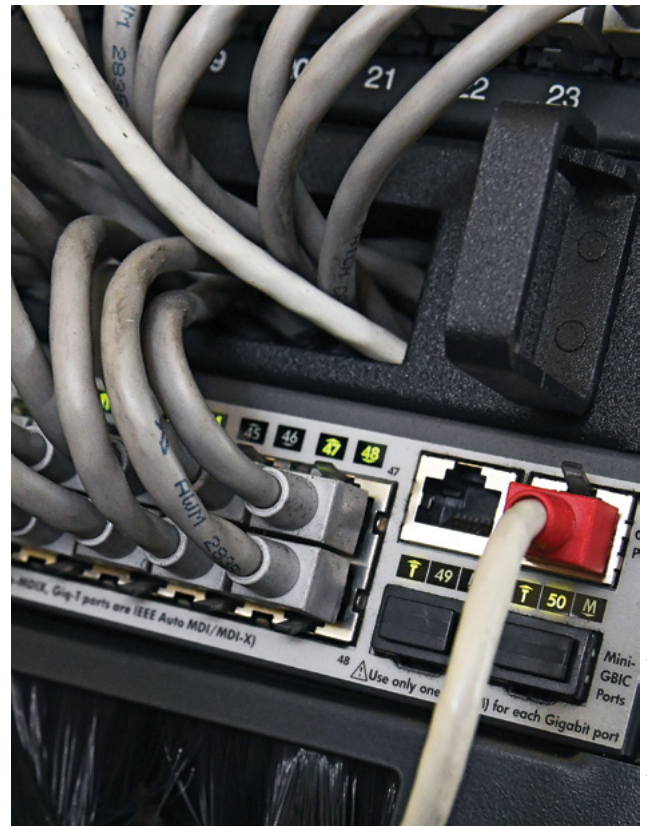
Transformation

MTN South Africa announced in November 2016 a new R9.90-billion black economic-empowerment scheme, MTN Zakhele Futhi, with its former BEE scheme, MTN Zakhele, having unwound in November 2016. MTN Zakhele Futhi holds a 4% stake in MTN South Africa.

RAIN

A new entrant to the market, Rain, was launched in June 2018. The Stellenbosch-based company, in which businessperson Patrice Motsepe's African Rainbow Capital holds a 20% interest, has built up a 4G network and is focused on providing data-only mobile offerings. The company offers only one price plan, 5c a MB, which translates into R50 a GB.

Unlike other mobile operators, Rain customers pay for only the data they have used at the end of the month and are not locked into contracts. The company promises that there are no out-of-bundle rates and customers can



Picture by Creamer Media

limit how much money can be spent per SIM, avoiding excessive and unexpected bills.

Rain states that its focus on a simple, data-only plan enables it to reduce costs that it can then pass on to customers through lower data prices.

The mobile operator had more than 2 100 long-term evolution-advanced (LTE-A) towers in metro areas across the country by its launch date and plans to expand this to more than 5 000 towers over the next three years.

Only weeks after launching, MyBroadband reported late in June 2018 that customers were experiencing various issues, including the slow delivery of SIMs, activation delays, poor customer support and network problems. Rain responded by saying that these were initial "teething problems" that would be dealt with.

Meanwhile, South African regulator the Independent Communications Authority of South Africa (Icasa) expects Rain's entrance to the market to play a significant role in raising competition in the market and lowering costs for the consumer.





TELKOM

	FY 2018	FY 2017	H1 2019	H1 2018
Revenue	R41.02-billion	R40.97-billion	R20.85-billion	R19.82-billion
Ebitda	R10.54-billion	R10.94-billion	R5.32-billion	R5.17-billion
Capex	R7.91-billion	R8.65-billion	R3.28-billion	R3.97-billion
Mobile subscribers	5.20-million	4-million	6.55-million	4.36-million
Mobile broadband subscribers	3.60-million	2.60-million	4.75-million	2.85-million

Source: Compiled from Telkom Integrated Report 2018 and Telkom group interim results for the six months ended September 30, 2018.

Ebitda – earnings before interest, taxes, depreciation and amortisation

Telkom is a South African information and communications technology (ICT) company that offers fixed-line voice and data services, mobile voice and data services, broadband solutions across copper and fibre infrastructure and ICT services, such as cloud services, besides others.

The South African government holds a 40.50% interest in the JSE-listed group, which operates two divisions – Telkom Consumer and Openserve – and three subsidiaries – BCX, Gyro and Yellow Pages.

Telkom Consumer offers fixed and mobile broadband and is an Internet service provider and converged communications services provider, while Openserve is a wholesale infrastructure connectivity provider. Telkom's 100%-owned BCX subsidiary provides ICT solutions, while its 100%-owned Gyro subsidiary manages the group's masts and towers, as well as its property development and property management services. Its 64.90%-owned Yellow Pages subsidiary, which is also known as Trudon, is an advertising and marketing company operating in South Africa and Namibia.

Telkom reported revenue of R41.02-billion for the financial year ended March 31, 2018, in line with the revenue reported for the 2017 financial year. While mobile services revenue increased by 47.20% year-on-year to R5.15-billion (2017: R3.50-billion), Openserve's revenue decreased by 2.90% year-on-year to R17.57-billion,

while BCX's revenue decreased by 4.60% year-on-year to R21.17-billion.

CEO Sipho Maseko noted in the group's Integrated Report 2018 that many customers were moving away from traditional voice services to Voice over Internet Protocol (VoIP) services, impacting on the group's voice revenues.

The group's mobile and data revenue streams are, however, offsetting the lower voice revenues. Maseko emphasised that the group would continue to focus on these new-generation revenue streams, which will ensure the group's sustainability.

As part of its focus on the new-generation revenue streams, the group invested R7.91-billion of capital expenditure (capex) – representing 19.30% of revenue – in its network during the 2018 financial year.

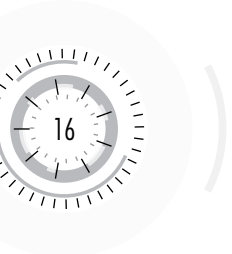
As a result of the network investment, mobile service revenue increased by 47.20% during the financial year, while the group's FTTH connectivity rate increased to 30.70%, from 18% at the end of the 2017 financial year.

The group's capex is expected to equal 16% to 20% of revenue over the three years to the end of the 2021 financial year and will focus mainly on new-generation revenue streams such as mobile and fibre offerings. The group is marketing new consumer offerings to attract customers to use its data products, while partnering with over-the-top (OTT) players to provide data-driven solutions for customers.

The group pointed out in its integrated report that its capital allocation programmes are flexible to enable it to invest in areas it considers material for future growth. The group has set its focus on fibre, long-term evolution (LTE) and cloud services, as well as augmented reality, artificial intelligence and Big Data analytics.

By November 2018, Maseko reported that the group's investment strategy was paying off, with operating revenue up 5.20% year-on-year to R20.85-billion for the six months to September 30, 2018. He noted that the mobile business had been a growth driver during the six months under review, with service revenue 53.80% higher year-on-year, at R3.60-billion, as a result of customer growth of 50% to 6.50-million subscribers.





Corporate activity

Telkom is reportedly in talks to create a joint venture with Zimbabwe State-owned mobile telecommunications operator NetOne. Bloomberg reported in October 2018 that the Zimbabwe government was seeking to sell certain State-owned assets, including NetOne, to raise funds for infrastructure programmes.

Telkom has, meanwhile, denied media reports that it plans to merge with MTN. The Sunday Times reported in September 2018 that the companies were considering a merger, amid both parties facing challenges, including regulatory setbacks.

Telkom has, however, concluded a multibillion-rand roaming agreement with Vodacom that will enable Telkom's customers to roam on Vodacom's 4G network. The parties announced the deal in November 2018, stating that they would start implementing the agreement in December 2018, with a full switchover to be completed by mid-2019.

Telkom had recently ended a roaming agreement with MTN, which had enabled Telkom's customers to roam only on MTN's 2G and 3G networks. Cell C had also recently terminated its roaming deal with Vodacom, which catered to roaming only on Vodacom's 2G and 3G networks, in favour of a roaming agreement with MTN South Africa that includes roaming on MTN's 4G/LTE network.

The switchover of Cell C's roaming to MTN's network will occur late in 2018.



Picture by Creamer Media

Transformation

According to news publication Business Day, Telkom is developing a plan to increase its black ownership above 30% without diluting existing shareholders.

The 30% black ownership may in future form part of requirements that telecommunications companies will need in order to bid for much-coveted new spectrum to expand their operations.

The news report, published in July 2018, states that Telkom has a 14.30% black shareholding.

VODACOM

	FY 2018	FY 2017	H1 2019	H1 2018
Revenue	R86.37-billion	R81.28-billion	R44.36-billion	R42.71-billion
Ebitda	R32.90-billion	R31.24-billion	R16.47-billion	R15.73-billion
Capex	R11.59-billion	R11.29-billion	R5.33-billion	R5.38-billion
Subscribers	29.57-million	28.13-million	29.94-million	29.49-million
Data customers	17.67-million	16.64-million	17.59-million	16.95-million

Source: Vodacom year-end results 2018 and interim results for the six months ended 30 September 2018

Ebitda – earnings before interest, taxes, depreciation and amortisation

Vodacom, in which global communications company Vodafone owns a majority stake, is South Africa's biggest mobile operator. It also has operations in the Democratic Republic of Congo (DRC), Mozambique, Lesotho and Kenya.

For the financial year ended March 31, 2018, the group's revenue increased by 6.30% year-on-year to R86.37-billion, compared with R81.28-billion in revenue earned in the 2017 financial year.

The group added seven-million customers to its network during the year – 4.50-million in South Africa and 2.50-million in its international operations. During the financial year, the group also acquired a 34.95% interest in Safaricom, in Kenya.

Safaricom added an additional 1.40-million customers to the network, taking Vodacom's overall customer numbers at the end of the financial year to 103-million.

Further, its revenue for the six months to September 30, 2018, increased to R44.36-billion, compared with





the R42-billion in revenue earned in the six months to September 2017.

South Africa

The group reported in May 2018 that its South African operation had performed well despite data pricing challenges and the country's low economic growth. Service revenue increased by 4.90% year-on-year to R54.60-billion (2017: R52.07-billion) on the back of a growing customer base, a higher contribution from data revenue and growth in enterprise services. Prepaid customer numbers increased by 4.30-million and postpaid or contract customers by 229 000.

Vodacom has reported that it uses Big Data deals and machine learning to create personalised bundle offers for customers, differentiating it from its competitors. Data bundle purchases increased by 54.70% year-on-year to 766-million in the financial year ended March 31, 2018. The group stated in May 2018 that better in-bundle use had resulted in the overall price per megabyte decreasing by 21.60% year-on-year.

Data revenue, nevertheless, increased by 12.80% year-on-year, while data traffic increased by 43.70%, as a result of Vodacom's efforts to focus on marketing 3G- and 4G-enabled devices. 4G customers reached 7.30-million at the end of the 2018 financial year.

For the six months ended September 30, 2018, Vodacom's South African business increased its service revenue by 4.60%, while its contract subscriber base expanded by 177 000 customers and its prepaid customer base by 2.30-million. Data traffic grew by 28.60% during the interim period.

International

Vodacom has been focusing on increasing data and M-Pesa – the group's mobile money offering – customers in its international markets. During the 2018 financial year, service revenue increased by 0.30% to R16.80-billion.

Tanzania is said to have delivered good revenue and customer growth, while Mozambique and Lesotho delivered "strong" results. The performance of Vodacom's DRC operations also improved during the financial year, with customer growth of 13.80%.

The group's international businesses achieved a 12% year-on-year increase in data revenue, as a result of expansions in the data network and efforts to provide more affordable smart devices. Data customers increased by 27.50% year-on-year to 16.60-million.

Meanwhile, in Kenya, Safaricom achieved a 10% increase in service revenue to KSh225-billion, as a result of a 5.10% year-on-year increase in the customer base to 29.60-million.

Data customers increased by 6.20% year-on-year to 17.70-million, while data revenue increased by 24% year-on-year. The number of M-Pesa customers increased by 8% year-on-year to 20.50-million, while M-Pesa revenue increased by 14.20% year-on-year.

In the six months to September 30, 2018, the international business increased its service revenue by 12.80% to R9.40-billion, while subscriber numbers expanded by 2.30-million. Data revenue increased by 26.60% for the interim period under review.

Mobile money

Overall, the international businesses added 1.80-million M-Pesa customers during the 2018 financial year and delivered a 19.60% year-on-year increase in M-Pesa revenue to R2.30-billion, which accounted for about 13.80% of the group's international service revenue. About \$1.90-billion a month was processed through the M-Pesa system during the 2018 financial year.

In a continuous process to improve the M-Pesa platform, Vodacom introduced the Lipa-Kwa M-Pesa merchant payment solution, in Tanzania, in September 2014, which has enabled customers to transact with M-Pesa at more points of sale than before. About \$160-million was transacted during the 2018 year financial year using the payment solution. In Mozambique, Vodacom has expanded its M-Pesa agent network to more than 20 000 agents.

During the six months to September 30, 2018, Vodacom's combined mobile money customer base, including Safaricom, expanded by 13.70% year-on-year to 34.20-million.

Safaricom, meanwhile, announced in November 2018 that it had partnered with US financial services provider Western Union to enable M-Pesa users on Safaricom's





network to send and receive money across the world using Western Union's agents.

Network expansion

To expand its coverage and improve network quality, Vodacom invested about R11.60-billion (2017: R11.29-billion) of capex during the 2018 financial year. South Africa accounted for the biggest chunk of the capex, at R8.88-billion (R8.47-billion), enabling the group to expand its 3G population coverage in the country to 99.40% and its 4G coverage to 80.10%.

The group reported in May 2018 that it had become the first African mobile network operator to extend its 4G coverage to more than 80% of its population and said this was, in large part, the result of its accelerated rural coverage programme.

It further reported in September 2018 that it had, over the past three years, invested R300-million on expanding network coverage for people who live in deep rural areas of the Eastern Cape. Another R270-million had been invested over a two-year period to expand its 3G and 4G base stations, as well as deploying new sites in rural and township areas in Limpopo.

The group invested a further R2.70-billion of capex in its international businesses, with a focus on expanding voice and data coverage, improving data network speeds and investing in business intelligence tools.

Safaricom also invested KSh36.40-billion of capex, in Kenya, to expand the number of 3G and 4G sites by 18.90% and 49.40% year-on-year respectively. In South Africa, Vodacom invested more than R4-billion in capex on its network during the six months to September 30, 2018, with its data network reaching 99.50% of the population on 3G and 83% on 4G. It invested a further R1.30-billion in capex in its international business.

Safaricom invested KSh17-billion in capex on its network during the six months under review, with 3G sites having increased to 21.10% and 4G sites to 61.80%.

Regulatory and policy developments

Vodacom has highlighted the changing regulatory environment in South Africa's telecommunications sector

as a significant area of concern. Chief among the changes is proposed amendments to the Electronic Communications Act (ECA), which proposes the establishment of a wholesale open-access network and the assignment of high-demand spectrum.

The telecommunications sector regulator, Icasa, is also proposing amendments to end-user and subscriber service charter regulations, which is aimed at introducing changes to out-of-bundle data charges and the expiry of data.

The proposed amendments are expected to have a significant impact on Vodacom's operations in South Africa. Meanwhile, the group is also being investigated by the Competition Commission in South Africa for alleged abuse of dominance. This pertains to a 2016 tender awarded to it by the National Treasury to supply and deliver mobile communication services to national and provincial government departments between September 2016 and August 2020.

Vodacom has argued that it followed due process during the tender, which it says was "controlled by the National Treasury through strict governance procedures".

Transformation

As part of ongoing transformation efforts, Vodacom Group announced a R17.50-billion black economic-empowerment (BEE) ownership transaction in June 2018 that would result in its existing BEE partners – Royal Bafokeng Holdings, Thebe Investment Corporation and other individual existing YeboYethu shareholders – exchanging their shareholding in Vodacom South Africa for a 5.80% to 6.25% shareholding in Vodacom Group.

The transaction, which replaced the R7.50-billion YeboYethu BEE ownership scheme that was launched in 2008 and unwound in October 2018, also includes participation by a newly formed staff scheme.

The latest transaction was funded through third-party and vendor financing, R4.50-billion in reinvested equity from the existing BEE partners and Vodacom Group, which provided R3.50-billion in funding for the participation of more than 4 600 Vodacom South Africa employees.





Industry trends and challenges

The global mobile sector reached a new milestone in 2017, with more than five-billion people connected to mobile services, research group GSMA Intelligence reports in its 'Mobile Economy' report for 2018.

South Africa has an estimated 89.40-million mobile connections and a penetration rate of 157%, with many people owning more than one SIM card. Vodacom and MTN continue to dominate the market, accounting for about 75% of the country's overall SIM connections. Cell C and Telkom have far smaller mobile subscriber numbers but continue to grow their customer bases. It is unclear at this stage what impact the introduction of mobile data driven operator Rain will have on the market.

South Africa also has various mobile virtual network operators (MVNOs) who use the mobile network infrastructure of mobile network operators to offer their own products and services without having to operate the mobile network infrastructure. MVNOs represent a small portion of the market, but are also slowly increasing their market share. MVNOs include Me&You Mobile, Pick n Pay, and MRP Mobile, besides others, with many operating on Cell C's network. South African bank FNB launched its FNB Connect MVNO in 2015 while another South African bank, Standard Bank, late in 2018 launched Standard Bank Mobile, becoming the nineteenth MVNO to use the Cell C network.

TechCentral reported in November 2018 that MTN South Africa had also expressed an interest in opening up its network to MVNOs, such as Standard Bank Mobile, as long as such partnerships made commercial sense.

While the telecommunications sector's revenue is growing, data revenue is increasing and voice revenue growth is declining.

The Independent Communications Authority of South Africa (Icasa) revealed in its 'Third State of the ICT Sector' report, published in March 2018, that telecommunications revenue increased by 10.10% year-on-year to R163.99-billion in 2017, compared with R148.85-billion in 2016. Mobile services revenue increased by 10.40% to R90.74-billion in 2017, compared with R82.21-billion in 2016.

Mobile data services revenue increased to R43.19-billion in 2017, compared with R37.88-billion in 2016, while mobile voice services revenue increased to R42.48-billion, compared with R39.50-billion in 2016. The Icasa report further revealed that prepaid mobile data revenue had increased by 21.20% year-on-year to R23.74-billion in 2017 (2016: R19.58-billion), while prepaid voice revenues had decreased by 5.40% to R27.82-billion in 2017 (2016: R29.41-billion) and prepaid messaging by 16.80% to R1.33-billion (2016: R1.60-billion).



More than five-billion people were connected to mobile services in 2017

Picture by AdobeStock

Sponsored by:

ZEST
WEG Group





Vodacom reported in its integrated report for the 2018 financial year that its voice revenue has been declining, while data revenue growth is being driven by the increased uptake of smart devices, improved network coverage and more affordable data bundles. The group's data revenue increased by 12.80% to R23.36-billion in the 2018 financial year (R20.70-billion), while voice revenue decreased by 4% year-on-year and messaging revenue decreased by 10% year-on-year.

MOBILE BROADBAND

The South African and African telecommunications markets are facing significant change, with greater access to smartphones and improvements in telecommunications networks driving demand for more data. Icasa's statistics show that mobile data subscriptions have increased by 22.10% year-on-year to about 61.40-million in 2017 (2016: 50.27-million). Smartphone subscriptions increased by 72.90% year-on-year to about 42.09-million in 2017 (2016: 24.34-million).

Smart device sales constituted about 70% of all Vodacom's device sales in the 2018 financial year, ended March 31. The group is focused on increasing sales of third-generation (3G) and fourth-generation (4G) devices, and those with smart devices on its network used about 784 MB of data a month during the financial year, representing an 18.40% year-on-year increase.

African manufactured smartphones

Rwanda-based Mara Group plans to establish manufacturing plants to produce smartphones in Rwanda and South Africa. South African government news agency SANews reported in November 2018 that Rwandan businessperson Ashish Thakkar had revealed, during the Africa Investment Forum, that Mara Group will invest about R1.50-billion over the next five years to establish a presence in South Africa. Mara Group seeks to produce high-quality, affordable smartphones for the African market, with ambitions to eventually expand its presence across the continent and to eventually also export smartphones to Europe.

Source: SANews

PwC's 'Entertainment and Media Outlook: 2018 – 2022' report shows that South Africa's data consumption

increased by 35.30% year-on-year in 2017 to about 1.95-billion gigabytes. Of that, 602-million gigabytes was used through smartphones.

Deloitte reported in August 2018 that smartphones had become the most popular communication device for consumers, who were among the biggest users of smartphones globally. It points out in its 'South Africa Mobile Consumer Survey 2017' report, also published in August 2018, that South Africans are relying more on data-driven applications, including instant messaging and social network applications, to communicate with one other, rather than through traditional voice services.

Further, more mobile consumers are becoming comfortable with using video calling, as opposed to traditional voice calls, which is also contributing to higher data demand, according to the report.

Deloitte states in its report that over-the-top (OTT) applications and services will continue to drive a shift in revenues from traditional voice and messaging to data.

Vodacom agrees, stating in its integrated report for 2018 that OTT services have become prevalent in all markets, contributing to higher data revenues, but also negatively impacting on voice and messaging revenues.

Nevertheless, it seems that mobile operators are starting to realise that consumers' shift away from traditional voice and messaging services is inevitable, as a result they have started including more OTT services in their offerings. Icasa's latest tariff analysis report, released in October 2018, shows that mobile operators are offering OTT-related bundles – such as Cell C's Shap bundles, Telkom's FreeMe bundles, Vodacom's Ticket bundles and MTN's Social bundles – to consumers. These bundle offerings provide consumers with easier and cheaper access to social networks and other services such as WhatsApp and Skype.

Deloitte, meanwhile, highlights in its report that consumers are seeking access to data networks that provide them with quality and speed, but they are also seeking value when considering which networks to use.

Mobile operators are investing significant amounts of money in improving their networks. Of those consumers surveyed by Deloitte, 63% in urban areas had access to 4G or long-term evolution (LTE) networks, while 38% of respondents in rural areas had access to 4G or LTE





networks. Respondents indicated that their connectivity speeds on 4G/LTE were faster than before, while those still on 3G networks were reporting no change in their connectivity speeds, demonstrating operators' focus on growing their 4G/LTE networks.

South Africa still has some second-generation (2G) networks, but these are expected to become obsolete in time. Operators have started to refarm some of their 2G and 3G spectrum to improve their 4G/LTE networks, but the number of active 2G-only mobile devices and other 2G-reliant devices, including vehicle trackers and point-of-sale systems, makes it impossible, at this stage, to completely eliminate 2G networks.

Telkom, however, is reportedly close to switching off its 2G network, with TechCentral reporting in November 2018 that the group had only about 250 000 2G-only customers out of its overall 6.50-million subscriber base. According to the news report, Telkom plans to phase out its 2G network within the next 12 months.

Meanwhile, in addition to speed and price considerations, consumers have also indicated that they would likely use more data if they had better visibility of how much data certain apps used and if they were able to better manage their data use. About half of respondents to Deloitte's consumer survey indicated that they frequently exceeded their monthly data budgets. Deloitte suggests that there is opportunity for operators to improve trust and transparency by developing apps that provide consumers with greater insight into their data use and enable them to better manage their data budgets.

Deloitte further points out in its report that while many respondents indicated that 4G networks offered faster Internet speeds, they tended to use data-intensive apps only where WiFi was available, enabling them to stretch their mobile data further.

Another trend that could potentially impact on future data growth is increasing e-commerce. Based on the consumer survey, consumers were still using their smartphones mainly to browse and do research about products; however, online buying using smartphones is increasing.

Advances in biometric authentication and the creation of policies around companies' use of the personal information of consumers are expected to help drive increased online sales using smart devices going forward.

TV white space trial



Telecommunications start-up AfriCanopy received approval from the Independent Communications Authority of South Africa in October 2018 to test its new technology that uses television white space (TVWS) equipment to provide high-speed, low-cost broadband.

TVWS uses the portions of ultrahigh-frequency terrestrial TV spectrum that are not used by broadcasters to transmit voice and data over greater distances than cellular frequencies. The costs are also lower than traditional cellular services.

An eight-month trial of the technology will be undertaken in the King Cetshwayo municipality, in KwaZulu-Natal, and will provide free Internet access for about 50 rural schools. The trial is expected to start in the first quarter of 2019.

AfriCanopy expects the trial to create about 400 jobs, with entrepreneurs to be equipped with solar power supplies, WiFi devices and TVWS equipment that will enable them to sell airtime and data and provide cellular charging services to customers. The entrepreneurs will also be given technical and business training.

If the trial is successful, AfriCanopy plans to roll out the technology to other rural areas in South Africa.

Source: AfriCanopy

The use of mobile payment solutions in South Africa, while growing, also still remains low, compared with global trends. The Deloitte survey revealed that 84% of money transfers were still made through online banking apps, while mobile operator and social payment apps were used by less than 10% of survey respondents. Improvements in biometric authentication will be key in driving increases in this area.

Many smartphones feature fingerprint readers that are most often used by consumers to unlock their phones; however, some are using their phones' fingerprint readers to authorise payments.

Network performance

OpenSignal, which measures mobile network performance, has rated Vodacom as the best mobile broadband provider in South Africa. Its 'State of Mobile Networks: South Africa' report from May to July 2018, analysed more than 433-million data samples from about 40 000 devices to gain an insight into the 3G





and 4G performance of South Africa's four largest mobile operators.

Vodacom was the top performer in terms of 4G download and upload speeds, 3G download speeds and overall download speeds during the period. Revealing the results of its analysis in September 2018, OpenSignal reported that Vodacom had increased its average 4G download speed by more than 3 Mb/s to nearly 25 Mb/s.

MTN's 4G download speeds remained at about 22 Mb/s, while Cell C and Telkom's 4G download speeds remained at about 14 Mb/s.

Further, Vodacom's average 4G upload speed also improved by about 3 Mb/s to about 17.50 Mb/s during the period under review, compared with MTN's average 4G upload speed of 15.40 Mb/s and Cell C and Telkom's average 4G upload speeds of about 10 Mb/s.

In terms of 3G download speed, Vodacom was again the clear winner with an average speed of 7.40 Mb/s. Cell C, meanwhile, achieved a notable improvement in this area, with its average 3G download speeding having increased by more than 1.50 Mb/s to about 6 Mb/s.

In the main city centres, Vodacom was again the top performer in Johannesburg, with 4G download speeds averaging about 30 Mb/s. In Cape Town and Durban, MTN and Vodacom had a similar performance, and continued to outperform Cell C and Telkom.

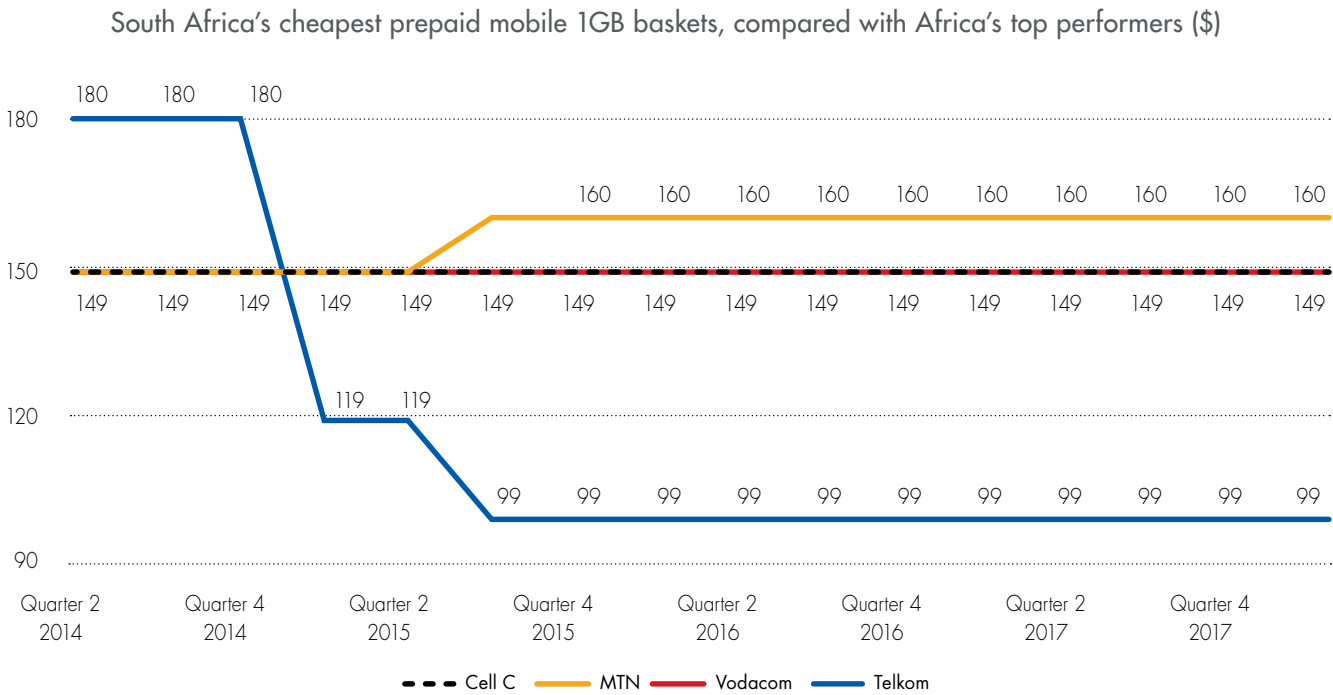
OpenSignal commented that Vodacom and MTN's performance was the result of their significant investment in their networks. It warned, however, that spectrum constraints continued to hamper further improvements in network performance.

Data costs

South African consumers have in recent years stepped up campaigns, such as the #DataMustFall campaign, to raise awareness of the high cost of data in the country and its impact on consumers.

In recent years, many comparisons have been provided by various organisations to better understand whether South Africa's data costs are really as expensive as many believe them to be.

ResearchICTAfrica reported in its 'State of ICT in Africa' report for 2017, which was published in July 2018, that



Source: RAMP Index, 2018





Data price comparison for Brics countries in dollars

Country	500MB			1GB			2GB		
	Cheapest	Average	Highest	Cheapest	Average	Highest	Cheapest	Average	Highest
Brazil	5.30	6.64	7.98	10.65	10.91	11.18	14.05	14.48	14.90
China	12.50	28.75	45	25	57.50	90	15.21	70.07	160
India	1.90	2.18	2.67	1.03	2.33	2.78	2.72	4.13	4.61
Russia	1.29	1.29	1.29	2.59	2.59	2.59	4.02	4.08	4.14
South Africa	2.63	5.72	7.90	4.89	9.04	12.04	7.15	14.43	19.57

Source: Operators Website (Converted on: 20 September 2017)
Brics – Brazil, Russia, India, China and South Africa

South Africa had performed poorly in terms of prepaid mobile 1GB data prices during the first quarter of 2018 – ranking thirty-fifth out of 49 countries. This was five positions lower than its ranking in the third quarter of 2017. The report shows that the cheapest cost for 1 GB of data was \$8.28 in the first quarter of 2018, which is seven times more expensive than the cheapest cost of \$1.13/GB in Egypt. The cost was also nearly three times higher than in Ghana, Kenya and Nigeria.

UK-based broadband product comparison provider Cable has, however, revealed that South Africa's broadband pricing is decreasing, with South Africa's ranking among 195 countries reviewed by Cable having improved by nine places to 93 in 2018.

Icasa, meanwhile, reported in its 'Bi-Annual Retail Tariffs Report' for the fourth quarter of 2017, published in March 2018, that South Africa did not have the cheapest nor the most expensive 1 GB data bundles among the Southern African Development Community (SADC) countries. South Africa's cheapest 1 GB data bundle cost \$4.89, while its most expensive 1 GB data bundle cost \$12.04. Although the highest-cost 1 GB data bundle in South Africa is cheaper than that of Zimbabwe, at \$30, and Swaziland at \$20.02, it is 37.50% more expensive than Lesotho's highest-cost 1 GB bundle, at \$7.53.

In comparison with the rest of the Brazil, Russia, China, India and South Africa (Brics) countries, South Africa's data prices were the third highest across 500 MB, 1 GB and 2 GB bundles. China and Brazil had the most expensive data costs across these bundles, while Russia and India had the lowest average data prices among the Brics members.

Icasa has conceded that data prices in South Africa are "considerably high" when compared with most African countries. It further points out that the price differentials

between in-bundle and out-of-bundle data rates, which can be as high as 2 720% are excessive and have a particularly negative impact on the poorest consumers who cannot afford to buy monthly data bundles upfront.

The authority is undertaking a number of initiatives to try to reduce data costs in South Africa. The first of its short-term initiatives was the establishment of a task team in 2017 to assess mobile data services business rules. The task team, comprising representatives of Icasa and the National Consumer Commission, considered mobile operators' rules on the expiry of unused data bundles and the differentials between in-bundle and out-of-bundle rates. The task team has amended the End-user and Subscriber Service Charter Regulations to eliminate the expiry of data and prevent mobile operators from automatically charging out-of-bundle data rates when consumers' data bundles run out.

ResearchICTAfrica, meanwhile, has stated that there is minimal pricing competition among operators in South Africa, which has contributed to the high cost of data, highlighting the impact this is having on the poorest consumers.

The impact of high data costs on the poor was also a key theme on the first day of public hearings held by South Africa's Competition Commission in October 2018 as part of its market inquiry into data services. The inquiry was requested by Economic Development Minister Ebrahim Patel in 2017 and is aimed at determining if South Africa's data costs are very high, what factors are driving those high costs, how those factors can be remedied and what impact high data costs are having on consumers and particularly low-income consumers.

Presentations delivered during the first day of the public hearings showed that poorer consumers bought small quantities of data at a time, which, in the long run, cost





them more than it would have had they been able to afford larger data bundles that come with a volume-based discount.

Engineering News quoted DG Murray Trust CEO David Harrison as stating that low-income earners spend about one sixth to one third of their per capita monthly income on telecommunications services and that they pay 10 to 30 times more for those services than more affluent populations that are able to afford larger data bundles.

Nonprofit advocacy organisation Right2Know Campaign, meanwhile, emphasised that providing affordable Internet access for poorer consumers was essential in enabling them to access other opportunities and services, such as applying for jobs and being able to bank online, that would otherwise cost them more to access.

Mobile operators, however, told the commission that their data prices were competitive. News24 quoted Vodacom CEO Shameel Joosub as telling the commission that operators were unable to further reduce data costs unless they were able to reduce the costs of their networks. In response to questions about why Vodacom provided cheaper data rates in other African countries where it operated than in South Africa, he responded that the company had lower levels of investment in those countries and that the service was often not as good as that offered in South Africa, as a result of the lower investment.

Telkom and Cell C, however, lamented the lack of competition in the South African telecommunications industry and highlighted to the commission that Vodacom and MTN's dominance in the market was making it difficult for smaller mobile operators to compete. The two smaller operators called for pro-competitive regulation that would allow smaller operators to gain market share. News website TechCentral quoted Telkom CEO Sipho Maseko as saying that smaller operators needed to be given an opportunity to compete on an equal footing with its bigger rivals.

ResearchICTAfrica has stated that the introduction of Rain's flat-rate data offering in the South African market should contribute to greater competition among mobile operators and assist in reducing data costs.

Mobile operators also maintain that the industry is being hamstrung by delays in the allocation of high-

demand spectrum. *Engineering News* reported in October 2018 that, according to Joosub, the South African telecommunications industry had lost out on up to R140-billion in investment, as a result of regulatory uncertainty, including uncertainty about the allocation of spectrum.

Business Day quoted Joosub, who was speaking at the annual MyBroadband conference, in Midrand, that data prices could more than halve if the delays in spectrum allocation were resolved.

MTN agrees that mobile operators will be in a position to reduce their costs and, subsequently, data prices, if they are given access to more spectrum.

Finance Minister Tito Mboweni assured the country during his maiden Medium Term Budget Policy Statement speech, delivered in October 2018, that the State was committed to lowering data costs. He pointed to progress being made in the allocation of high-demand spectrum and measures being implemented by Icasa to determine how to better regulate the market to ensure data costs decrease.

SPECTRUM CRUNCH

Mobile operators have, for many years, lobbied government to make key bands of spectrum available to the industry, but the allocation of the high-demand spectrum needed for the roll-out of 4G services has continued to be delayed, with Icasa having announced on several occasions that spectrum auctions would be held, only for the auctions to be cancelled because of disputes with the relevant government departments.

MTN South Africa has pointed out that its South African operation has the least spectrum among the 21 countries in which it operates. While awaiting the allocation of spectrum for 4G services, telecommunications operators have moved to refarm 2G and 3G spectrum to meet demands for 4G, but this has been problematic in some areas, as well as expensive.

Mobile operators are seeking access to the high-demand spectrum, especially the frequency ranges below 1 GHz, between 1GHz and 6 GHz and above 6 GHz. *Engineering News* reported in July 2018 that mobile operators had indicated that, without the additional spectrum, it was becoming increasingly costly





to expand and improve their services. The article points out that mobile operators have to invest in building more base stations to meet consumer demand, rather than being able to invest in the efficient use of spectrum. Further, Frost & Sullivan information and communication technology analyst Naila Govan-Vassen has said that the efficient use of spectrum could contribute to greater economic growth by increasing access to wireless communication.

Other analysts have pointed out that access to more spectrum would enable mobile operators to continue providing 2G service where it is needed, in addition to deploying newer technologies, including fifth-generation (5G) services and the Internet of Things. While South African operators are mainly focused on upgrading infrastructure to ensure the delivery of 4G services, some are considering the potential of rolling out 5G services.

Following the inauguration of President Cyril Ramaphosa in February 2018, the South African government has been pushing to get the economy back on a growth path by eliminating corruption, attracting more investment and removing regulatory constraints that are holding back the economy. There seems to be renewed impetus by government to ensure spectrum constraints are resolved.

Engineering News reported in September 2018 that the Department of Telecommunications and Postal Services (DTPS) had been mandated by the Presidency to ensure progress was made in resolving the spectrum constraints facing the industry.

Following negotiations between the DTPS, former Telecommunications and Postal Services Minister Dr Siyabonga Cwele and Icasa, the Minister and Icasa agreed in September 2018 to settle a court dispute over Icasa's July 2016 invitation to apply (ITA) to operators for the allocation of high-demand spectrum. Under the terms of the agreement, Icasa withdrew the ITA in October 2018 while the Minister withdrew his legal challenge against the ITA.

As part of the agreement, the Minister committed to directing Icasa to issue a new ITA that takes into consideration recommendations made by the Council for Scientific and Industrial Research (CSIR) regarding the establishment of a wholesale open-access network (Woan).

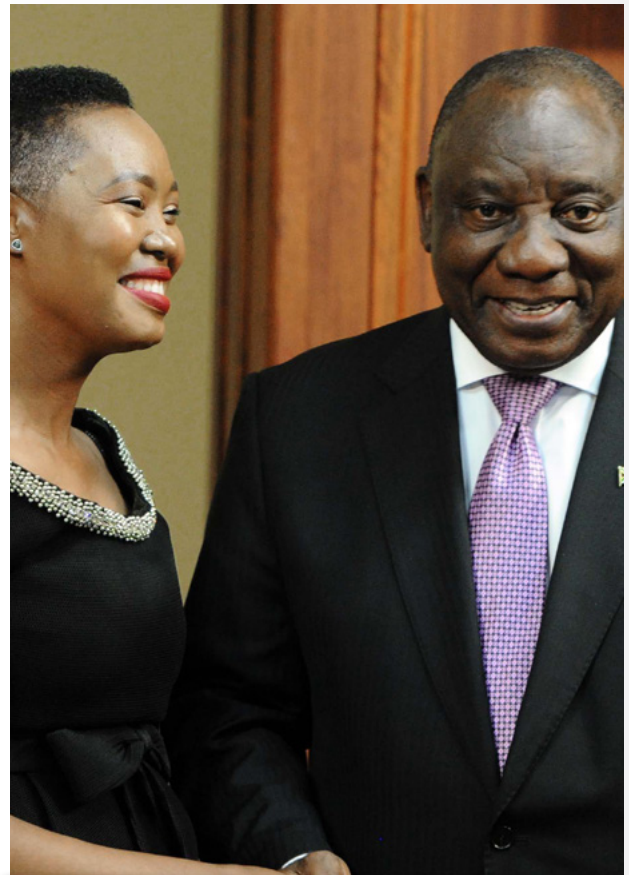
Bloomberg, meanwhile, reported in October 2018 that the long-delayed auction of 4G spectrum would now be

Cabinet reshuffle



President Cyril Ramaphosa in November 2018 appointed former Deputy Communications Minister Stella Ndabeni-Abrahams as Communications, Telecommunications and Postal Services Minister. Former Communications Minister Nomvula Mokonyane was appointed Environmental Affairs Minister, following the death of former Minister Edna Molewa. Former Telecommunications and Postal Services Minister Dr Siyabonga Cwele was moved to the Home Affairs portfolio, following the resignation of Malusi Gigaba earlier in November.

The Communications and Telecommunications and Postal Services departments will be merged following the 2019 national elections.



Newly elected Communications, Telecommunications and Postal Services Minister Stella Ndabeni-Abrahams and President Cyril Ramaphosa

Source: *Engineering News*





held in April 2019, while spectrum for 5G licences would be auctioned by 2020.

While the progress made is good news for mobile operators, operators may be able to access only the "prime" spectrum they are hoping for after 2022. This spectrum, in the 700 MHz and 800 MHz frequency bands, is being used by broadcasters and can be made available only after government completes its broadcasting digital migration (BDM) plans – another government programme, led by the Department of Communications, that is years behind schedule.

The International Telecommunications Union (ITU) required all countries across the world to switch its broadcasting signal to digital from analogue by 2015. South Africa missed not only its own initial target of switching from analogue to digital signal by 2011 but also the 2015 ITU deadline and other subsequent targeted deadlines the country set for itself. The ITU no longer protects analogue broadcasting signals, which may result in people living in some areas experiencing signal interference.

South Africa now plans to complete the analogue switch-off by July 2020.

TechCentral reported in October 2018 that once the analogue signal switch-off was complete, it would take up to two years for "digital restacking", which involved moving broadcasters out of the prime spectrum frequency bands, to be completed. Mobile operators will likely have to wait until at least the second half of 2022 to gain access to the spectrum in the 800 MHz to 900 MHz frequency bands.

Former Telecommunications and Postal Services Minister Dr Siyabonga Cwele, meanwhile, confirmed to MyBroadband in a November 2018 interview that mobile operators will be expected to share radio frequency spectrum for 5G networks once that spectrum is made available. The news website reported that where spectrum is assigned to one network operator, it would be required to offer wholesale open access to its network to other operators.

Meanwhile, government plans to proceed with the establishment of a Woan, which was first proposed in the 2016 National Integrated ICT Policy White Paper. The Woan is expected to serve as a public-private sector consortium.

The DTPS initially planned to reserve all unassigned high-demand spectrum for the Woan, but following criticism



Picture by Creamer Media

from the industry, commissioned the CSIR to consider how much spectrum would be needed for the Woan to succeed in the provision of greater access to broadband. A report compiled by the CSIR was approved by Cabinet in September 2018 and suggests that a portion of the radio frequency spectrum be allocated to the Woan and excess capacity to the telecommunications industry.

The CSIR has also recommended that further studies be undertaken, including a market study to determine the size of the proposed Woan from 2020 to 2030 and to take into consideration new technologies, such as 5G.

Satellite connectivity

South African satellite operator MzansiSat considers satellites to offer a reliable short-term solution to expanding broadband access in the country. *Engineering News* quoted CEO Bart Cilliers in November 2018 as saying that satellite technology could offer consumers access to affordable broadband Internet connectivity.

The company hopes to launch its MzansiSat-1 satellite by 2022, pending regulatory approvals.

Source: *Engineering News*





5G

While South African operators are still investing heavily in providing 4G services, the world has turned its attention to the next generation of technology – 5G. 5G promises much faster data download and upload speeds, wider coverage and more stable connections.

Forbes reported in October 2018 that, according to a report by financial services provider Bank of America Merrill Lynch, 5G is expected to “power” the Fourth Industrial Revolution. The Forbes article states that, in the years ahead, the data generated by, for example, autonomous vehicles and smart cities, will be far higher than the data generated by the world today and that current mobile networks will be unable to support that much data. However, 5G technology could better support the growth in generated data.

Further, the article mentions that 5G will also contribute to the world becoming more connected as the number of smart devices and Internet of Things (IoT) devices grows.

The ITU states that 5G will play a significant role in transforming cities into smart cities while providing

improved performance and reliability and, thus, enhancing end-user experience for users of 5G networks. By reducing latency to below 1 ms, compared with a latency of 30 ms to 40 ms on a 4G network, 5G will be particularly useful in the delivery of mission-critical services, it states. The ITU adds that 5G networks will offer high-speed broadband services as an alternative to fibre-to-the-home (FTTH) or copper infrastructure services.

The ITU expects the first commercial 5G networks to be ready for deployment from 2020.

GSMA states in its ‘The Mobile Economy 2018’ report that 4G will become the leading mobile network technology globally during 2019, while the telecommunications industry continues with trials of 5G technology. By 2025, it expects 4G to account for 53% of mobile connections, while 5G mobile connections are expected to account for about 14% of all connections.

The ITU notes that, while 5G could contribute to higher economic growth and create new business opportunities, besides other benefits, the deployment of 5G networks also come at a great cost. The organisation, therefore, urges operators to carefully consider the investment case for deploying 5G networks.





GSMA has also urged governments and regulators across the world to move quickly to make the required radio frequency spectrum bands available to allow for the roll-out of 5G services. The news report pointed out that the final 5G standards were expected to be ratified in November 2019. It further stated that 5G networks would require wider frequency bands to support higher speeds and larger volumes of traffic.

Meanwhile, South African mobile operators, similar to their global counterparts, are undertaking research and development into and trials of 5G technology.

MTN has partnered with Huawei and Ericsson on trials of 5G technology in South Africa, while Vodacom has entered into a memorandum of understanding with Nokia to conduct trials using Nokia's 5G technology. Vodacom launched the first commercial 5G service in Africa, in Lesotho, in August 2018. Joosub told delegates at the MyBroadband 2018 conference in October 2018 that 5G services could be rolled out in South Africa if the required spectrum was made available. He added that the introduction of 5G services would also contribute to lower data costs.

Data-only network provider Rain announced in October 2018 that it planned to deploy, with the support of Huawei and Nokia, a 5G broadband fixed-wireless network in South Africa. The company's 5G offering is expected to eventually support use cases, such as IoT, smart cities and self-driving vehicles.

Rain subsequently unveiled details of its 5G network during telecommunications, media and technology conference AfricaCom, in Cape Town, in November 2018. The company plans to launch 5G services during the first quarter of 2019. It will layer its 5G network on top of its existing 4G network, adding about 12 Gb/s of bandwidth to each of its sites. Speed tests done on the 5G network have demonstrated a download speed of more than 700 Mb/s and an upload speed of about 70 Mb/s.

FIXED-LINE BROADBAND

With growing investment and interest in mobile connectivity, fixed-line revenue continues to decline in South Africa. Icasas reported in its 'Third State of the Information and Communication Technology Sector' report, which covers the year until September 2017

SMEs adopting fibre above ADSL



Small and medium enterprises (SMEs) are advancing from using asymmetric digital subscriber line (ADSL) technology to fibre connections, reports World Wide Worx. The market research firm released the findings of its 'SME Survey 2018' in March 2018, which had been conducted in partnership with Intuit QuickBooks.

World Wide Worx pointed out that SMEs had transitioned from dial-up technology to ADSL between 2003 and 2009 and have again started a transition to the next technology opportunity – fibre. The survey shows that ADSL use among SMEs had peaked at about 70% in 2009 and had remained at that level until 2015. ADSL use among SMEs has now decreased to about 56%, while fibre use has increased to about 23%.

World Wide Worx attributes the growing adoption of fibre among SMEs to the increase in availability of the technology and decreasing fibre costs.

Source: World Wide Worx

and was published in March 2018, that fixed-line voice revenue had decreased to R13.42-billion in 2017 from R13.74-billion in 2016.

Fixed-line Internet and data revenue, however, increased substantially to R20.43-billion in 2017, from R12.61-billion in 2016.

Telkom, which has remained the dominant provider of fixed-line services in South Africa, reported a 9.30% year-on-year decrease in fixed-line telephone subscribers to 2.68-million in the financial year ended March 31, 2018, compared with 2.95-million subscribers in the 2017 financial year. The group's fixed-line voice usage and subscription revenues decreased by 8.70% year-on-year to R12.38-billion (2017: R13.55-billion).

Telkom's fixed-line subscribers decreased to 2.57-million by September 30, 2018, compared with the 2.84-million subscribers it had at the end of September 2017. This is significantly lower than the 5.49-million fixed-line subscribers it had in 2000. In addition, Telkom's total fixed-line voice traffic had decreased to 5.63-billion minutes in the six months ended September 30, compared with the 6.45-billion minutes recorded for the prior interim period.





Telkom reported in May 2018 that customers were increasingly moving away from circuit voice services to Voice over Internet Protocol (VoIP), which was further negatively impacting on its fixed-line voice revenues. To mitigate this challenge, the group has implemented strategies to manage the decline in fixed-line voice revenue and is migrating its customers to VoIP. Telkom further pointed out that its focus on new revenue streams – mobile and data – had compensated for the decrease in traditional business for the first time during its 2018 financial year.

Its mobile broadband subscribers increased by 37.50% year-on-year to 3.63-million in the financial year under review, compared with 2.64-million subscribers in the 2017 financial year. Its mobile broadband data volumes increased by 123.60% year-on-year to 191 813 TB (2017: 85 770 TB).

Further, although the number of fixed broadband subscribers had decreased by 2.20% to 981 176 (2017: one-million), fixed broadband volumes increased by 34.30% to 848 314 TB, compared with 631 569 TB in the prior financial year.

Many consumers in South Africa continue to use asymmetric digital subscriber line (ADSL) services; however, news publication MyBroadband has reported that consumers would gain more from moving to fibre connections. The publication stated in an October 2018 article that fibre connections cost less than ADSL services and that fibre could often offer better speeds and better reliability than ADSL services.

Telkom has also realised the benefits of providing access to newer technologies for customers, including fibre, and the group's wholesale division Openserve is focusing its efforts on increasing the number of fibre lines, as well as data volumes. Telkom reported in May 2018 that Openserve had invested R4.73-billion during the 2018 financial year in its last-mile access, which enabled it to offer customers broadband of up to 200 Mb/s. By March 31, 2018, Openserve had deployed more than 157 400 km of fibre across the country, which passed by more than 2.50-million premises.

In the six months to September 30, 2018, Openserve had invested a further R1.65-billion expanding its

footprint to 161 119 km of fibre, which passed by more than 2.60-million premises. Openserve was also, where feasible, migrating existing copper-based broadband customers to fibre-based broadband services to provide those customers with access to high-speed data connectivity.

Although Telkom has the biggest fibre network in the country, many service providers have entered the FTTH market in recent years. According to MyBroadband, there are at least 25 fibre infrastructure operators in South Africa. These include Openserve, Vumatel, FibreCo Telecommunications, MetroFibre Networkx, Frogfoot, Dark Fibre Africa and Seacom. The list also includes mobile operators Cell C, MTN and Vodacom.

Cell C is steadily expanding its C-Fibre FTTH offering.

MTN, meanwhile, launched new uncapped FTTH offerings under subsidiary company Supersonic in September 2018.

Vodacom is reportedly also planning to rapidly expand its fibre network, with CEO Shameel Joosub telling MyBroadband in November 2018 that the company was considering acquiring existing fibre infrastructure, partnering with other providers, as well as investing in its own infrastructure, as possible options for achieving that goal.

Another provider, BitCo, launched its FTTH offering in South Africa in September 2018.

Undersea cable system operator Seacom, meanwhile, reported in November 2018 that its subsidiary Seacom South Africa had concluded a deal to strengthen its fibre services. The company has agreed to acquire 100% of open-access fibre provider FibreCo Telecommunications, which connects more than 60 points of presence across South Africa, as part of its strategy to expand its African presence and to ensure it is prepared for the global move toward 5G technology. Seacom has said that the acquisition will enable it to deliver high-speed Internet connectivity and cloud products in underserved smaller cities and towns in South Africa. FibreCo's network also connects the Seacom subsea cable system, which lands in Mtunzini on the east coast of South Africa, to the West African Cable System, which lands at Yzerfontein, on the west coast of South Africa. The acquisition is subject to approval by the Competition Commission.





Policy and regulatory developments

IMT ROADMAP

The Independent Communications Authority of South Africa (Icasa) published its draft International Mobile Telecommunications (IMT) Roadmap for public comment in November 2018.

The roadmap is aimed at ensuring universal access to broadband services and a competitive telecommunications industry. It sets out Icosa's findings regarding the radio frequency spectrum required for IMT for 2020 and beyond. It identifies the radio frequency bands that are available and needed for IMT deployment, as well as the migration of licensees out of certain bands and into other bands to ensure the best use of the various frequency bands.

The regulator states in the draft document that IMT2020 represents the next generation of mobile technologies that will provide greater capacity for wireless networks, offer greater reliability, deliver fast data speeds and enable innovative new services across various industries.

Icosa points to three groups of IMT2020 services and applications, the first of which is enhanced mobile broadband, with 5G expected to provide faster and more reliable mobile broadband. The second group includes machine-type communications, including Internet of Things-enabled devices that wirelessly connect to the Internet and other similar devices.

The last group includes ultrareliable and low-latency communications that will provide for applications such as connected and driverless cars and smart manufacturing.

The public has until January 2019 to comment on the draft IMT Roadmap, after which consultations will be held with the industry. The regulator will, depending on the outcome of the consultations, compile radio frequency spectrum assignment plans to specify how the different frequency bands will be used.

NATIONAL INTEGRATED ICT POLICY WHITE PAPER

South Africa's Cabinet approved the National Integrated ICT Policy White Paper, which is aimed at unlocking the potential of the information and communication technology (ICT) sector to help eliminate poverty and reduce inequality in South Africa by 2030, in September

2016. The White Paper will be used as an instrument to ensure everyone in the country can participate in the digital society.

The Department of Telecommunications and Postal Services (DTPS) plans to implement the White Paper in phases over the medium term.

A key piece of legislation that forms part of the implementation of the White Paper is the Electronic Communications Act (ECA) Amendment Bill, which was published in the Government Gazette in September 2018. The legislation covers the proposed establishment of a national wholesale open access network (Woan) and will govern how radio frequency spectrum is traded and shared.

Government initially sought to take back all spectrum already issued to licensees for incorporation in the Woan, but has, following criticism from the industry, altered those plans.

MyBroadband reported in an article in September 2018 that the Amendment Bill contains a use-it-or-lose-it clause, which enables the Independent Communications Authority of South Africa (Icosa) to withdraw a spectrum licensee's licence should it fail to use the licensed spectrum for two years. The legislation will also allow spectrum licensees to trade licensed spectrum, if Icosa approves the trade. Licensees will also be able to share spectrum, also subject to Icosa's approval.

Licensees will also be required to get approval from Icosa to refarm spectrum that has been allocated to them. As part of the criteria for approving the trading, sharing or refarming of spectrum, Icosa will have to consider whether such activities will negatively impact on competition in the market.

In terms of the Woan, Icosa will be required to ensure that operators that are issued licences have diverse ownership; includes participation by targeted groups, including women, youth and persons with disabilities; and do not include consortium members that hold a market share of more than 50% in electronic communication services.

Business Day, meanwhile, highlighted in September 2018 that a proposal contained in the ECA Amendment Bill requires service providers with at least 25% of South Africa's network infrastructure to share their networks





with their competitors. The publication stated that this was likely to have a significant impact on the two dominant companies in the market – Vodacom and MTN.

Analysts have argued that the clause would leave larger operators with little incentive to invest in spectrum and infrastructure.

During the commission's inquiry into the South African data services market, the Internet Service Providers' Association called for the large mobile operators to share their networks with ISPs on a wholesale basis. According to TechCentral, Vodacom CEO Shameel Joosub told the Competition Commission in October 2018 that the operator's network was already constrained, leaving little room for providing access to its networks to Internet service providers (ISPs) on a wholesale basis.

Meanwhile, the DTPS is also progressing three strategies – the National e-Strategy, the National e-Government Strategy and Roadmap, and the ICT Small, Medium-sized and Microenterprises (SMME) Support Strategy – that form part of the implementation of the White Paper.

The DTPS states in its Annual Performance Plan for 2018/19 that the department will, as part of the National e-Strategy, focus on developing the National Digital Skills Strategy during the 2018/19 financial year. This strategy is aimed at identifying the ICT skills gap in the country and developing a plan to close that gap.

Further, in terms of the National e-Government Strategy and Roadmap, which is expected to ensure the digital transformation of the South African public service, the DTPS plans over the medium term to focus on facilitating the implementation of the strategy in cooperation with its partners, which includes the State Information Technology Agency (Sita). The DTPS and Sita are developing a National e-Services Portal that will enable government to deliver services to and communicate with citizens in real time.

The DTPS is also finalising a three-year implementation plan for the ICT SMME Development Strategy, which is expected to provide SMMEs in the ICT sector with new business opportunities. Through this strategy, the DTPS aims to develop SMMEs and provide them with entry into the ICT sector, and encourage more use of their services across various economic sectors in the country. During the 2018/19 financial year, the DTPS plans to implement capacity building programmes for black-owned ISPs at

POLICY AND REGULATORY DEVELOPMENTS

National Health Insurance sites, support private-sector ICT SMME programmes and promote the international competitiveness of these SMMEs.

ICT SECTOR CODE

A broad-based black economic-empowerment (BBBEE) ICT sector-specific code was published in the Government Gazette in November 2016. Under the code, entities in the ICT industry are required to have at least a 30% black shareholding.

Icasa held public hearings in May 2018 to determine how it should approach the implementation of the sector code and how it can promote BBBEE in the sector.

Meanwhile, the DTPS had established a BBBEE ICT Sector Council in 2015 to oversee the implementation and monitoring of the sector-specific code and provide guidance on matters pertaining to empowerment in the ICT sector, besides other functions.

The council elected a new chairperson, Andile Tlhoale, and deputy chairperson, Pheladi Gwangwa, in October 2018. This followed the resignation of former chairperson Nokuzola Ehrens in September 2018.

CALL TERMINATION REGULATIONS

After ten months of consultations with the telecommunications industry, Icasa announced in September 2018 the final 2018 Call Termination Regulations, which serve as amendment to the 2014 Call Termination Regulations and provide for revised wholesale voice call termination rates.

Call termination rates are the rates operators charge other operators for carrying voice traffic on its networks.

The regulations, which form part of Icasa's measures to reduce the cost to communicate, took effect on October 1, 2018.

Under the new regulations, operators with more than a 20% share of total minutes terminated in the wholesale voice market will be required to reduce their fixed-line termination rate to 9c/min from October 1, 2018; to 7c/min from October 2019; and then to 6c/min from 2020 onwards.





The mobile termination rate for those operators with more than a 20% share of total minutes terminated in the wholesale voice market has decreased to 12c/min from October 2018 and will decrease further to 10c/min from October 2019; and to 9c/min from October 2020 onwards.

For operators with a share of less than 20% of total minutes terminated in the whole voice market, the fixed-line termination rate decreased to 10c/min from October 2018 and will decrease further to 8c/min from October 2019 and then to 6c/min from October 2020 onwards.

The mobile termination rate for those operators with a share of less than 20% of total minutes terminated in the wholesale voice market, the mobile termination rate decreased to 18c/min from October 2018 and will decrease further to 16c/min from October 2019 and to 13c/min from October 2020 onwards.

NUMBER PORTABILITY REVIEW

Since November 2006, South Africans have been able to “port” their mobile numbers to operators, enabling them to retain their cellphone number when moving to another operator network. Number portability was introduced as a means to encourage greater competition in the market and reduce voice costs.

Icasa revealed in May 2017 that it would review the effectiveness of number portability in South Africa.

Following industry consultations, the regulator, in July 2017, published the findings of its review, which showed that, although there had been positive momentum, there were also some weaknesses that needed to be dealt with. The regulator found that port times could be reduced and that porting in the post-paid or contract segment lagged behind that of other countries.

Icasa published the draft Number Portability Regulations for public comment in November 2017, stating that the regulations were aimed at ensuring the efficiency of number portability.

The final 2018 Number Portability Regulations were published in October 2018.

Meanwhile, the Number Portability Company reports on its website that 10.59-million mobile subscribers

had successfully ported between November 2006 and October 2018, with an average of 71 550 ports a month.

END-USER AND SUBSCRIBER SERVICE CHARTER REGULATIONS

To deal with consumer complaints regarding the high cost of data, the expiry of data and high out-of-bundle data rates charged by telecommunications operators, Icasa undertook a review of its 2016 End-user and Subscriber Service Charter Regulations.

The regulator published the final 2018 End-user and Subscriber Service Charter Regulations in April 2018, which it says is aimed at protecting the rights of consumers by ensuring they are given sufficient information by telecommunications operators to make informed decisions.

Under the terms of the new regulations, licensees will be required to allow consumers to roll over unused data and transfer data to other users on the network. They will also be required to send consumers depletion notifications when they reach 50%, 80% and 100% depletion of their data bundles.

Lastly, consumers may no longer be defaulted to out-of-bundle data charges, which are generally much higher than in-bundle data charges, when their data bundles are depleted. Consumers must first give their consent to the out-of-bundle charges.

The new regulations were set to come into effect in June 2018, but the country's four largest mobile operators – Vodacom, MTN, Cell C and Telkom – requested that Icasa extend the deadline for the implementation of the regulations, saying they needed more time to effect the changes, but Icasa refused. Cell C, subsequently, launched a court application to postpone the implementation of the regulations.

Cell C and MTN South Africa reached a settlement with Icasa in November 2018, with the regulator agreeing to start the implementation of the regulations from only February 28, 2019.

Telkom, however, started implementing the regulations in November 2018, allowing for the roll-over of unused data or for the transfer of data to another user on the Telkom network.





PRIORITY MARKETS

Icasa started a process in 2017 to identify areas in the electronic communications sector that hamper competition and that disadvantage consumers through high costs and low quality of service.

After consultations with the industry, the regulator published its findings in October 2018, which suggested that three areas be prioritised for potential market reviews. These are the wholesale fixed-access market, including wholesale supply of asymmetric broadband origination, fixed-access services and relevant facilities; the upstream infrastructure markets, incorporating national transmission services and metropolitan connectivity and relevant facilities; and the mobile services market, including the retail market for mobile services and the wholesale supply of mobile network services.

The regulator noted that these markets were selected based on the likelihood of competition

concerns, as well as their importance to government's policy objectives.

Icasa announced in November 2018 that it planned to conduct a market inquiry into mobile broadband services to assess the state of competition in the market and determine whether there were market segments within the mobile broadband service value chain that required regulation.

Consumer protection

The Independent Communications Authority of South Africa established a Consumer Advisory Panel in March 2018 to advise it on all consumer-related issues in the broadcasting, telecommunications and postal services sectors. The panel, comprising 11 members, is expected to communicate with consumers regarding their concerns in these sectors and recommend to the regulator where research is needed to improve consumer protection.

Source: Icasa



Icasa started a process in 2017 to identify areas in the electronic communications sector that hamper competition and that disadvantage consumers

Picture by Creamer Media





South Africa Connect

South Africa (SA) Connect, which was approved by Cabinet in December 2013, is government's national broadband policy that aims to ensure the entire country has access to high-speed Internet by 2030. Through the policy, government is targeting the provision of Internet at a download speed of 5 Mb/s for 90% of the population and 100 Mb/s for 50% of the population by 2020. This is expected to increase to Internet provision at a download speed of 10 Mb/s for 100% of the population and 100 Mb/s for 80% of the population by 2030.

The policy will be rolled out in two phases, with the first phase to provide high-speed Internet access for 6 235 government facilities. A further 35 211 government facilities will be connected during the second phase until 2020.

Like many other government-led programmes, SA Connect has suffered various delays.

News website ITWeb reported in February 2018 that the SA Connect budget over the medium term had been decreased to R1.70-billion, from the R1.90-billion allocated in the prior year, as a result of the slower roll-out of the programme.

However, by October 2018, the Department of Telecommunications and Postal Services (DTPS) indicated that it was making progress with the roll-out. ITWeb reported at the time that the DTPS was planning to connect 570 government facilities to broadband services by the end of the 2019 financial year.

The DTPS emphasised in its Annual Performance Plan for 2018 to 2019, published in September 2018, that the roll-out of Phase 1 of SA Connect remained a priority for the department.

It stated that, as a result of fiscal constraints, the department was seeking crowd investment by the private sector.

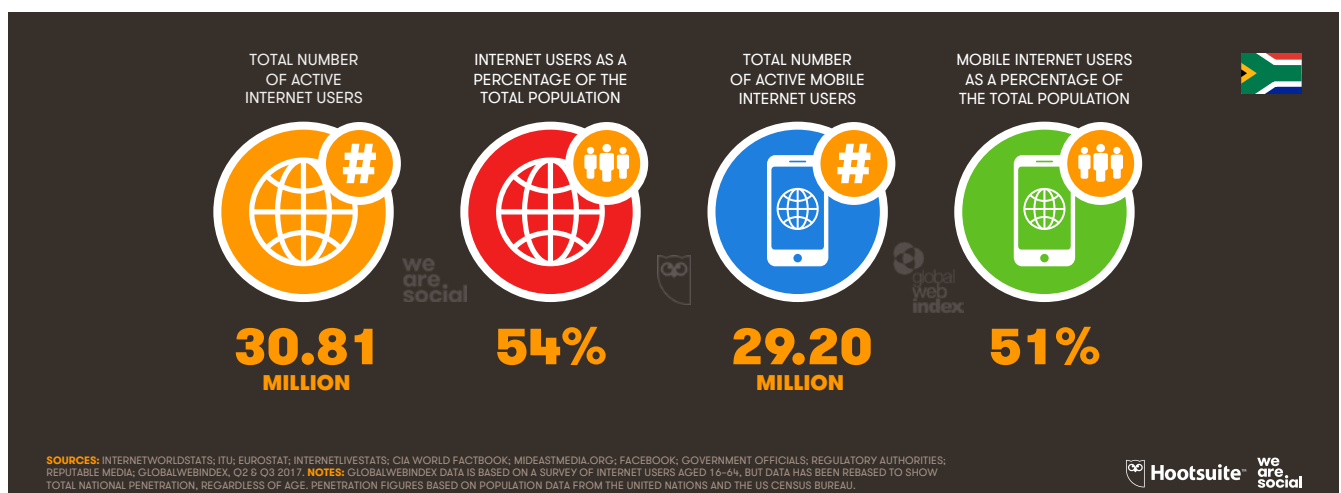
It added that all provinces were also pursuing broadband plans or strategies.

In Gauteng, Altech Alcom Matomo has successfully completed a R1.20-billion contract to build the core Gauteng Broadband Network (GBN) and connect 450 sites to the network.

Further, ITWeb reported in August 2018 that the State Information Technology Agency (Sita), which is managing the SA Connect project on behalf of the DTPS, had awarded the R2.80-billion tender for Phase 2 of the GBN to Altech Alcom Matomo.

Meanwhile, the Sunday Independent reported in August 2018 that the Limpopo provincial government's plans to establish an open-access broadband transmission carrier network had potentially hit a snag, with companies appointed to roll out the project reportedly in disagreement about the payment of fees. According to the news article, the R585-million provincial project, which forms part of the broader SA Connect programme, would connect about 6 000 government sites and 1.60-million households by 2030.

Internet use – based on reported Internet user data, and user claimed mobile Internet use (January 2018)



Source: Hootsuite – Digital in 2018 in Southern Africa





International connectivity

Various broadband cable systems, including Seacom, the Eastern Africa Submarine Cable System (EASSy) and the West Africa Cable System (Wacs), connect South Africa to the rest of the world. Planning for further cables is also under way.

EASSy: The 10 000 km EASSy submarine cable system runs along the east and south coasts of Africa and connects South Africa with Sudan through landing points in Mozambique, Madagascar, the Comoros, Tanzania, Kenya, Somalia and Djibouti. It offers more than 10 Tb/s of capacity.

SACS: The South Atlantic Cable System (SACS), which is wholly owned by Angola Cables and which connects Luanda, in Angola, to Fortaleza, in Brazil, was opened to commercial traffic in September 2018. The undersea cable was manufactured by NEC Corporation and has a design capacity of 40 Tb/s. Angola Cables reports that SACS is the first and fastest undersea cable link between Africa and the Americas and that it provides a more direct route for Internet traffic in the southern hemisphere, enabling African Internet service providers a secure path to the Americas without needing to pass through Europe.

SACS will also connect to the recently completed Monet Cable system, which is part-owned by Angola Cables and connects Boca Raton, in Florida, in the US, to Fortaleza and Santos, in Brazil, and the Wacs, which links South Africa to the UK.

SAT-3/WASC/SAFE: The South Atlantic 3/West Africa Submarine Cable, or SAT-3/WASC, cable runs along the sub-Saharan Africa coastline and links South Africa with Portugal and Spain. It connects with various West African countries along the route. The South Africa Far East (SAFE) cable system, meanwhile, provides redundancy on the east coast of Africa and links Southern Africa with Asia, with landing points in South Africa, Mauritius, Reunion, India and Malaysia.

It has a capacity of 920 Gb/s in the northern segments, north of Ghana, and a capacity of 800 Gb/s in the southern segments. The SAFE cable provides 440 Gb/s of capacity.

Seacom: The 17 000 km Seacom cable, which connects South Africa to Europe through the east coast of Africa, was the first submarine cable system to link South Africa and Europe. It was launched in 2009 with a design

capacity of 1.28 Tb/s. Seacom expanded the capacity of the cable in June 2018 to 1.5 Tb/s to increase available capacity in Kenya, Tanzania, Mozambique and South Africa.

Wacs: The Wacs cable system runs from Yzerfontein, in South Africa's Western Cape, to London, in the UK and connects to 15 terminal stations across Europe, West Africa and Southern Africa. It was launched in 2012, with a design capacity of 5.12 Tb/s.

Ace: MTN joined a consortium in 2015 that aims to extend the Africa Coast to Europe (Ace) submarine cable to Cape Town. The telecommunications operator has invested about \$50-million in the cable system. The first phase of the cable, running between Europe and Equatorial Guinea entered service in 2012. The extension of the cable to connect more countries along Africa's west coast and to South Africa forms Phase 2 of the Ace system.

Liquid Sea: Liquid Telecom subsidiary Liquid Sea plans to build a 10 000 km submarine cable with a capacity of up to 30 Tb/s linking South Africa to the Middle East. It will also connect to Liquid Telecom's Pan-African terrestrial network. TechCentral reported in January 2018 that the project was progressing, albeit slowly, as a result of the complexity of rolling out submarine systems.

Peace: The new Pakistan East Africa Cable Express (Peace) system, which has a 60 Tb/s design capacity, will initially span 6 200 km and connect Pakistan with Djibouti, Somalia and Kenya. A second 13 000 km phase is expected to eventually extend the cable system to Europe and South Africa.

Cape to Cairo network

Liquid Telecom completed the roll-out of a 60 000 km terrestrial fibre network from Cape Town, in South Africa, to Cairo, in Egypt, in 2018.

The company has plans to further expand its network, following the completion of the Cape to Cairo link. Liquid Telecoms CEO Reshaad Sha stated during the yearly MyBroadband Conference in October 2018 that 660 towns and cities across Southern, Central and East Africa had been connected through the network.

Source: *Engineering News*



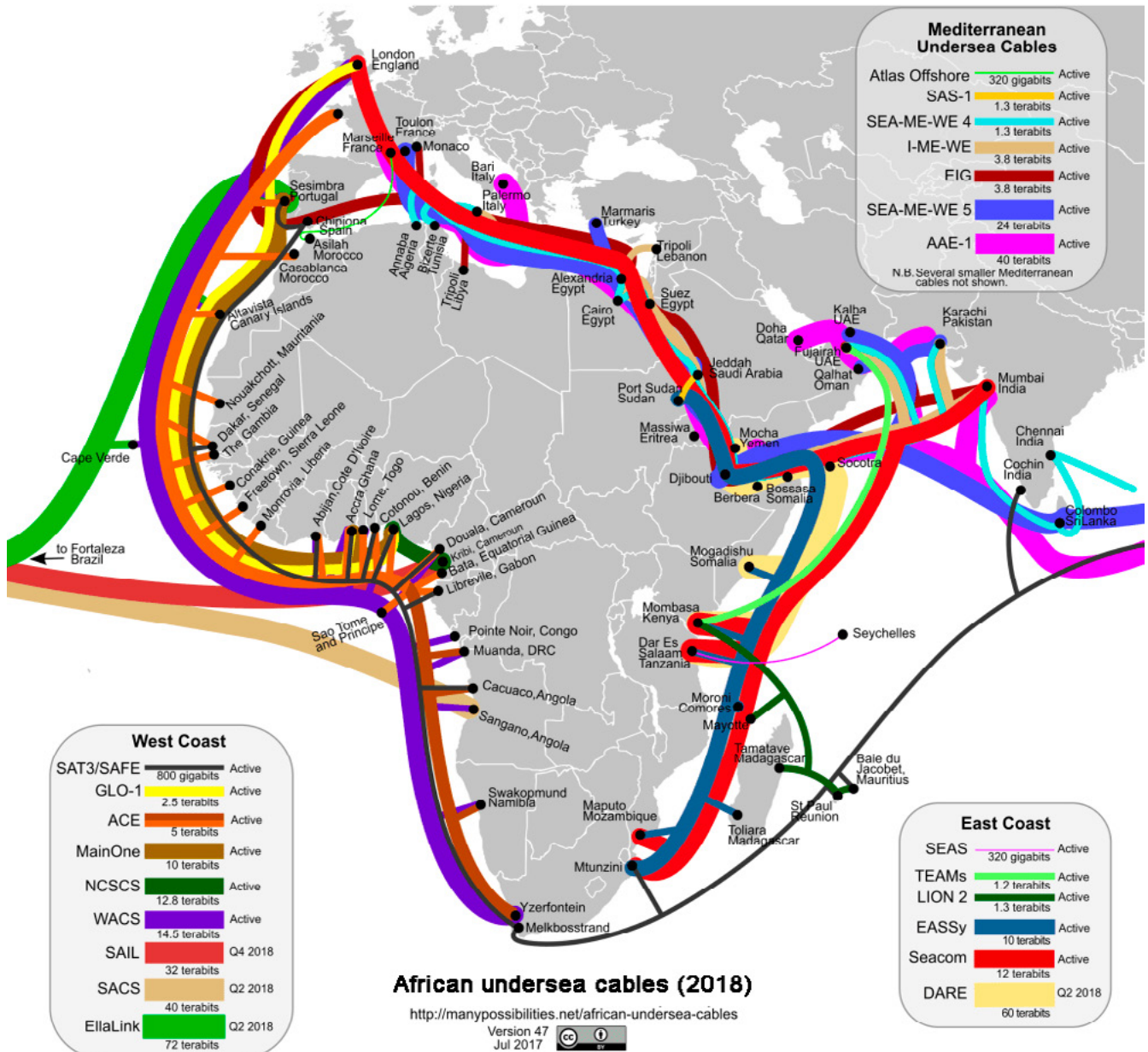


South Atlantic Express: The proposed South Atlantic Express (SAEx) cable, with a 72 Tb/s design capacity, will connect Mthunzini, in KwaZulu-Natal, South Africa, with Yzerfontein, in Cape Town, South Africa, and then link up to Fortaleza, in Brazil, through Virginia Beach, in the US. The first phase, which will also connect to the

island of St Helena, will cost about R5.90-billion and will enter service in the second half of 2020.

A second phase, which will cost about R3.70-billion, is expected to link up to Malaysia and will be called SAEx-2.

African Undersea Cables 2018



Source: <http://manypossibilities.net/african-undersea-cables>





Prospects

Although there is renewed momentum in South Africa to resolve the spectrum constraints that are holding back the telecommunication industry's growth, the process is likely to take several years before operators can access the ideal spectrum that will enable them to roll out the next generation of technologies.

In the meantime, operators will continue to invest in their networks and new product and service offerings to maintain or increase their market share in a competitive environment.

Professional services provider PwC, meanwhile, expects South Africa's mobile Internet revenue to increase at an 11.50% compound annual growth rate (CAGR) between 2017 and 2022, when yearly revenue will reach R70.30-billion and account for 90.90% of total Internet access revenue, compared with 87.60% in 2017. It points out in its 'Entertainment and Media Outlook: 2018-2022' report, published in September 2018, that rising smartphone adoption will help to drive the growth in Internet access revenue.

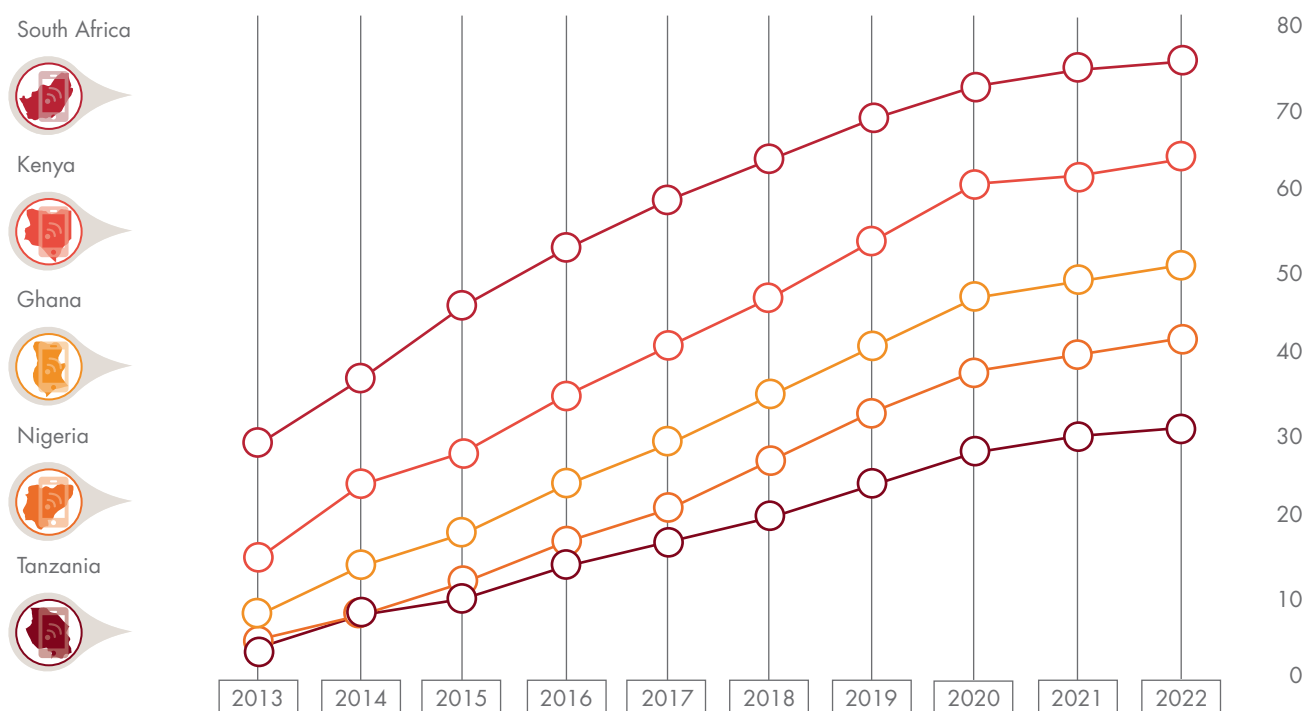
Further, fixed broadband penetration of households will also increase to about 22% of households (2.90-million households) by 2022, from 14% (2.90-million households) in 2017.

PwC states that mobile traffic is likely to grow "healthily" as phones and networks improve and if data tariffs are not overly expensive. The number of mobile Internet subscribers is expected to increase from 32.30-million in 2017 to 43.20-million in 2022, while mobile Internet penetration is expected to increase from 58% in 2017 to 75% by 2022.

The firm forecasts a 32.50% CAGR in South Africa's data consumption, from 1.95-million gigabytes in 2017 to 7.97-million gigabytes by 2022, as a result of the increasing affordability of smartphones and other smart devices, as well as continued investment by mobile operators in their networks.

Data consumption through smartphones is expected to record a 40.40% CAGR over the period, from 602-million gigabytes in 2017 to 3.28-billion gigabytes

South Africa, Nigeria, Kenya, Ghana and Tanzania:
Mobile Internet penetration – 2013 to 2022 (%)



Sources: Entertainment and media outlook: 2018–2022, An African perspective, PwC, Ovum, www.pwc.co.za/outlook





by 2022. Data consumption using tablets will record a 32.60% CAGR, from 448-million gigabytes in 2017 to 1.84-billion gigabytes by 2022. Data consumption through other portable devices will increase from 365-million gigabytes in 2017 to 1.40-billion gigabytes by 2022, while fixed broadband data consumption will increase from 524-million gigabytes in 2017 to about 1.44-billion gigabytes by 2022.

Video continues to be the dominant driver of data consumption by type and is expected to increase from 1.06-billion gigabytes in 2017 to 4.74-billion gigabytes in 2022.

GSMA Intelligence, meanwhile, expects the roll-out of fifth-generation (5G) technology to play a significant role in the sub-Saharan African telecommunications market in the years to come. It expects the number of 5G connections

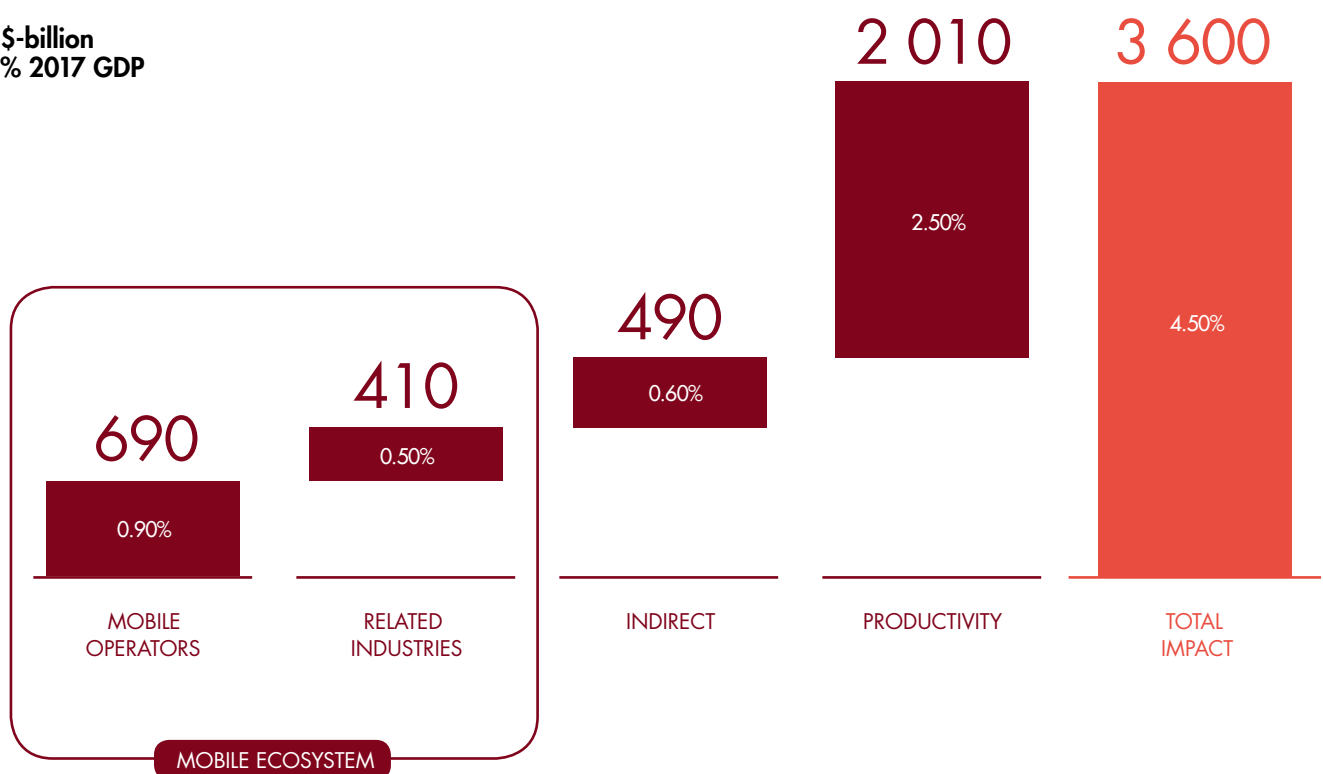
in the region to grow from about 400 000 in 2021 to nearly 12-million by 2025. GSMA believes 5G will provide improved mobile broadband services, as well as fixed wireless access in sub-Saharan Africa.

Another significant trend in the region is the increasing number of technology start-ups. GSMA Intelligence states that technology hubs play an important role in the technology start-up ecosystem, which contributes to the creation of homegrown solutions for local challenges. To date, 355 technology hubs have been established in sub-Saharan Africa and nearly half of those hubs are located in Ghana, Kenya, Nigeria and South Africa.

Investment in technology start-ups in the region is increasing, with Kenya, Nigeria and South Africa the most popular investment destinations in this regard.

Total (direct, indirect and productivity) contribution to gross domestic product

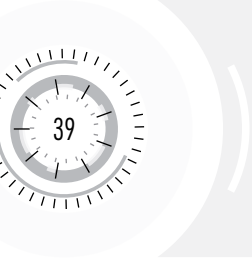
\$-billion
% 2017 GDP



Source: GSMA Intelligence

Note: totals may not add up due to rounding





Main sources

African News Agency. Vodacom agrees R17.5 bln black economic empowerment deal (June 11, 2018).

AfriCanopy. Media release: SA-first, TV white space trial approved to bring low-cost internet to rural SA (October 12, 2018).

Bloomberg. MTN is said to mull West African unit sale in markets cull (July 18, 2018).

Bloomberg. Cell C plans IPO for early 2020 in bid to raise funds (August 21, 2018).

Bloomberg. MTN raises \$236m in Ghana as it falls short of IPO target (August 30, 2018).

Bloomberg. MTN talks of scrapping Nigeria IPO (October 1, 2018).

Bloomberg. NetOne Zimbabwe in talks with Telkom (October 11, 2018).

Bloomberg. South African government will hold 4G spectrum auction by April 2019 (October 11, 2018).

Bloomberg. MTN executive exits said to intensify amid Nigeria crisis (November 27, 2018).

Blue Label. Results for the year ended May 31, 2018 (August 21, 2018).

Business Day. Telkom works out plan to boost black ownership above 30% (July 30, 2018).

Business Day. Cell C profit 'late in 2019', says Blue Label (August 22, 2018).

Business Day. Vodacom eyes new deal with Telkom (August 30, 2018).

Business Day. Contentious bill's 'open up' plan likely to scare MTN and Vodacom (September 10, 2018).

Business Day. Data prices 50% lower if State sells spectrum (October 19, 2018).

Business Day. Mobile network operators heed call to roll over data (October 19, 2018).

Business Day. Nigeria said to be cutting \$8.1bn demanded from MTN to \$800m (November 14, 2018).

Business Report. Icasa to review BEE regulations in ICT sector (April 25, 2018).

Business Report. Steps will be taken to cut data costs (October 24, 2018).

BusinessTech. SA mobile share in 2018: Vodacom vs MTN vs Cell C vs Telkom (March 19, 2018).

BusinessTech. 5G will drive down data costs in South Africa – Vodacom CEO (October 18, 2018).

Cell C. Media release: Cell C's turnaround takes shape with strong financial results (February 20, 2018).

Cell C. Media release: Cell C on track to benefit from strategy implementation (August 21, 2018).

Deloitte. Global Mobile Consumer Survey 2017 The South African Cut (August 2018).

Department of Telecommunications and Postal Services. Annual Performance Plan 2018/19 (September 2018).

Engineering News. MTN's shares surge as it announces \$1.67bn cash settlement over Nigerian fine (June 10, 2016).

Engineering News. MTN optimistic of turnaround after plunging into the red in FY16 (March 2, 2017).

Engineering News. National consultations on supporting ICT White Paper draft strategies begin (May 8, 2017).

Engineering News. Icasa number portability report shows room for improvement (July 21, 2017).

Engineering News. Turkcell's licensing fight with MTN gets go-ahead in South Africa courts (June 1, 2018).

Engineering News. MTN continues Turkcell defence (June 5, 2018).

Engineering News. Spectrum release expected to bring big economic and social benefits (July 6, 2018).

Engineering News. MTN disposes of its MTN Cyprus holding for R4.1bn (July 16, 2018).

Engineering News. Spectrum challenge likely to be resolved by next year (September 3, 2018).

Engineering News. MTN says concludes sale of MTN Cyprus to Monaco Telecom (September 4, 2018).

Engineering News. 5G on its way, but roll-out to be pursued on a case-by-case basis (September 7, 2018).

Engineering News. Cwele, Icasa settle spectrum litigation (September 26, 2018).

Engineering News. Telcos embracing once-feared OTTs (October 15, 2018).

Engineering News. Poverty comes with a data premium – Competition Commission hears (October 17, 2018).





- Engineering News*. Liquid eyes further expansion as Cape to Cairo links up (October 18, 2018).
- Engineering News*. Telecommunications industry loses billions of rands on the bank of regulatory uncertainty (October 18, 2018).
- Engineering News*. Rain to launch 5G network (October 29, 2018).
- Engineering News*. BBBEE ICT sector council appoints new chairperson, deputy (October 30, 2018).
- Engineering News*. Satellite connectivity can reduce sky-high Internet prices – MzansiSat (November 2, 2018).
- Engineering News*. MTN, Cell C secure extension on new end-user regulations deadline (November 16, 2018).
- Engineering News*. Ramaphosa merges Ministries in Cabinet reshuffle (November 22, 2018).
- Engineering News*. Telkom enables data transfer and rollover (November 26, 2018).
- Engineering News*. MTN South Africa reaches 90% LTE coverage (November 27, 2018).
- Fitch Solutions. Retreat or expand? Key considerations for MTN Africa strategy (July 27, 2018).
- Forbes. 5G technology set to fuel technological change and transform global economy (October 29, 2018).
- Government Gazette. Draft International Mobile Telecommunications Roadmap 2018 (November 9, 2018).
- GSMA Intelligence. The Mobile Economy 2018: Sub-Saharan Africa (July 2018).
- Independent Communications Authority of South Africa. Bi-Annual Retail Tariffs Report (March 2018).
- Independent Communications Authority of South Africa. Media release: Icasa commences with an inquiry into mobile broadband services (November 20, 2018).
- International Telecommunications Union. Setting the scene for 5G: Opportunities & challenges (2018).
- IT News Africa. MTN becomes the first African telco to join IoT World Alliance (November 28, 2018).
- ITWeb. Budget: Cabinet trims SA Connect budget (February 21, 2018).
- ITWeb. Another R2.8bn for Gauteng broadband network (August 24, 2018).
- ITWeb. Telecoms ministry lifts lid on WOAN spectrum allocation (September 28, 2018).
- ITWeb. Mini Budget 2018: Broadband rollout on track, says DTPS (October 24, 2018).
- MTN Group. Financial results for the year ended 31 December 2017 (March 2018).
- MTN Group. Integrated Report 2017 (May 2018).
- MTN Group. Interim financial results for the six months ended 30 June 2018 (August 2018).
- MyBroadband. Undersea cable systems in South Africa from 1879 to 2015 (August 10, 2015).
- MyBroadband. How many fibre infrastructure and service providers there are in South Africa (May 3, 2018).
- MyBroadband. Baptism of fire for Rain Mobile (June 25, 2018).
- MyBroadband. Here it is – the Act which will determine Vodacom and MTN's future in South Africa (September 3, 2018).
- MyBroadband. MTN Supersonic vs Vodacom Fibre – Prices compared (September 17, 2018).
- MyBroadband. MTN South Africa and Telkom in talks to merge – Report (September 23, 2018).
- MyBroadband. BitCo launching fibre-to-the-home packages (September 25, 2018).
- MyBroadband. We are not in merger discussions with MTN – Telkom (September 25, 2018).
- MyBroadband. ADSL users are paying much more than fibre customers for the same speed (October 25, 2018).
- MyBroadband. Big improvement in broadband prices in South Africa (November 6, 2018).
- MyBroadband. Rain launches 5G network – Hits 747 Mbps download speeds (November 12, 2018).
- MyBroadband. Big Telkom fixed-line and ADSL shock (November 13, 2018).
- MyBroadband. Vodacom's big fibre network expansion could take on Vumatel and Openserve (November 13, 2018).
- MyBroadband. Vodacom and MTN will have to share 5G spectrum – Minister (November 21, 2018).
- MyBroadband. All the MVNOs on Cell C's network (November 24, 2018).





- News24. Data won't fall if providers' costs don't fall, inquiry hears (October 18, 2018).
- OpenSignal. State of Mobile Networks: South Africa (September 2018).
- PayJoy. Media release: PayJoy, MTN and Sterling Bank bring fl MTN a smartphone financing options to Nigerians (November 5, 2018).
- PwC. Entertainment and media outlook: 2018 – 2022: An African perspective (September 2018).
- ResearchICTAfrica. The state of ICT in South Africa (July 2018).
- Reuters. MTN swings into first annual loss in 20 years (March 2, 2017).
- Reuters. Nigeria's central bank files counter claim in escalating MTN dispute (October 5, 2018).
- Reuters. MTN, Nigeria central bank face-off in court over \$8.1bn (October 20, 2018).
- Reuters. Kenya's Safaricom takes M-Pesa global with Western Union (November 6, 2018).
- Reuters. PIC raises stake in MTN to 23.6% (November 28, 2018).
- SANews. South Africa to start building affordable smartphones (November 10, 2018).
- Seacom. Seacom announces strategic acquisition fo FibreCo Telecommunications (November 14, 2018).
- Sunday Independent. Limpopo's R580m broadband fiasco (August 1, 2018).
- TechCentral. New subsea cable Peace to connect Africa, Asia (January 2, 2018).
- TechCentral. Liquid Telecom pumps R1.3bn into expanded SA data centres (January 30, 2018).
- TechCentral. Standard Bank said to be building an MVNO (February 12, 2018).
- TechCentral. SAEx pushing ahead with multibillion-rand SA, US marine cable (April 23, 2018).
- TechCentral. Can MTN become Africa's biggest bank? (April 26, 2018).
- TechCentral. Government's spectrum licensing plans revealed (September 28, 2018).
- TechCentral. 'Enduring' mobile duopoly has harmed consumers: Telkom CEO (October 18, 2018).
- TechCentral. Our prices will tumble when we get more spectrum: MTN (October 18, 2018).
- TechCentral. SA ranked with war zones in spectrum allocation: MTN (October 18, 2018).
- TechCentral. We don't have capacity to sell to ISPs, Vodacom says (October 18, 2018).
- TechCentral. Why operators will have to wait longer for prime spectrum (October 19, 2018).
- TechCentral. 5G 'at risk' without the right spectrum: GSMA (November 6, 2018).
- TechCentral. Cell C has a new chief financial officer (November 7, 2018).
- TechCentral. Telkom to switch from MTN to Vodacom for roaming (November 7, 2018).
- TechCentral. Telkom to switch off its 2G network (November 13, 2018).
- TechCentral. Seacom to buy 100% of FibreCo (November 14, 2018).
- TechCentral. MTN open to 'commercially agreeable' MVNO deals (November 24, 2018).
- Telkom. Integrated Report 2018 (May 2018).
- Telkom. Group interim results for the six months ended September 30, 2018 (November 13, 2018).
- Vodacom. Annual results for the year ended 31 March 2018 (May 14, 2018).
- Vodacom. Interim results for the six months ended 30 September 2018 (November 11, 2018).
- World Wide Worx. SME Survey 2018 (March 2018).
- Quartz Africa. Africa's largest mobile network may disconnect from parts of West Africa (July 23, 2018).





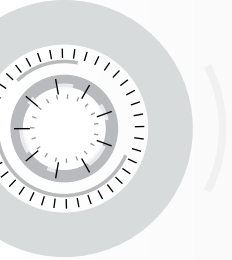
MAIN SOURCES

www.angolacables.co.ao
www.afdb.org
www.cellc.co.za
www.icasa.org.za
www.ictsectorcouncil.org.za
www.mtn.co.za
www.number-portability.co.za
www.rain.co.za
seacom.mu
www.telkom.co.za
www.vodacom.com
www.oceannews.com

Sponsored by:

ZEST
WEG Group





TELECOMS 2018

The material contained in this report was compiled by Creamer Media (Pty) Ltd's Research Unit, based in Johannesburg, South Africa. It has been compiled from sources believed to be reliable, but no warranty is made as to the accuracy of such information.

Creamer Media's aim is to present its reports in an impartial, user-friendly format for easy reference. The reports draw on material published over the past 12 months and are a summary of other sources of information published in *Engineering News* and *Mining Weekly*, as well as of information available in the public domain. The report does not purport to provide analysis of market trends.

This report is designed to be a source of information for subscribers to Creamer Media's *Research Channel Africa* and Creamer Media's *MiningWeekly.com Research*, and is not to be reproduced or published for any other purpose. In particular, the report may not be republished on any other websites and it may not be reproduced or redistributed in any manner.

© Copyright Creamer Media (Pty) Ltd



To subscribe to Research Channel Africa or purchase this report contact:

Creamer Media (Pty) Ltd | Tel +27 11 622 3744 | Fax +27 11 622 9350 | Email subscriptions@creamermedia.co.za

Picture by Creamer Media

