



Competition Commission Data service Market Inquiry, 2018

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1. Introduction

1. The Competition Commission (“the Commission ”), on the 20th September 2018, published an invitation for stakeholders to make formal submission to participate on the Data Service Market Inquiry (“the Inquiry”). Research ICT Africa provides its formal submission to the Commission, focussing primarily on mobile prepaid market pricing, competition, investment and regulatory policies.
2. Research ICT Africa (RIA) is a regional information and communication technology (ICT) think tank, active across Africa and in the Global South. RIA conducts research on ICT policy and regulation to facilitate evidence-based and informed policy-making for improved access, use and application of ICTs for social development and promote economic growth.
3. RIA published recently published a report on The State of ICT in South Africa which assess the policy, legal and regulatory framework, market structure and competition in both the wholesale and retail market and use the After Access Survey data to assess access and use of ICT in South Africa.
4. RIA concludes that even in the advent of a horizontal licensing regime, with separate network services licences, the legacy of the monopoly market in fixed services and the duopoly in the market remains. The protectionism afforded state-owned entities, the advantage of incumbency together with delays and ineffectual ex-ante regulation required to create an enabling environment for new entrants has had a negative impact on the development of some telecommunication market especially the fixed technology market.
5. The South African telecommunication market remains structured around vertically integrated incumbents who compete downstream in the service markets. Although the functional separation of Telkom required by the Competition Commission following findings of anti-competitive practices had arguably limited effect on Telkom’s behaviour, their voluntary structural separation in response to the competition they faced from wholesale open access carriers does appear to have brought some transparency to their practices and pricing, as witnessed in their positive results.
6. The entry of multiple open access fibre operators, in both the international transmission and national transmission markets does appear to have had a positive competitive effects on prices and investments. Fibre to the home or office is also driving up quality and driving down prices where services are being rolled out, but remains primarily a high-end residential and corporate offering.
7. While the mobile market appear to be competitive with four players in the market and a number of virtually networks and services, as a result of a series of regulatory failures on which dominant operators in the mobile market have been able to capitalise, it is concentrated around two players around two players who own more than 80 percent market share of active SIMs: MTN and Vodacom. Due to the existence of club effects and first-mover advantage, the late entrants Cell C and Telkom Mobile have not been able to place pressure on the incumbents and have struggled to keep more than a 10-15 percent of market share.
8. With data becoming the central requirement for most smartphone users, it appeared that the shift from voice to data might level the playing field as club effects and high high off-net voice prices diminished. Vodacom and MTN’s dominance in the market enables them to have the liquidity to reinvest in its network, extending its network coverage and improving the quality it offers. This in turn enables them to attract more customers and thereby increase their surpluses and be in a better position to buy more spectrum and enhance their quality of their network. Even without engaging in any anti-competitive practices, this creates a virtuous business cycle against which smaller operators cannot compete, without cost cost-based access to dominate operators’ networks. Wholesale price regulation of this kind is critical to creating a fair and competitive

environment, but it has to be done in a way that does not remove incentives for investments by operators to build out and upgrade their networks.

2. Wholesale and retail market performance

Undersea Cables

9. For the period up to April 2009, Telkom had a full monopoly on submarine cables into South Africa and was able to charge excessively high rates on international bandwidth out of South Africa. However, at that time, Telkom only sold the half circuit between South Africa and Europe, and one of the other international consortium members would have to sell the other half circuit into Europe. Since the end of the exclusivity period, other owners such as BT and Neotel have now been able to sell full end-to-end circuits on SAT-3 and SAFE.
10. Since 2009, a number of new cables have been laid around Africa on both the East and West coasts, and today there are six submarine cables that connect SA to the rest of the world. This has resulted in massive reduction in prices for bandwidth, and has boosted the demand very significantly for international connectivity. The price of international transmission, the major costs of inputs for ISPs only 10 years ago, has continued to fall since the advent of competition in the market. With the entry of Seacom in 2009, followed shortly thereafter by EASSy, with the advent of the West Africa Cable System (WACS) and Africa Coast to Europe (ACE) consortia on the West Africa coast, the stranglehold that the SAT-3 consortium had on the continent was broken. The consortium arrangements and open access models of the new undersea cable operators changed structure and ownership of the international transmission market entirely.
11. With the arrival of competing undersea cables, prices fell to a fraction of what they had been under the SAT-3 SAFE monopoly. While international bandwidth previously made up 80 percent of ISPA costs, it now made up roughly 20 percent. The real cost challenges shifted to national transmission, which now made up the bulk of costs. For many ISPs international bandwidth is now cheaper than national bandwidth (personal interview, Anthony Brooks, ISPA, 2016).

Fixed network/service operators

12. Considerable backbone and backhaul investments have been made over the past decades by the likes of Telkom, Liquid Telecom South Africa (previously Neotel) and Broadband Infraco, giving South Africa the most extensive infrastructure on the continent. This has been supplemented in the recent years by the expansion of fibre networks in the larger metropolitan areas. The overlays of fibre and bandwidth available is a key measure of competitiveness of cities as global investment destinations. The cost of fibre is, of course, a further consideration. With negligible wholesale access regulation in South Africa, despite the duplication and the existence of a clear facilities-leasing framework, the cost still remains relatively high.
13. Competition in fibre network rollouts in South Africa was initiated by the 2005 High Court ruling that ended Telkom's infrastructure monopoly and allowed mobile operators and value-added service providers to build their own networks. Competition in the fibre-to-home (FTTH) market intensified in 2014, following the appointment of Vumatel to lay fibre in Parkhurst, which subsequently led to a stampede to lay fibre in all the other metros. Since Vumatel's success, the number of competitors in the infrastructure market has risen to 35. Other than Vumatel, main players in the FTTH market include mobile operators, MTN and Vodacom and Openserve, which together owns 80 percent of the market.

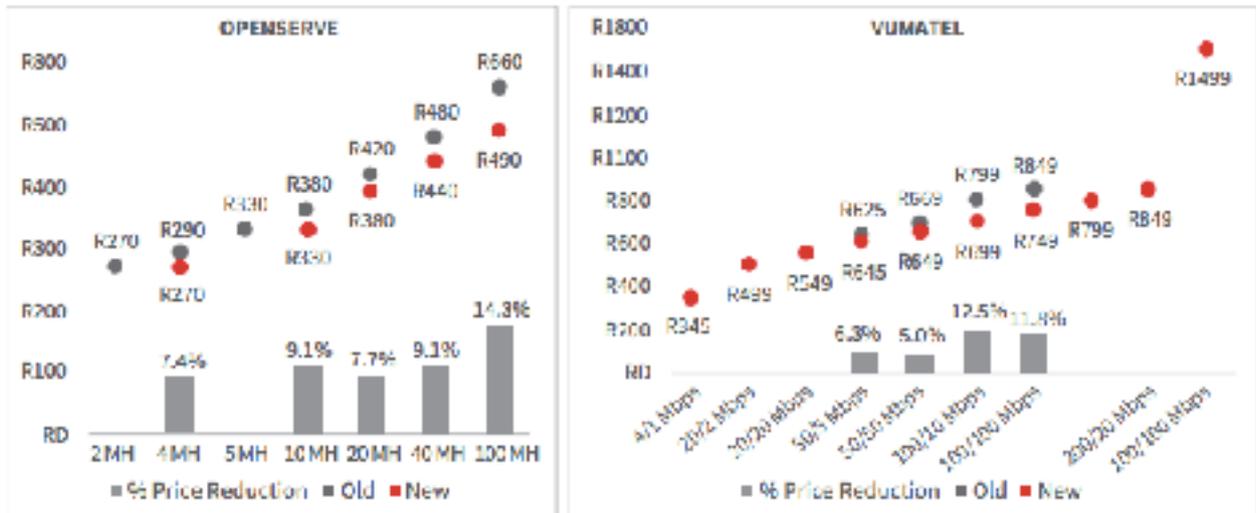


Figure 1: Price reduction on bandwidth at wholesale level (OpenServe and Vumatel)

Source: Econex Calculation, 2017

Mobile Market Network service

14. South Africa has a vibrant mobile market that has seen rapid uptake and unexpected innovations which have far surpassed market expectations, when the first two licences were granted in 1993. The dominant operators are MTN and Vodacom, in terms of SIMs and voice minutes), with Cell C and Telkom Mobile trailing behind. All are increasingly forced to find innovative ways of distinguishing themselves from competitors to gain and retain customer, as they deal with the presence of disruptive OTT services and the migration of their core business from voice and data.
15. Vodacom is the largest operator in South Africa, with a subscriber base of 45 263 001, corresponding to 46.8 percent of the market¹. Vodacom was the first operator in South Africa to launch 4G LTE technology in 2012. As of 2018, the company claims to have extended its 4G network coverage to some 80 percent, with 3G now reaching 99.97 percent, and only 0.03 percent with no coverage. Despite the investment made in 4G networks, only a small proportion of Vodacom subscribers (16 percent) are connected via LTE. The majority of Vodacom subscribers in South Africa are connected either through W-CDMA (44 percent) and GSM (40 percent).² MTN, the second largest mobile operator (measuring by active SIM cards), started its transition from 3G to 4G in 2012, with a capacity to offer speeds of 70 mbps, though at that time it could only provide average download speeds of between 7 and 20 mbps³. The MTN Subscriber base of active SIM cards stands at 29 806 000, representing a market share of 31 percent, some way behind Vodacom. The majority of its subscribers (72 percent) use 3G W-CDMA network with 18 percent on GSM and only ten percent connect via LTE⁴, despite the fact that MTN claims 80 percent 4G population coverage in 2018. MTN's 3G population coverage is reportedly 98 percent, marginally less than that of Vodacom's.
16. The entry of Cell C, in 2001, increased competition in the South African market, previously a duopoly of MTN and Vodacom. As of 2018, 17 years later, the company has managed to gain 17 percent of the total market share of active SIMs, claiming some 16.3 million subscribers, and

¹ GSMA Intelligence, (2018) Available on subscription

² GSMA Intelligence, (2018) Available on subscription

³ TechCentral, (2012). MTN launches commercial 4G network. Available at: <https://techcentral.co.za/mtn-launches-commercial-4g-network/36673/>

⁴ GSMA Intelligence, (2018) Available on subscription

doubling of the company's market share since 2011. Cell C business is highly dependent on the provision of Mobile Virtual Network operators (MVNOs) on its network, which contributed ZAR 370 million to its revenue.⁵ The majority of Cell C subscribers (72 percent) connect via a 3G W_CDMA technology and a mere 7 percent use 4G LTE technology.⁶

17. Telkom's mobile arm entered the market as '8ta' in 2010, and is the smallest operator, with barely five percent of the active SIM market in 2018, despite being able to leverage the fixed-line market presence and backhaul facilities of Telkom. After a very slow start in the market, Telkom's cheap data prices have built some market share, with it gaining the largest number of subscribers in 2016/17.⁷ Virgin Mobile has operated as MVNO since it came into the market with some fanfare in 2006. However, the services has not been able to attract large audience on the brand alone, with offerings that are not very competitively priced or products that are not very innovative. It has less than one percent market share, a penetration that has shuffled little in the 12 years of its existence.
18. rain, a data-only mobile network, launched its services in 2018, with flat-rate offerings (ZAR 0.05 per MB) intended to incite competition in the data market, where high pricing for OOB data has been the subject of consumer ire.

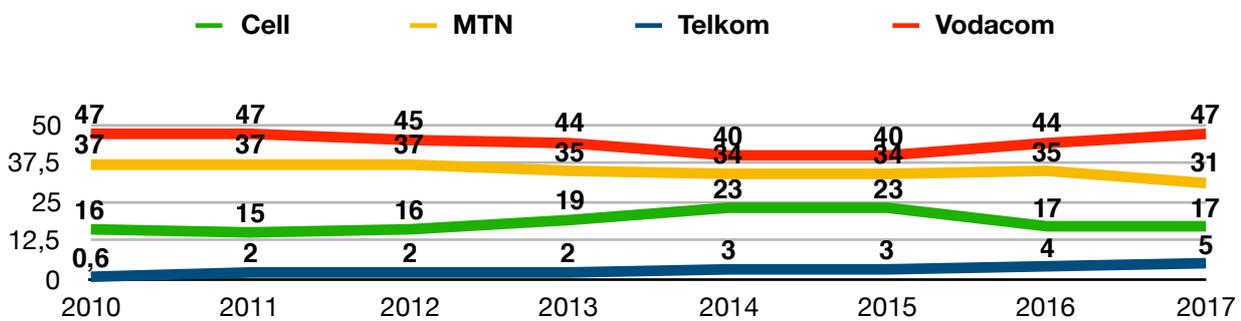


Figure 2: Operators Market shares 2010-2017

Source: GSMA Intelligence, 2018

19. The South African mobile market is highly concentrated, with an Herfindahl-Hirschman Index of 3 495, high than the 2 500 score for highly concentrated market as indicated by the Federal Trade Commission and the US Department of Justice. Suggesting minimal competition in the market. The RIA Mobile Pricing (RAMP) Index is used to assess pricing competition in the South African data market. Following the innovations and development of new products in the market, in 2018 RIA extended its pricing database to capture prices of 100 MB, 500 MB and 1 GB data with a daily, weekly or monthly validity. While the 1 GB is calculated based on the cheapest offering, the prices of the new products are captured as they appear in the market. Capturing prices as they appear in the market is critical as it helps regulators and policymakers to make evidence-based competition policies.
20. There is evidence of minimal pricing competition among operators. The 1 GB prices in South Africa have remained constant for more than nine quarters, since Q3 2015. This suggests that

⁵ Cell C Annual Report Presentation for year ended 31 December 2017. Available at: https://www.cellc/static-content/PDF/ANNUAL_RESULTS_2017.pdf

⁶ GSMA Intelligence (2018), Available by subscription

⁷ Mothobi, O. (2017). South Africa data prices static for two years but consumers not flocking to cheapest product offering. Research ICT Africa Policy Brief no.3. Available at: https://www.researchictafrica.net/docs/SA%20Policy%20Brief_V16_Final.pdf

lack of competition in the market has impacted negatively on low-income users who cannot afford access to the Internet due to high costs.

21. Despite Telkom offering the cheapest 1GB data at a price ZAR 99, its low pricing strategy did not lead any improvements in market shares. Telkom market share in the mobile market is very small, reaching only 5% in Q4 2017. The strategy to embrace OTTs at a time when the two dominate operators, MTN and Vodacom were lobbying decision-makers against OTTs allowed Cell C to grow its market share significantly. Cell C's market share improved to 23 percent in 2014/15. However, this did not last as its market share fell to 17 percent in 2016 due to large operator's decision to embrace OTTs and investments in providing quality.

22. Even though there is evidence that consumers do not react to price changes among small operators, the pricing data and information on the evolution of market shares show that consumers respond to changes in prices of two large operators. Through its innovative products "Just 4 You" and its promotional package that offers 2 GB at a price of 1GB, Vodacom continues to gain substantial market share from other operators in the market. Responding to the Vodacom pricing pressure, in Q1 2018, MTN substantially reduced its prices to match that of Cell C and Vodacom.

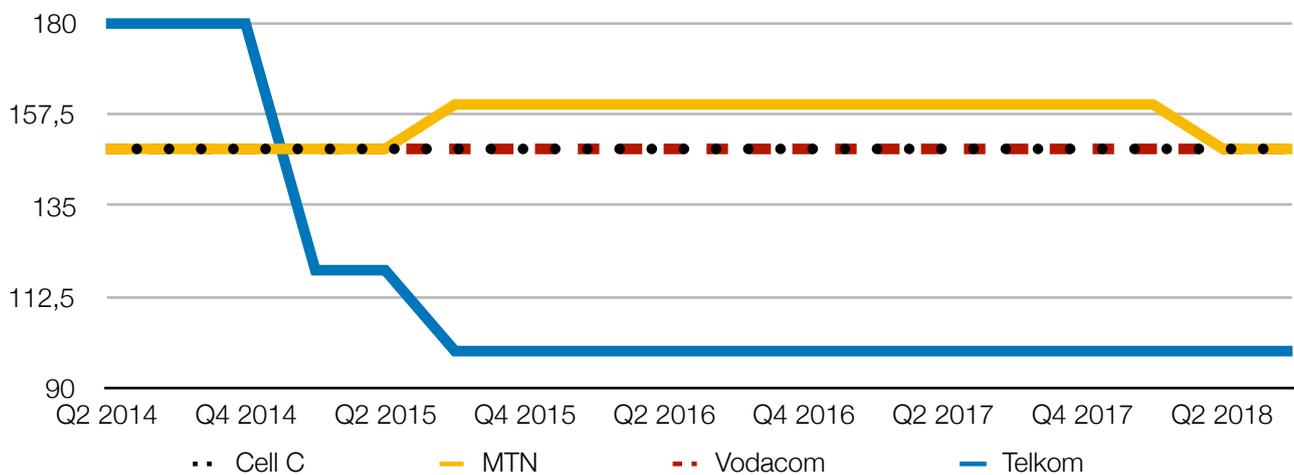


Figure 3: 1GB prepaid mobile data prices for South African operators

Source: RAMP Index, 2017

23. Data from the RAMP Index shows how MTN offers a range of products for price-sensitive users, while Vodacom's 'Just 4 You' package is tailored for customers. Telkom offers a 150 MB daily bundle for ZAR 10,00, cheaper than the ZAR 15,00 charged by MTN for its 120 MB bundle. Vodacom's price for a 100 MB daily bundle also costs ZAR 15.

24. MTN offers the cheapest 500 MB data bundles for daily (ZAR 50) and weekly (ZAR 55) periods, but Telkom again offers the cheapest 500 MB monthly bundle at ZAR 69. Similarly, MTN offers the cheapest 1 GB weekly bundle (ZAR 70) but does not compare well in the 1 GB monthly comparison. Vodacom's ZAR 149 promotional package (2 GB) offers the most value with an effective rate of ZAR 74.50 per GB, but Telkom's 1 GB is still the cheapest at a nominal price of ZAR 99.

25. The new, flat-rate offering of ZAR 0,05 per MB by a new mobile data network entrant 'rain' is likely to bring about changes to the data market. Although the extent of these changes is difficult to predict, rain's strategy of using a flat rate means that customers do not have to worry about restrictive validity periods and out-of-bundle charges. With this strategy, rain now offers the cheapest tariffs across the board: a 100 MB bundle will cost a customer ZAR 5, significantly less expensive than the previously lowest ZAR 29 100 MB offering of Cell C, MTN and Telkom. Rain's

500 MB costs less than half that of Telkom's 500 MB bundle and out-competes its 1 GB bundle price too by being just about half the cost (ZAR 50).

26. Although the competitive pricing strategy adopted by rain is expected to pressurise the other operators to reduce their data price for fear of losing market share, rain's data-only network can only be accessed by LTE-enabled devices and its coverage is limited to only some of South Africa's metros. With only 50 percent of the population owning an Internet-enabled device, and the lack of Internet-enabled devices (as identified in demand side section below) identified as a major barrier to Internet uptake, these services are likely to be enjoyed by those who are already better placed to pay for data, and may not alter the sector's landscape very dramatically any time soon.
27. The proportionately price of data for low-income users should be a serious concern for policymakers and regulators in South Africa. The After Access Survey shows that those who do not have access to the Internet fall overwhelmingly in the bottom two income categories. Of those who are connected, the majority depend on small data packages with shorter validity periods.
28. The RAMP shows that the cost of data in South Africa is very high as compared to other African countries. Compared with other Africa countries, South Africa performs poorly, coming 35th out of 49 African countries. The cost of the cheapest 1 GB pf data in South Africa is USD 8.28 (ZAR 99) as of Q3 2018. seven times the cost of the cheapest 1 GB data in Egypt (USD 1.13), and nearly three times the cost of the same data in Ghana, Kenya and Nigeria.

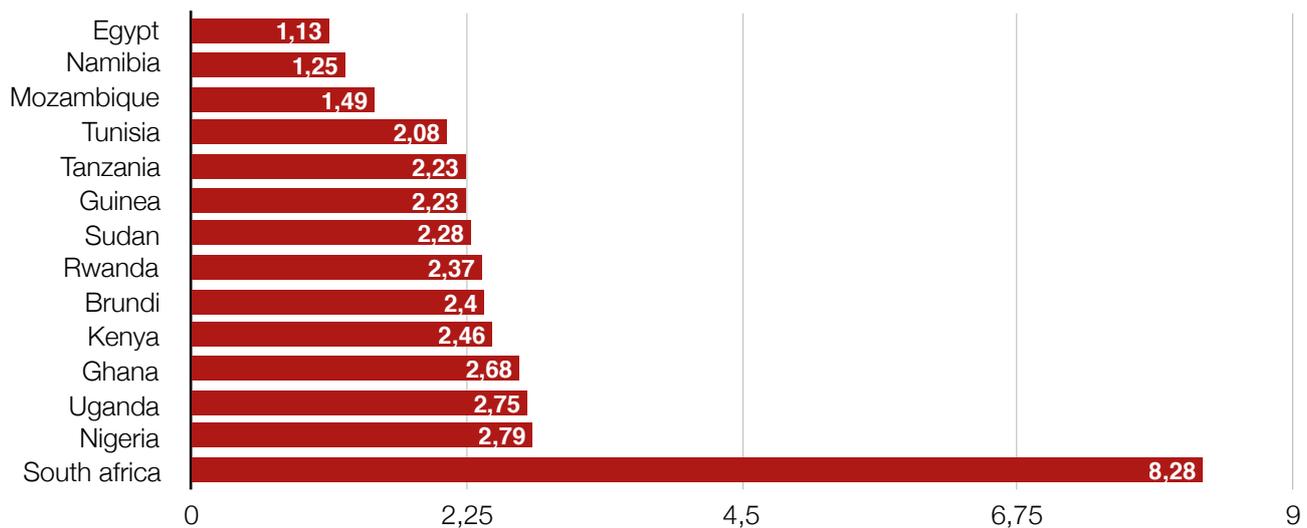


Figure 4: SA's cheapest prepaid mobile 1GB baskets compared to Africa's top performers (USD)

Source: RAMP Index, 2018

3. Pricing and affordability

29. Price is a key indicator of the level of competition in the sector. Accordingly, the price of mobile data services is the starting point for the assessment of the sector's performance. They serve as a measure of the competitiveness of the market and the degree of consumer welfare. If mobile prices are high in comparison to the benchmarked countries, then the causes of high prices need to be assessed.

30. The cost of communication in South Africa is high in comparison with other African countries. The cost of 1 GB of data in South Africa is double the average cost of the same amount of data in the comparative countries. Among factors contributing to high prices is lack of competition in the market. Although there are some virtual mobile providers (MVNOs), there are essentially four mobile network operators (MNOs), a number that is half the number of MNOs in Brazil and Nigeria (8 each) and fewer than the number of MNOs in Cambodia (5), and Ghana (7). Other factors leading to high cost of data in South Africa include input costs, which are affected by lack of stability of Rand/USD exchange rate, and regulatory issues surrounding the allocation of spectrum.

31. A key component to achieving universal access and usage service is affordability. Whether or not telecommunication services are affordable depends primarily on the price (which is determined by the input costs and profit margin of the operator) and the user's disposable income.

Table 1: Benchmarking South Africa against Ghana, Kenya and Nigeria				
Affordability	Comparison average	Traffic Light	Country-level indicator	Source
Mobile prepaid 1GB basket (USD)	3,04		7,27	RIA, 2017
Dominant operator: mobile prepaid 1GB basket (USD)	4,06		10,94	RIA, 2017

32. The 2017 RIA After access survey shows that low-income earners pay a significantly high proportion of their disposable income to access telecommunication services. This result is crucial for South Africa, which has a significant income disparities. The affordability divide between the low-income and high-income South Africans is creating barriers to connecting the low-income earners. The Survey shows that almost 50% of South Africans do not use the Internet, and further that these 50% are in the bottom of the pyramid - evidence that the price of communications in South Africa is unaffordable to the poor (see Figure 1).

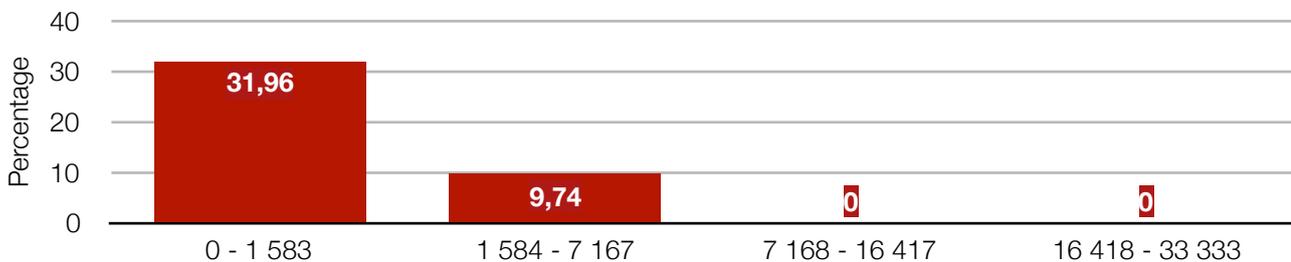


Figure 5: Percentage of individuals who do not have access to the Internet, by income group (ZAR)

Source: RIA After Access Survey data, 2017

33. Other than creating a barrier to access and use, the cost of communication in South Africa discourages Internet users from accessing the Internet as much as they need or desire to, even when they own or have Internet-enabled devices. A quarter of Internet users stated that the cost of Internet access limits their Internet use.

Competition

34. The competition component of sector performance impacts upon, and is impacted by other components, since it is at the heart of any ecosystem. Fair competition in the sector leads to reasonable returns on investment for operators and affordable prices for end users. Competition is evaluated by a concentration measure (the Herfindahl-Hirschman Index) and wholesale prices such as MTRs.

35. The benchmarking exercise shows that, overall African markets are highly concentrated. An assessment of the Herfindahl-Hirschman Index (HHI) shows that South African telecommunication is highly concentrated, with an HHI index of 3 495, higher than the 2 500 rule-of-thumb yardstick for high concentration, but lower than the average HHI of the other benchmark countries. The dominant operator, Vodacom, holds close to 50% share of the market. The market is highly concentrated, with two operators, Vodacom and MTN, controlling more than 80 percent of the market. This indicates that, despite the entry of two other players (Cell C and Telkom), the dominant position of incumbents makes it difficult for late entrants to wrestle market share away from them.

Table 2: Benchmarking South Africa against Ghana, Kenya and Nigeria

Competition	Country-level indicator	Traffic Light	Comparison average	Source
Market concentration (HHI)	3495		4087,66	GSMA
Number of mobile operators (excluding MVNO)	4		5	GSMA
Market share of the largest operator	47,18%		50,69%	GSMA

Table 3: Benchmarking South Africa against Argentina, Colombia, Guatemala, Paraguay and Peru

Competition	Country-level indicator	Traffic Light	Comparison average	Source
Market concentration (HHI)	3495		3822	GSMA
Number of mobile operators (excluding MVNO)	4		4	GSMA
Market share of the largest operator	47,18%		43,2%	GSMA

4. Market shares and revenue

36. The telecommunications sector is one of the largest industries in South Africa. For the year ending March 2017, the industry generated about ZAR 163 billion in revenue⁸. Vodacom has the largest revenue share of this revenue, amounting to ZAR 70 billion (a 8,1% increase from the previous year), followed by MTN (ZAR 41,9 billion – a 4,7% increase). For the same period, Vodacom’s service revenue increased by 4,9 percent to reach ZAR 54,6 billion, while that of MTN’s increased by 1,9 percent.

37. The increases in service revenue for these two operators were mainly due to growth in the numbers of active SIMs, and increased demand for data products. In the same period, Vodacom’s data revenue grew by 2.1 percent to ZAR 21.1 billion (making up 38% of service revenue), while that of MTN increased by 11,4 percent and contributed 34 percent to total revenue. Both MTN and Vodacom attribute their revenue growth to improved 3G and LTE network quality, alongside an aggressive smartphone sales campaign (MTN Annual Report, 2017; Vodacom Annual Report, 2018).

Table 4: Revenue by operator (ZAR)			
	Total revenue	Service revenue	Data revenue share
Vodacom	64.7 billion (+3.9%)	52 billion (+5.6%)	40%
MTN	41.9 billion (+4.7%)	(increased by 1.9%)	34%
Telkom	7.7 billion (+22.1%)	5.1 billion (+47.3%)	
Cell C	14.6 billion (+11%)	11.8 billion (+8%)	30%

Source: Operators' annual reports, 2017

Notes: Service revenues for Telkom and MTN, as well as Telkom's data revenue share were not reported.

38. For the period ending March 2017, Cell C recorded the highest percentage revenue increase among all operators: 11 percent, to reach ZAR 14.6 billion, while Telkom's mobile revenue grew by 22.1percent reaching ZAR7,7 billion in March 2018. Telkom recorded the highest percentage increase in service revenue: 47.3 percent to ZAR 5,1 billion%, while Cell C's service revenue increased by only 8 percent, taking it to ZAR 11.8 billion. Cell C attributed the strong revenue growth to its "strategy of innovation, exceptional value in product offerings and customer-centric approach", while its lesser service revenue increase was attributed to the growth in data volumes (an increased of 67% to reach ZAR 4.4 billion) (Cell C, 2017; Telkom Annual Report, 2018).

39. While much is made of pricing, a closer look at how the market evolves according to adjustments in operators' competition strategies shows that their intense focus on improving their network quality, speed and coverage is the most significant factor in earning market leadership. The subscriber bases of the two smaller mobile operators increased by higher percentages than those of the larger players in 2016/2017. Telkom and Cell C registered subscriber growth rates of 47.7% (from 2.7 million active SIMs in 2016 to 4 million in 2017) and 20% (up to 15.5 million active SIMs) respectively. It is important to note that these operators are growing from a much lower base than the two major operators, which makes their higher percentage growth rates unsurprising.

40. Vodacom's subscriber base grew by 12,1 percent% to reach 41.6 million in 2018, double the subscriber base of Cell C. The company registered more than four million new subscribers, a quarter of Cell C's total subscribers, and its prepaid subscriber base reached 36million (up by 13.4%) in 2018. Vodacom attributes the growth in its subscriber base to its new bespoke offering 'Just 4 You'. Having increased its subscriber base by 0.6% to reach 30.8 million in 2016, MTN's number of active SIMs declined to 29,5 million in 2017. The effects of its turn-around strategy (more competitive pricing and improved service quality) may only be seen in its 2018 figures.

5. Investment

41. After several years of slower growth in operator revenues, and clinging to their traditional voice and SMS services in the face of the growing adoption of OTT voice services (WhatsApp, Skype and their ilk), operators in South Africa appear to have turned their revenue attention to data revenues. Mobile operators have made significant network infrastructure investment to be able

carry the vast volumes of data transmitted by bandwidth-intensive applications and platforms (see Figure 6) .

42. For example, as part of its strategy to grow its network capacity, reduce its reliance on third-party transmission providers and improve network redundancy, and in an effort to catch up with the rate of investment by dominant operators, Cell C commenced replacement of its Core Transmission Legacy SDH technology with a new IP-MPLS and DWDM Core in 2016. Cell C attributes its good performance in the year ending March 2017 to significant investment in infrastructure and the rollout of additional sites, amounting to a capital expenditure of about ZAR 3.4 billion (Cell C, 2017). A decline in capital expenditure (to ZAR 1.2 billion as reported by Cell C in December 2017) does, however, suggest that the smallest operator was not able to hold to its strategy of improving network capacity.

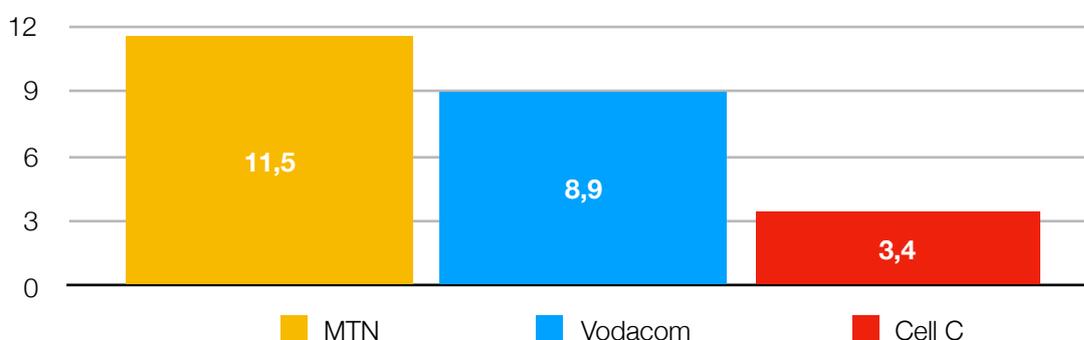


Figure 6: Operators' capital expenditures (ZAR billions) in 2017/18

Source: Operators' annual reports, 2017

43. After holding out on competitive data prices, and trying unsuccessfully to drive voice revenues, MTN has been forced to strengthen its data strategy. Vodacom which, together with Cell C, had been a first-movers in embracing data strategies — and in Cell C's case embracing OTTs — gained substantial market share from MTN. Vodacom, however, emerged from the short-lived price war as the premium quality provider and quickly adjusted its price upwards. However, its current promotion, offering 2 GB of data for the price of 1 GB is likely to maintain its market share for a large portion of 2018.

44. For the year ending March 2017, MTN's strategy focussed on investing in infrastructure to improve its network coverage and quality and to compete more effectively with Vodacom, which had become perceived as the quality provider with the widest coverage following six years of intensive investment in 4G network developments. This included the refarming of its 900MHz spectrum in order to use its old 2G spectrum for providing 3G services (Vodacom Annual Report, 2016/17). MTN has since allocated ZAR 11.5 billion to capital expenditure, and its Q3 2017 financial results demonstrated that the second-largest operator is playing catch-up, investing more than its competitors in 2017.

45. Although it invested less than MTN in the last year, Vodacom has continued its strong investment strategy with a ZAR 8.9 billion injection made in the 2018 financial year. Vodacom's strategy has also included widening its 3G and LTE data coverage, improving voice quality, and increasing data speeds (Vodacom Annual Report, 2017/18). It has succeeded in covering 80 percent of the population with its 4G network (up from 58.2% in March 2016) and in reaching over 7 900 sites.
46. Competition in the data market today, where digital products are more in demand than ever, is no longer about pricing alone. Quality of service is more critical for time sensitive voice substitutes and video that are driving demand.
47. Large operators, such as Vodacom and MTN, are more likely to win this battle, because their significant market share and larger profits are able to accelerate their investments relative to smaller operators, and respond to the demand for high-quality and high-speed services for which users are willing to pay a premium. Small operators are unable to attract and retain the customers favouring quality over price (who generally increase service revenue) and, as a result, have smaller surpluses to reinvest, forcing an over-reliance on loans. Small operators know, however, that this is the only way they can survive, hence the significant capital injections in both Cell C (3.4 billion) and Telkom (8.6 billion) for the extension of their high-speed networks. Both of these operators have had to significantly cut their costs of operating as part of their ongoing business strategy.

EBITDAs

48. The South African mobile operators are financially healthy and profitable. Under its strong leadership with a turnaround strategy of innovation-driven revenue growth and recapitalisation process in 2017, Cell C has had a successful year, achieving a 151 percent year-on-year increase in EBITDA to ZAR 7.8 billion. Despite being the smaller operator, Cell C has operated more efficiently with an EBITDA margin of 50 percent and higher than all operators in the market. The second most efficient operator in the market is Vodacom. However, Vodacom strategy of offering high quality and user-tailored services has been able to secure its place as the largest operator in terms of subscribers market share and revenue share. MTN is barely profitable with a EBITDA margin of 32 percent. The low margins of MTN are attributed to its strategy of protecting its traditional revenue streams. An EBITDA trend analysis of the two dominant operators Vodacom and MTN shows that Vodacom's profitability has been increasing, rising from 36 percent in 2010 to 40 percent in 2018, while MTN's EBITDA continues to dip from 44 percent in 2010 to 32 percent in 2018.

Average revenue per user (ARPU)

49. Average revenue per user (ARPU) is an important metric to measure the health of the mobile telecommunication sector and how well a company can monetise its user base. It provides a way to track operator revenue growth.

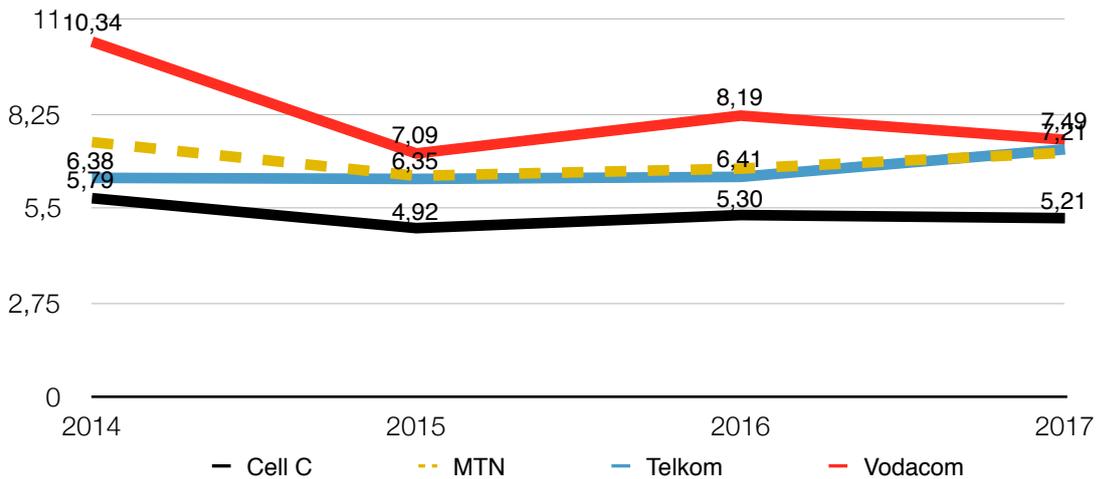


Figure 7: SA's mobile operator average revenue per users (ARPU)

Source: GSMA, 2017

50. Figure 7 shows that Vodacom is not only the largest operator by its share of subscriptions in the market but also its share of revenues. Its dominance, however, is declining. In 2014, Vodacom's average revenue per user at USD 10.34 was almost twice as that of Cell C and almost USD 4.00 higher than that of MTN, the second largest operator. While Vodacom's ARPU is declining, MTN and Telkom's ARPU is on the rise, catching up with Vodacom in 2017. This is probably a reflection of Vodacom's bullish decision to embrace the data market and to invest heavily in its 4G network, (and is even trailing a 5G network), building a strong customer base with with some innovative data offerings.

6. Legal framework

51. Following an invitation to provide written comments on the draft Electronic Communications Amendment (ECA) Bill in November 2017, a public workshop was held in March 2018, with invitations to organisations that made submissions to provide oral presentations. The draft Amendment Bill is part of omnibus cluster of legislative amendments arising from the White Paper.

52. It is clear from the White Paper that the remaining Bills will have substantial implications for the ECA, and for the structure and regulation of the sector. It is likely they will affect the powers, competencies and independence of ICASA, as well as the future existence and scope of USAASA and the domain name authority, ZADNA. The draft Bill (DTPS, 2017) sets out several fundamental departures from the recommendations of the ICT Policy Review Panel. (DTPS, 2015) There is an undercurrent throughout the Bill that asserts the role of the DTPS and its Minister over that of ICASA, and downgrades the independence of the latter. The Bill grants extensive powers to the Minister, not only in overseeing the sector, developing policies and representing the country at international fora, but also in the management of scarce resources such as spectrum (DTPS, 2017). This erodes the powers of independent entities that are tasked to exert their technical expertise and grasp of the dynamics and trends within the broad ICT sector to implement national policy independently of government and industry

Spectrum

53. The proposed pre-emptive insertion of Section 29A into the chapter on spectrum asserts *ex ante* a primary role for the Minister in respect of spectrum, and serves to, limit the autonomy of the regulator. It is also at odds with Section 192 of the Constitution, which requires

broadcasting to be subject to “independent” regulation. This is so, because broadcasters depend on spectrum, which will no longer be under the overall control of an independent regulator. Although overall high-level spectrum policy and international country interaction with the ITU are clearly the domain of the Ministry, regulatory practice in many jurisdictions with independent sector regulators (or spectrum agencies) leaves spectrum management and band planning within the ambit of such a specialised agency, along with regulation, assignment, licensing, charging, monitoring and enforcement in relation to spectrum.

54. Further, with the Ministry still a significant shareholder in key industry players such as Telkom and Broadband Infraco, the proposed involvement of the Minister in respect of ‘high demand’ spectrum creates a potential conflict of interest. In addition, d ICASA, as the body receiving spectrum assignment requests, is far better placed than the Minister to determine where there is high demand. In any respect, global standardisation of next-generation spectrum is likely to indicate what is going to be high-demand spectrum. High-demand spectrum could, of course, also be in the unlicensed bands, for example, public Wi-Fi bands. This notwithstanding, a mechanism for determining demand for such spectrum also needs to be considered by ICASA.

WOAN

55. The draft Bill also proposes to license a Wireless Open Access Network (WOAN) operator. Although not canvassed in much depth in either the ICT Policy Review process or in SA Connect, the draft Amendment Bill sets out procedures to establish the proposed WOAN, as a special licence category with close involvement of the Minister.

56. The establishment of the WOAN as an ECNS licensee with radio frequency spectrum and subject to special conditions is intended to provide wholesale electronic communications network services on an open access basis to other operators licensed in terms of the ECA. Incentives for the WOAN include:

- reduced or waived fees;
- access to rights of way, public infrastructure as well public electronic communications facilities through government facilitation; and
- allocation of funds to construct or extend an electronic communication network in under-serviced areas.

57. The Bill specifies further that it is the Minister who must determine which unassigned high-demand spectrum must be assigned to the WOAN. This provision may undermine the existing rights of current spectrum licensees and the high levels of investment in the sector. Not only that, its asymmetrical application will serve to disadvantage other applicants for spectrum, making it anti-competitive.

58. Any new assignment of any additional high-demand spectrum would become conditional on the WOAN being “functional” (DTPS, 2017). Making access to ‘high-demand’ spectrum conditional on the successful deployment and operation of the WOAN, which already faces a number of risks, might further delay the urgent release of 4G spectrum, in respect of the assignment of which SA is now lagging many other African countries. This consequently forces operators to continue the sub-optimal practice of refarming spectrum from other bands, contributes in turn to the high data prices witnessed in South Africa. The sector also requires competitive mechanisms for spectrum assignment, and the assignment of unused spectrum to alternative network deployment mechanisms, such as community networks and secondary use in rural areas. The recently-published regulations on TV White Spaces – all be they not yet in effect at the time of writing - sare a welcome accommodation of dynamic spectrum technologies that have the potential to reduce the cost of communications dramatically.

59. The Bill identifies the deployment of open access networks as a means of bringing about affordable and ubiquitous broadband access through increased service-based competition as depicted in the National Integrated ICT Policy White Paper. It should be noted that the WOAN as a licence category was introduced in the White Paper, without sufficient prior public or industry consultation⁹. Both the White Paper and the draft Bill appear to assume that 'open access' inevitably and always produces positive outcomes. Open access can be a mechanism to achieve certain outcomes, but it is not necessarily the only or always the best way to do so. There is considerable evidence that open access can reduce investment, perpetuate dominance and requires enforcement once it is found to be effective in meeting its objectives (Mariscale *et al*, Mexico case; Gillwald, Odufuwa and Rademan, 2016).
60. A 2014 study by Analysis Mason, commissioned by DTPS and Treasury, on the viability of the open access network, indicated that there was no case to be made for the introduction of such an open access wireless network, and that those that were being trialled at the time suggested caution was advisable. The Department has indicated it did have other studies that have demonstrated the viability of the WOAN (personal Interview, former DG Joe Mjwara, 2016), but these have not made public. The CSIR was commissioned in 2017 to undertake an implementation analysis, but this too has not been made public as yet.
61. The open access initiatives, that accompanied the broadband plans of Nigeria, Kenya and South Africa, and in the case of Rwanda, there has been no successful implementation of the various open access wireless initiatives undertaken. In these high profile African cases. In the Mexican case with the Department aspires to the delays and opportunity costs associated with the delays have raised many red flags. The project was only possible and could only override existing rights and legal barriers because of the constitutional mandate that underpinned it. It was also this constitutional imperative that compelled it to proceed even when there were significant concerns about its viability and benefits.¹⁰
62. In the case of Mexico, complex institutional arrangements have had to be instituted to mitigate the risk associated with the project, included the establishment of Red Compartida, the common carrier company holding the spectrum, as a special purpose vehicle, for which only bidders not associated with any existing operators were eligible. Unlike what is being proposed in South Africa, only 90 MHz of spectrum in the 700 MHz (digital dividend) band has been set aside for the exclusive use of the open access wireless network (Red Compartida, interview, 2016).
63. Further, the potential success of Red Compartida appears to depend on special powers given to the regulator by constitutional reform, which permit the asymmetrical regulation of the operator that has enjoyed extreme dominance of the market (as much as 80% market share). This differs from South Africa where dominance of the duopoly is yet to be established by a market review, and the abuse thereof is far less certain. Despite this, only one bidder, ALTAN Redes, came through to the final round, and was awarded the contract. In March 2018, the

⁹ Industry players have publicly complained about the lack of good faith displayed by the Minister in leaving out the agreed policies and clauses from the few consultations that did take place. For more information, see: <http://www.freemarketfoundation.com/article-view/telecoms-industry-under-threat-what-the-media-and-public-need-to-know>.

Also note that the idea's beginnings germinated from the Broadband Plan's "open access" principles and attention to a lack of service-level competition — an idea later sustained in the ICT Policy Review Panel's findings without recommending any adoption of a WOAN.

¹⁰ Gillwald, A., Odufuwa, F. and Rademan, B. (2016). "An evaluation of open access broadband networks in Africa: the cases of Nigeria and South Africa". Available at: https://researchictafrica.net/publications/Other_publications/2016_Integrated_Policy_Paper_-_Open_Access_Broadband_Networks_in_Africa.pdf

company went operational with the initial 30 percent coverage as required, and which it is required to extend to 90 percent by 2024.

64. Recommendation: The suggestion of creating a single national wholesale network in the wireless sector cannot be automatically dismissed on the grounds that it has not enjoyed success in the few other countries where it has been applied (keeping in mind the unique conditions that contributed to their failures and un-redeeming successes). In addition to this evidence, South Africa's own unique environmental conditions ought to be taken into account (by completing a thorough in-depth market review and feasibility study, among others) before formulating any policy that calls for a change in the market structure. The current version of the WOAN, as proposed in the draft ECA Bill, is too ambitious and untested to pass into law without threatening the incentive on the private sector to invest, and without receiving legal attention from mobile network operators that threaten to delay mobile sectoral development by years as court procedures attempt to resolve conflicts. There is enough unassigned spectrum available currently, in addition to that which should become available at the conclusion of the Digital Migration process, to entertain a hybrid model that both assigns high-demand spectrum to existing licensees and to a consortium of network operators for wholesale purposes.

7. Policy implications and recommendations

65. The headline findings of the survey show that the biggest barrier to South Africans getting online remains the initial cost of an Internet-enabled device, with the ongoing cost of data services the major factor limiting the intensity of use.

66. Even where people have acquired the device, and have found the resources to be online, large numbers of them lack the skills and knowledge to use the Internet productively. There are things that can be done on the supply-side to remedy this situation. On the demand-side the challenges are much greater, particularly with regard to the seemingly intractable problem of poor education. Until this is addressed, most citizens will remain at best consumers in the digital economy; and many of those currently marginalised will remain so, with only a very few able to become value-adding producers or creators of services and content. The potential of virtual labour mobility to raise incomes by decoupling workers from the geographical constraints of physical workplaces, and through improved matching of employment opportunities with individual skills, will not be realised.

67. A number of specific constraints holding back effective sector performance emerge from the analysis, each of which will be discussed.

Affordability

68. There is little doubt that cost drivers, such as the high rand-dollar exchange rate (which affects equipment imports required for the constant upgrading of mobile networks), together with the increasing cost of key inputs (such as electricity) have had inflationary effects on data prices. In the absence of high-demand spectrum being released to operators for 4G, high bandwidth services are also not being deployed in the most cost-effective bands, which further exacerbates the high cost of communications. Despite this, it is clear the price of data is not cost-based, and could be brought down through regulatory measures to enable more effective competition in the market¹¹.

69. Although the recent End User and Subscriber Service Charter Amendment Regulations – which mandate operators to roll over unused data, to enable transfer data to other users on the same network, and which prohibit customers being charged out-of-bundle rates without their

¹¹ See [RIA Policy Brief 1](#), 2018

consent - demonstrate a commitment to consumer protection, they do not deal with the underlying causes of high data prices.

70. Along with many other telecommunications regulators responsible for economic regulation of the sector around the world do, ICASA is mandated (by Chapter 10 of the Electronic Communications Act) to define and analyse markets and market segments, and to determine their degree of competitive functioning, in order to design the appropriate remedies. This *ex ante* pro-competitive regulation is designed to protect consumers in the retail market by safeguarding fair competition and by pre-empting anti-competitive behaviour. Ex post regulation, dealing with anti-competitive conduct and abuse of dominance, deals with market failures after they occur, and is the province of the Competition Commission and Tribunal.
71. Failure by ICASA to put in place this mandatory and foundational regulation more than a decade after the Act was passed means that the wholesale facilities and services market, which is highly imperfect by nature, does not allocate resources efficiently, and therefore does not produce the intended competitive results. Even in the absence of anti-competitive practices, without cost-based access to dominant operators' networks smaller operators cannot compete. While successful operators should not be penalised for their success, dominance does enable Vodacom and MTN to have the liquidity to reinvest in their networks, extending network coverage and improving the quality it offers. Even in the absence of anti-competitive practices, this enables dominant players to attract more customers and thereby increase their surpluses, placing them in a better position to further enhance the quality of their networks or pay for spectrum when it does become available. Wholesale price regulation is therefore critical to creating a fair and competitive environment. This is not an easy task in a developing market, and has to be done in a way that does not remove incentives for network investment.

Universal access

72. What is also clear from the supply-side and demand-side analysis is that, even if prices were effectively regulated, based on existing business models and licensing frameworks, vast numbers of South Africans would still not be able to afford to use the Internet in any sustained and meaningful way.
73. With 50% of people offline, current universal access models aimed at filling in the last 10 or 20 percent of the population are not going to impact significantly on digital inequality. Strategies to reach schools, clinics and police stations in under-served areas through leveraging existing private investment, have already been identified in the national broadband plan, SA Connect. The aggregation of public sector demand in those areas and the creation of incentives through anchor tenancies is already well articulated in the plan.
74. However, the fact that five years later the key targets have been missed, is an indictment on the institutional arrangements at various levels in the sector, particularly the failure of institutions established to spearhead policy and manage market failure. Many of the problems relate to legacy issues with the ICASA Council appointment processes, that have resulted in a leadership vacuum, and the consequent failure generally to create strong public interest institutions with effective capacity to implement policy without political or industry interference. The political discontinuity in the Ministry has also impacted on the policy cycle and weakened the commitment of incumbent Ministers to their predecessors' agendas. The administration were also preoccupied with operationalising the misguided and ill-advised 2014 splitting of the Department of Communications into two, with bifurcated responsibilities for broadcasting and for telecommunications and postal services.

75. All of this impacted on and undermined the protracted process that led to the proposed ECA Amendment Act, six years after the policy review process was started. That the Universal Access and Service Agency of South Africa (USAASA) will be rationalised and incorporated into the regulator, despite the latter appearing to be under tighter Ministerial control, is a sound decision. Universal access and service should be at the core of regulation in a developing country such as South Africa, and duplication of administrative functions and costs for multiple agencies in the sector has long been identified as wasteful.
76. Although proposed legislation appears to intend to replace the Universal Access and Service Fund with a broader focus Digital Development Fund, there appears to have been insufficient assessment of the effectiveness of the Fund or questions of its continuation. A more thorough analysis of the outcomes of USAF might well have concluded that secondary levies on the sector have been counter-productive, and certainly that the ineffectual use of them should end. Unless strategically deployed, all such levies do is add a premium to the cost of communications.
77. Instead of using the existing funds for long-term projects, that fail to consider global market trends or are overtaken by technology developments, any remaining funds should be used in a targeted and co-ordinated way to provide not only access but equitable use of the Internet.
78. As proposed by SA Connect, the fund could far more effectively be used to leverage the growing availability of smart devices to enable citizens to be online by supporting the rollout of free public WiFi hotspots outside of urban centres. With SA Connect's failure to meet its targets to connect public buildings in under-serviced areas, the national public Wi-Fi initiative has also been undermined. It is true that in Gauteng and the Western Cape have launched very several initiatives, with varying degrees of success, but at present these remain in the major metropolitan centre. Deploying the Universal Access and Service Fund for the development of free public Wi-Fi networks has the potential to bring more people online, improving government's online communications with citizens, and reducing digital inequalities by enabling greater use by those currently price-constrained. In this way price-sensitive users can use their small recharge bundles for voice communication.
79. The introduction of the 'play-or-pay' principle proposed in the White Paper certainly creates much needed flexibility for the use of the fund. This needs to encourage operators to play according to a well-conceived plan requiring high levels of institutional and cross sectoral co-ordination that have not previously been demonstrated.

Spectrum

80. Spectrum assignment is an area that can specifically be leveraged to achieve universal access and service goals. Operators gaining access to GHz 2.6 spectrum for LTE, for example, could be required first to fill gaps in 3G before being able to operationalise their services in urban areas. Or they could acquire the spectrum for urban use at the same time being required to relinquishing their spectrum in areas where they are not providing service to community network operators or WISPS wishing to provide service there.
81. Creating an enabling environment for the entry of multiple players with benefits for all, can be done relatively quickly and will fast track more efficient use of spectrum. Such an approach is far more likely to succeed than the highly contested exclusive wireless open access network (WOAN) being proposed in the draft ECA Amendment Bill, which is likely to result in the further delay of the already long-delayed assignment of high demand spectrum.
82. Modern regulation of an increasingly converged ICT ecosystem, needs even greater regulatory agility and insight to manage tensions between the certain policy objectives of competitive efficiency, innovation and consumer welfare. While assigning high-demand spectrum for the

optimal evolution of next-generation technologies is a priority, greater consideration needs to be given to safeguarding the public and social value of the Internet through the extension of the spectrum commons by setting aside unlicensed and social use spectrum.

83. Further, in developed and developing countries alike, most spectrum is largely unused outside main metropolitan areas. In the sharing-economy of the Internet era, we are already seeing voluntary infrastructure sharing by operators. These types of approaches need to be embraced by governments from a critical resources management perspective. Enabling secondary spectrum use would enable new dynamic spectrum sharing, which operates at a fraction of the cost of GSM network to be deployed on new business models in the largely unused spectrum in rural areas. Such an approach could instantly provide low cost, high quality bandwidth.
84. With the evolution of 5G firmly under way, policymakers also need to ensure an environment for next generation investment into the potential of 5G technology, which operates within a spectrum-sharing environment, where data offload to proprietary and open public Wi-Fi is harnessed for public purposes, not just niche commercial applications.

Table 5: Specific recommendations

Digital Economy and Society Advisory Council: The White Paper proposes to establish an Inter-Ministerial Digital Transformation Committee to co-ordinate policy formulation and implementation necessary to address the challenges of the so the so-called Fourth Industrial Revolution. While overcoming sectoral silos is essential for the state co-ordination necessary to create the conditions for the digital economy, the success of the 21st Century national project needs to harness the resources of both private and public sectors. It is, therefore, proposed that that a Digital Economy and Society Advisory Council be appointed by the Presidency, s from leaders in the public, private sectors and civil society, supported by the National Development Planning Office.

Review of SA Connect broadband plan: Assess the implementation of SA Connect, identify the factors contributing to the failure to meet 2016 target and likely 2020. Review broadband strategy including feasibility of leveraging private investments for public delivery through incentives of smart procurement and anchor tenancies, which can shift costly capital expenditure by government to much lower-cost OpEx; innovative use of licensed and unlicensed spectrum; align with new universal access and service strategies, including complementary public access such as free public wi-fi extension to rural areas to deal with extreme digital inequality.

Rationalisation of state-owned entities: Prevent multiple state-owned entities from competing with each other, and merge public entities into a single operation. Political decisions requiring the use of state-owned entities, undermine the competitive strategies adopted in policy, and make the effective regulation of the sector untenable.

Market Review: ICASA must create a fair competitive environment for the multiple players in the market by implementing the findings of its market review, and applying the necessary pro-competitive remedies, in particular in respect of entities enjoying significant market power. Incentivised infrastructure sharing, and wholesale regulation of facilities and bandwidth, will reduce input costs for service providers and private networks, but this requires a fair competitive environment in which all players can compete in this relatively small market. The market review, the third commissioned and as yet unpublished findings, must be urgently completed and the necessary remedies applied to provide all licensees and market players with a certain environment in which to operate.

Enabling environment for competitive delivery of broadband services: To support the rapid deployment of broadband the regulator needs to create a mandatory rights of way regime, and commercially-incentivised tower zoning and infrastructure. The regulator needs to support the shift from voice services to data, by ensuring that there is sufficient spectrum available, and by reducing secondary taxes on the industry, that are driving up prices. Specifically, the implementation of the proposed **rapid deployment guidelines** need to proceed in haste and not be held up by possible delays in the proposed Electronic Communications Amendment Bill.

Infrastructure sharing: Complementary investments such as in fibre national transmission should be encouraged as part of national strategic infrastructure strategy as should commercial infrastructure sharing that is being practiced where it is reducing the high costs of duplicating networks. Where it is anti-competitive, or excluding other market players, ICASA should investigate the need for mandatory infrastructure sharing at regulated cost-plus prices.

Spectrum: Review spectrum policy to ensure more optimal co-existence of licensed and unlicensed spectrum that will optimise spectrum for diverse needs in the country, but which will prioritise affordable access to communications. Licensed spectrum required for the evolution of existing services needs to be assigned at a competitively-determined (efficient use) price to ensure the build out of capital-intensive networks benefitting from economies of scale and devices. With evidence that even cost-based GSM prices are not affordable to most South Africans, spectrum should be made available for secondary use. Nationally-allocated spectrum not in used in remote areas must be made available for though low cost or licence-exempt spectrum by communities, non-profit providers or micro-networks. Extending unlicensed spectrum to new frequency bands can spur investment and innovation, and lead to the introduction of technologies that can complement licensed networks (e.g. via the handoff from GSM to public Wi-Fi, which now also has backhaul application) and expand broadband access in low-cost last-mile access and backhaul. Enabling the deployment of dynamic spectrum is critical aspect of spectrum management seeking to optimise the use of spectrum in the context of both providing exclusive use required by operators for large sunk investments and the expanded licence-exempt spectrum that can reduce digital inequality by enabling access but also complementing high cost, private use.

Wireless Open Access Network (WOAN): Dismissing a WOAN cannot be automatically dismissed on the grounds that it has not enjoyed success yet in other countries where it has been applied (keeping in mind the unique conditions that contributed to their failures and unredeeming successes). The current version of the WOAN, as proposed in the draft ECA Bill, is too ambitious and untested to pass into law without threatening the incentive on the private sector to invest, and without opening itself to legal challenge from mobile network operators that could up the assignment of high demand spectrum and delay mobile sectoral development by years. There is enough unassigned spectrum available currently, in addition to that which should become available at the conclusion of the digital migration process, to entertain a hybrid model that both assigns high-demand spectrum to existing licensees and to a consortium of network operators for wholesale open access purposes. Making this decision within a wider review of spectrum needs as proposed above that includes a demand side valuation that ensures that the public good characteristics of at least some spectrum is retained, not only the currently supply side valuation; and arising valuation of spectrum based on these needs and value, that is more granular in its application and enables the entry of multiple smaller players into market with more limited use and spectrum that will enable reuse at a regional or even lower level.