chapter 1 State of the market

Is Africa still rising?

Brahima Coulibaly, Global economy & development director, Africa Growth Initiative, The Brookings Institution

Between 2000 and 2014, Africa grew at a strong clip, fuelling belief in the narrative of an 'Africa rising'. But since 2015, growth across sub-Saharan Africa (SSA) has weakened, and the poor outlook for commodity prices has cast doubt on the continent's economic promise, even leading some to pronounce it dead.

Such scepticism is perhaps understandable. The 2014 oil-price shock hit several African economies hard, and played a role in pushing aggregate growth down from 5-6 per cent in 2004-2014 to just 2.5 per cent in 2015-2017 – a rate that barely keeps up with population growth.

Moreover, the continent's three largest economies – Angola, Nigeria and South Africa – have experienced major declines in performance. In 2016, the Angolan and South African economies stagnated, while Nigeria actually contracted for the first time since 1991. The latest projections suggest that these economies will experience tepid recoveries in the coming years.

But the sceptics have overlooked a number of important factors. For starters, when one sets the three largest economies aside, SSA's aggregate-growth rate for 2017 increased from 2.5 per cent to almost four per cent. That is faster than the 3.5 per cent rate at which the global economy was growing at in November 2017. In fact, five of the ten fastest-growing economies in the world are African. And over the next four years, around half of all SSA economies will expand at an average rate similar to or higher than that which prevailed during the 'Africa rising' heyday.

High commodity prices were just one factor in the region's strong economic performance between 2000 and 2014. Many African countries have also made vast improvements to macroeconomic management, governance, and the business environment, and entrepreneurship is on the rise. Even with lower commodity prices, these developments will continue to bolster many African economies.

Policymakers across the continent have sustained the 1990s-era reforms that set the stage for the subsequent period of high growth. Although there is still much work to be done, the economic and business environment in many countries has continued to improve, and institutions and governance have grown stronger.

Owing to new ICTs, Africans, particularly young people, are better informed, more engaged in civil and political discourse, and increasingly capable of holding their leaders accountable. These technologies have also unleashed a wave of innovation and entrepreneurship across the continent.

Such positive trends are unlikely to be reversed, and will continue to improve the economic conditions in Africa, even if commodity prices do not rebound; after all, the region's economic growth averaged 5.6 per cent between 2000 and 2004, before commodity prices had begun their rapid ascent.

But that is not to say the region will be spared from daunting challenges in the years ahead. Globally, the economic environment will become less favourable for African nations. In the major advanced economies, interest rates will soon rise, and the political backlash against globalisation may force governments to abandon their past commitments to development assistance.

In light of all this uncertainty, African policy-makers should look inward by focusing on policies to mobilise national resources and finance their economic agendas. Those agendas should include a number of key priorities. African countries need to diversify their economies to withstand future shocks better, while also accelerating the pace of industrialisation. Governments will have to find a way to create decent jobs for the 11 million people now entering the region's labour force every year. And they will need to enact policies to reduce poverty, and ensure that prosperity is shared across all cohorts of society.

These are particularly important goals for Angola and Nigeria which need to become far less reliant on oil, as well as South Africa which still needs to implement far-reaching reforms to address structural problems that have plagued it since the apartheid era. Seeing these projects through will require competent political leaders who are committed to the principles of good governance. Failure could result in an extended period of low growth.

Brahima Coulibaly is also a chief economist and head of the emerging market and developing economies group at the Board of Governors of the US Federal Reserve. The above is an edited version of his article that was first published at www.project-syndicate.org on 4 October 2017. All content reproduced with kind permission. The Brookings Institution is a non-profit public policy organisation based in Washington, DC. Its mission is to conduct in-depth research that leads to new ideas for solving societal problems.

Banking on infrastructure

Dr. Ibrahim Mayaki, CEO, NEPAD Agency

Africa faces a yawning gap between its infrastructure needs and its ability to attract the foreign investment required to finance projects. The continent's leaders must recommit to creating a more favourable investment climate, one that can attract capital while limiting investors' risk exposure.

As the US Federal Reserve embarks on the 'great unwinding' of the stimulus programme it began nearly a decade ago, emerging economies are

growing anxious that a stronger dollar will adversely affect their ability to service dollar-denominated debt. This is a particular concern for Africa, where, since the Seychelles issued its debut Eurobond in 2006, the total value of outstanding Eurobonds has grown to nearly USD35bn.

But if the Fed's ongoing withdrawal of stimulus has frayed African nerves, it has also spurred recognition that there are smarter ways to finance development than borrowing in dollars. Of the available options, one specific asset class stands out: infrastructure.

Africa, which by 2050 will be home to an estimated 2.6 billion people, is in dire need of funds to build and maintain roads, ports, power grids, and so on. According to the World Bank, Africa must spend a staggering USD93bn annually to upgrade its current infrastructure. The vast majority of these funds – some 87 per cent – are needed for improvements to basic services like energy, water, sanitation and transportation.

Yet, if the recent past is any guide, the capital needed will be difficult to secure. Between 2004 and 2013, African states closed just 158 financing deals for infrastructure or industrial projects, valued at USD59bn – just five per cent of the total needed. Given this track record, how will Africa fund even a fraction of the World Bank's projected requirements?

The obvious source is institutional and foreign investment. But to date, many factors, including poor profit projections and political uncertainty, have limited such financing for infrastructure projects on the continent. Investment in African infrastructure is perceived as simply being too risky.

Fortunately with work, this perception can be overcome, as some investors – such as the African Development Bank, the Development Bank of Southern Africa, and the Trade & Development Bank – have already demonstrated. Companies from the private sector are also profitably financing projects on the continent. For example, Black Rhino, a fund set up by Blackstone, one of the world's largest multinational private equity firms, focuses on the development and acquisition of energy projects, such as fuel storage, pipelines and transmission networks.

But these are the exceptions, not the rule. Fully funding Africa's infrastructure shortfall will require attracting many more investors – and swiftly. To succeed, Africa must develop a more coherent and coordinated approach to courting capital, while at the same time working to mitigate investors' risk exposure.

Public-private sector collaborations are one possibility. For example, in the energy sector, independent power producers are working with governments to provide electricity to 620 million Africans living off the grid. Privately funded but government regulated, these producers operate through power purchase agreements, whereby public utilities and regulators agree to purchase electricity at a predetermined price. There are approximately 130 such producers in SSA, valued at more than USD8bn. Forty-seven projects are underway in South Africa alone, accounting for 7,000 megawatts of additional power production.

Similar private-public partnerships are emerging in other sectors, too, such as transportation. Among the most promising are toll roads built with private money, a model that began in South Africa. Not only are these projects, which are slowly appearing elsewhere on the continent, more profitable than most financial market investments, they are also literally paving the way for future growth.

Clearly, Africa needs more of these ventures to overcome its infrastructure challenges. That is why I, along with other African business leaders and policymakers, have called on Africa's institutional investors to commit five per cent of their funds to local infrastructure. We believe that with the right incentives, infrastructure can be an innovative and attractive asset class for those with long-term liabilities. One sector that could lead the way on this commitment is the continent's pension funds which, when combined, add up to a balance sheet of around USD3tn.

The *5% Agenda* campaign was launched in New York in October 2017. It underscores the belief that only a public-private approach can redress Africa's infrastructure shortfall. For years, a lack of bankable projects deterred international financing. But in 2012, the African Union adopted the *Programme for Infrastructure Development in Africa* which kick-started more than 400 energy, transportation, water, and communications projects. It was a solid start – one that the *5% Agenda* seeks to build upon.

But some key reforms will be needed. A high priority of the *5% Agenda* is to assist in updating the national and regional regulatory frameworks that guide institutional investment. Similarly, new financial products must be developed to give asset owners the ability to allocate capital directly to infrastructure projects.

Unlocking new pools of capital will help create jobs, encourage regional integration, and ensure that Africa has the facilities to accommodate the needs of future generations. But all of this depends on persuading investors to put their money into local projects. As business leaders and policymakers we must ensure that the conditions for profitability and social impact are not mutually exclusive. When development goals and profits align, everyone wins. ■

Dr. Ibrahim Assane Mayaki is a former prime minister of Niger and is now CEO of the New Partnership for Africa's Development (NEPAD) Planning and Coordinating Agency. The above is an edited version of his article that was first published at www.nepad.org on 17 November 2017. All content reproduced with kind permission.

Cutting through the gloom

The International Monetary Fund (IMF) began a gloomy start to 2017 with a forecast that GDP per capita in sub-Saharan Africa will contract for the first time in 22 years. In its *Regional Economic Outlook for Sub-Saharan Africa* report published towards the end of 2016, the organisation expected average growth to have declined to 1.4 per cent during the preceding 12 months. It said that was less than half of 2015's growth and "far below" the five per cent plus experienced during 2010-14.

Speaking at the time, Abebe Aemro Selassie, director of the IMF's African Department, identified two main factors behind the sharp slowdown: "First, the external environment facing many of the region's countries has deteriorated, notably with commodity prices at multi-year lows and financing conditions markedly tighter.

"Second, the policy response in many of the countries most affected by these shocks has been slow and piecemeal, raising uncertainty, deterring private investment, and stifling new sources of growth."

The IMF said most commodity exporters are under "severe" economic strain. It pointed out that this is particularly the case for oil exporters like Angola and Nigeria, and five of the six countries from the Central African Economic and Monetary Union (CEMAC) whose near-term prospects had "worsened significantly" in recent months despite the modest uptick in oil prices. (The five CEMAC countries were Gabon, CAR, Chad, Republic of the Congo and Equatorial Guinea. Cameroon is the exception.) Repercussions from the initial shock have now spread beyond the oil-related sectors to the entire economy in these countries, and the slowdown risks are becoming "deeply entrenched", warned the IMF.

The organisation continued by saying conditions in non-oil commodity exporters also remained difficult, including in South Africa where output expansion was expected to stall in 2017. It said that growth in the DRC, Ghana, South Africa, Zambia, and Zimbabwe was also "decelerating sharply or stuck in low gear". The IMF added that the challenges for several of these countries had been compounded by the acute drought affecting large parts of eastern and southern Africa.

However, the organisation was more optimistic about non-commodity exporters which represent around half of the countries in the region. It said they continue to perform well with growth levels at four per cent or more, and benefit from lower oil import prices, improvements in their business environments, and strong infrastructure investment. Countries such as Côte d'Ivoire, Ethiopia, Senegal and Tanzania were expected to continue to grow at more than six per cent for the next couple of years.

The report showed that overall growth in the region could recover to close to three per cent in 2017 if policymakers implemented "strong action" in the coming months. While many of the hardest hit oil exporters have taken steps to adjust to the new reality of low commodity prices, Selassie believes their adjustments have generally been too slow and incomplete. "Given the scale and persistent nature of the shock and limited policy buffers, a growth rebound will require a much more sustained adjustment effort, based on a comprehensive and internally consistent set of policies to re-establish macroeconomic stability," he said.

For countries outside monetary unions, the report urged central banks to allow the exchange rate to fully absorb external pressures, and tighten monetary policy where needed to tackle sharp increases in inflation.

The outlook for Africa continued to remain gloomy as 2017 progressed with separate news from Moody's Investors Service. During Q2, it warned that Nigeria's dollar liquidity shortage was likely to continue as oil revenues stay lower. For several years now, Nigeria has been regarded as a key African market, and has the continent's largest number of mobile users with more than 154 million subscribers, followed by Egypt and South Africa (*see ITU table on p16*).

In May 2017, Moody's published a report that said dollar usage in Nigeria is "unlikely" to return to previous levels, and that oil prices are "highly unlikely" to return to the USD100 per barrel level that would lead to greater forex inflows. The credit ratings agency said the slump in oil prices in 2014-15 more than halved the country's forex earnings, with exports falling from an average of around USD90bn between 2013 and 2014 to USD46bn in 2015. It added that this was compounded by attacks on oil infrastructure in the Niger delta region which led to reduced production volumes.

The report continued by saying that during 1Q17, the Central Bank of Nigeria (CBN) began to increase the availability of forex through two new exchange rate windows and interventions in the interbank market. But Moody's pointed out that this had been heavily supported by USD1.5bn in international debt issuances rather than non-oil exports. It said a recent rebound in spot oil prices and the recovery in production since 4Q16 were more significant and believed that these would be the factors to support dollar availability in 2017.

Nigeria's current account had already moved from a deficit of USD15.3bn in 2015 to a small surplus in 2016. Moody's forecasted a positive balance of payments outlook for 2017, taking into account additional external borrowing and stable reserves of around USD30bn, despite some volatility expected during the year.

Ericsson's troubles from previous years[1] continued into 2017 and were not helped when Moody's downgraded the company's credit rating to Ba1. This is generally regarded in the market as 'junk' status as it is below investment grade.

Alejandro Núñez, a Moody's VP, senior analyst and lead analyst for Ericsson, said: "The downgrade reflects the anticipated negative impact on the company's operating earnings and cash flow in 2017 and 2018 due to rising restructuring charges and provisions, leading to credit metrics that will no longer be commensurate with investment-grade ratings."

The downgrade was said to be the first time since 2005 that Ericsson had been given such a rating. A company spokesperson reportedly said it was not expected to have any impact on costs for corporate bonds and loans that the company currently has. But following Moody's announcement in early May, Ericsson shares fell by up to 2.7 per cent and were trading 2.6 per cent lower at SEK57.30 in Sweden.

Bucking the trends

Despite all the negative forecasting, M&A activity did not stall on the continent. For instance, Liquid Telecom received unconditional approval from the Independent Communications Authority of South Africa (ICASA) for its ZAR6.55bn acquisition of Neotel. This followed earlier approval from South Africa's Competition Commission in October 2016 and paved the way for the closure of the deal during 1Q17.

Liquid Telecom, which is majority-owned by Econet Global, claimed that combining its network assets and service platforms with Neotel's give it "unrivalled" reach across Eastern, Central and Southern Africa. It said this will enable it to offer access, via a single connection, to more than 40,000km of cross-border, national and metro fibre networks across 12 countries.

Liquid's partner, South African investment group Royal Bafokeng Holdings (RBH), now owns a 30 per cent stake in Neotel. Speaking at the time, RBH CEO Albertinah Kekana said: "Together, we are well positioned to expand through telecommunications infrastructure and services sector in other key markets beyond South Africa."

The transaction included two of Neotel's tier 3 data centres in Johannesburg and Cape Town. Liquid said the facilities will complement the East Africa Data Centre which it operates in Nairobi.

Since its launch in 2006, Neotel is said to have invested more than ZAR7bn in infrastructure, deploying a nationwide backbone fibre connecting the top 40 cities and towns in South Africa. The company is said to connect more than 5,000 businesses and passes close to another 100,000 addresses. It has fully redundant backhaul fibre to landing stations with access to all five of the international subsea cables serving South Africa (*SAT-3*, *SAFE*, *SEACOM*, *EASSy* and *WACS*). Neotel is also said to operate one of Africa's largest Ethernet networks.

Getting the green light for its Neotel acquisition followed a period of significant expansion for Liquid. Towards the end of 2016, it signed a joint venture agreement with the Botswana Power Corporation, and in December it received regulatory approval for the acquisition of Tanzanian ISP Raha. The latter claims to serve more than 1,500 businesses as well as a growing number of retail customers with a range of connectivity solutions including fibre, satellite, WiMAX and Wi-Fi. It operates a metro network throughout Dar es Salaam's central business district as well as other areas of the capital. Liquid said the acquisition – which marked its debut in Tanzania – provides enterprise and wholesale customers with direct and faster access to the country as well as to the Eastern, Central and Southern African regions.

Buying up ISPs seemed to be in vogue on the continent in 2017. In a separate deal, pan-African communications service provider Internet Solutions entered into an agreement to acquire the business of MWEB Connect.

Founded in 1997, MWEB is said to be one of South Africa's largest ISPs and has around 325,000 customers. It is owned by MultiChoice South Africa Holdings, which is 50.7 per cent owned by black South Africans and is a subsidiary of Naspers. Its acquisition immediately gave Internet Solutions a presence in the rapidly growing consumer market.

Financial details were not disclosed in the announcement that was originally made in December 2016 through Internet Solutions' parent company, Dimension Data. The deal was expected to close during 1Q17 following approval by South Africa's competition authorities and shareholders.

Meanwhile, further north across the border in Zimbabwe, broadband internet access provider Dandemutande Investments purchased local ISP YoAfrica for an unspecified sum. Established in 1997, Dandemutande is licensed to use 30MHz paired 2.5GHz spectrum to provide internet services to Zimbabwe's wholesale, corporate and retail markets. In May 2015, it became part of Gondwana International Networks and operates the AfricaOnline, iWayAfrica, uMAX and Utande brands in the country.

It was claimed that the acquisition enabled the merged companies to harness YoAfrica's "best-in-class" technical expertise with Dandemutande's infrastructure and pan-African reach to provide enterprise customers with a 'one-stop shop' for all their connectivity needs. Dandemutande added that, following

[1] The African Wireless Communications Yearbook 2017, State of the market, p7.

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INVESTMENTS, MERGERS & ACQUISITIONS IN 2017

Date	Buyer	Seller	Item	Price	Notes
19/12/16	SoftBank	OneWeb	40% stake	USD1bn	Japanese tech giant becomes biggest stakeholder in OneWeb which now has estimated worth of USD2.5bn.
1/2/17	MTN Group	Nigeria Tower InterCo share exchange	51% stake	NA	Nigeria Tower InterCo is the parent company of Lagos-based towerco INT Towers. MTN has exchanged its stake for additional shareholding going from around 15% to approximately 29%.
14/2/17	Joint management team	Epsilon Global Communications	Cataleya	NA	Cataleya says acquisition will enable it to push intelligent networking into new areas & develop new commercial models for next-generation session border controller technologies.
17/2/17	VimpelCom Holdings	Various banks	Credit facilities	Up to USD2.25bn	New agreement replaces existing USD1.8bn revolving credit facility signed in 2014. Several international banks have committed to the TL/RCF in an aggregate amount of USD2.108bn.
29/3/17	Mobile Mark	Comtelco	Company acquisition	NA	Comtelco Industries makes a range of LMR antennas. Following the acquisition, its manufacturing facilities were moved to Mobile Mark's facilities in Illinois.
29/3/17	Mobile Mark	Luxul's *X-WAV* & *TMA* antenna ranges	Acquisition	NA	Mobile Mark said acquisition of *X-WAV* and *TMA* lines from Legrand's Luxul brand immediately position it to develop new & "innovative" antenna solutions.
25/4/17	BICS	TeleSign Corporation	Company acquisition	USD230m	BICS claims combination creates the first global end-to-end Communication Platform as a Service (CPaaS).
3/5/17	Actility	Abeeway	Company acquisition	NA	France-based Abeeway specialises in geolocation solutions for LPWANs. Actility said acquisition will give it "best in class" portfolio of IoT location services.
8/5/17	MTN Group	Iranian Net	49% stake	ZAR540m (approx.)	MTN plans further investments of around ZAR3.4bn in both equity & loans to facilitate Iranian Net's rollout targets over the next five years. The fixed broadband provider has a national license for the construction & operation of an optical data transmission & access network across Iran.
10/5/17	CLX Communications	Dialogue Group	Company acquisition	GBP32m	CLX purchased the UK-based global provider of mobile messaging & security services on a cash- & debt-free basis.
22/5/17	VEON	Sberbank	Loan	RUB110bn	The five-year agreement will refinance existing loans between Sberbank & VEON's subsidiary, VimpelCom Holdings, as well as provide additional funds for general purposes.
26/5/17	Hytera Communications	Sepura Group	Company acquisition	GBP74m (reported)	Hytera has now completed its acquisition of Sepura that was first announced in early February and was approved by 97% of Sepura's shareholders.
30/5/17	Cevian Capital	Ericsson	5.6% stake	USD1bn	Said to be one of Europe's largest activist investors, Cevian Capital is now Ericsson's third-largest shareholder & is likely to raise its position to become the biggest, according to some reports.
22/6/17	Globetouch Inc.	Teramatrix	Company acquisition	NA	Globetouch will integrate Teramatrix's *xFusion* platform to create IoT applications that support connected cars, autonomous driving, predictive maintenance & edge intelligence.
7/7/17	Liquid Telecoms Financing	Debt capital markets & banks	Bond & term loan financing package	UD700m	Liquid Telecom's financing arm has raised USD550m in the international debt capital markets in its debut bond, in addition to a USD150m term loan.
12/7/17	CommScope	Cable Exchange	Acquisition	NA	US-based Cable Exchange manufactures a variety of fibre & copper cables, trunks & related products used in high-capacity data centres and other enterprise applications.
14/7/17	CETel	Onlime Managed Satellite Services	Company acquisition	NA	Transaction allows Onlime to concentrate on developing its core business of community software applications as well as its fibre & wireless based communications solutions in Africa.
28/7/17	Motorola Solutions	Airbus	Plant Holdings	NA	Plant Holdings includes Airbus' DS Communications business which provides command centre software for fielding emergency calls & citizen emergency notifications in North America.
4/9/17	SEACOM	MacroLan	Company acquisition	NA	SEACOM said the purchase of the Cape Town-based ISP was part of its strategy to extend the reach of its fibre network to more metropolitan areas across South Africa.
9/8/17	Investor group	Globecomm Systems	Company acquisition	NA	Investor group is led by HPS Investment Partners & funds managed by Tennenbaum Capital Partners. Financial terms not disclosed. Deal was expected to close 3Q17.
8/9/17	4Sight Holdings	Digitata	Company acquisition	NA	4Sight focuses on investing in Industry 4.0 companies. Earlier in August, Digitata announced acquisition IP rights of RanWorx Solutions' *NetTrax* & *TecTonix* network performance solutions.
21/9/17	Alphabet Inc.	HTC	Pixel division	USD1.1bn	Google's parent has bought the HTC division that develops its *Pixel* smartphones. Google gains 2,000 HTC employees, non-exclusive license for IP, but no manufacturing assets.
22/9/17	Procera Networks	Sandvine Corporation	Company acquisition	Approx. USD562m	The two companies have combined to offer a wider portfolio of network intelligence solutions. Merged entity will operate under Sandvine name led by Lyndon Cantor as president & CEO.
6/9/17	Shareholders	Redknee Solutions	Rights offering	CAD0.63 per share	Under the offering, an aggregate of 108,519,936 subordinate voting shares were issued for gross proceeds to Redknee of around CAD68m. Net proceeds will be used to fund restructuring. Company later re-branded to Optima.
3/10/17	ARRIS International	Broadcom Limited	Ruckus Wireless & Brocade's *ICX* switch business	USD800m + unvested employee stock awards	ARRIS originally announced its agreement to acquire both Ruckus Wireless & Brocade's *ICX* switch business from Broadcom in March 2017 – deal contingent on Broadcom closing its acquisition of Brocade Communication Systems, the current owner of Ruckus.
4/10/17	Ekinops	OneAccess	Company acquisition	EUR60m (estimated)	It's claimed the combination creates a "major player" in transport, Ethernet & corporate routing solutions for telecoms networks. Market capitalisation of new group around EUR119m (as of 29 September 2017).
16/10/17	CITIC Telecom CPC	Linx Telecoms	Company acquisition	NA	Hong Kong telco says completion of its acquisition of Europe-based Linx's telecoms business gives it 140 PoPs in 130 countries across the so-called 'Digital Silk Road' that links Asia, Europe & Africa. Merged company is named CITIC Telecom CPC Europe.
19/10/17	ENGIE	Fenix International	Company acquisition	NA	Founded in 2009, Fenix offers solar home systems in Africa. ENGIE says investment will contribute to its goal of providing 20 million people around the world with access to "de-carbonised, decentralised" energy by 2020.
25/10/17	DragonWave	Transform-X	Company acquisition	NA	The acquisition ends months of uncertainty for the Canada-based microwave radio specialist which went into receivership earlier in 2017. According to reports, DragonWave struggled to repay debts of CAD17.2m & had been trying to pursue alternative financing.

approvals, the deal will strengthen its national presence with additional regional PoPs and an office in Victoria Falls, and widen YoAfrica's reach for its strong enterprise base. It also claimed the transaction would give it the largest VSAT customer base in Zimbabwe.

To merge or not to merge?

In March, Airtel and Millicom entered into an agreement to combine their operations in Ghana. The financial terms were not revealed but each company will have equal ownership and governance rights in the merged entity. It was claimed the combination of Millicom's Tigo operation in Ghana with Airtel's local subsidiary will cover more than 80 per cent of the population with high-speed data, providing the widest 3G coverage across the country. The merged operations will have revenues of just under USD300m and a 25.93 per cent market share, making it Ghana's second-biggest mobile voice operator.

Millicom and Airtel said the integration of their networks, which was subject to the usual conditions, will provide a "major boost" for customers in both rural and urban network coverage. They added that their combined fibre footprint and increased data centres will also give enterprise customers access to a diverse portfolio of "world class" solutions. Mobile financial services will also be enhanced with combined agent networks and platforms.

"The combination of Tigo and Airtel will create an operator that will be able to offer Ghanaian consumers and businesses a state-of-the-art network with high-speed mobile data coverage," said Millicom Africa EVP Mohamed Dabbour. "This transaction underlines confidence in the Ghanaian economy, and provides the opportunity to develop nationwide digital infrastructure and services."

According to December 2016 figures from Ghana's National Communications Authority, the total number of mobile voice subscriptions in the country increased year-on-year by 9.42 per cent to reach 38,305,078. That represented a penetration rate of 136.34 per cent. Scancom (MTN) remained the market leader with 19,296,157 voice subscribers and was the only cellco in the country to have recorded an increase from the previous month. It was followed by: Vodafone (8,289,913); Tigo (5,339,052); Airtel (4,591,051); Glo (695,306); and Expresso (93,599).

Earlier in February, Millicom had signed an agreement to sell its Senegal business to Dakar-based provider of mobile and digital services, Wari Group. But several months later in July, the operator announced the termination of the agreement. This was followed by a statement from Millicom saying that it wanted to make corrections concerning the termination after what it claimed to be "incorrect and misleading" claims made by Wari.

The statement said that the February agreement signed between the two companies set 2 June 2017 as the deadline for Wari to provide the funds required as part of the transaction (which was worth USD129m). In the event of Wari not complying with the financing requirements, the agreement granted Millicom the right to terminate the process immediately upon notification.

On 28 July, almost two months after the deadline, Millicom said that Wari had still not provided the funds required. It therefore notified Wari of the termination of the deal. The company added that subsequent claims mentioning an ongoing due diligence process were also incorrect, as no such process was outstanding as part of the original sales agreement.

Separately, Millicom signed an agreement to sell its Senegal operations to a consortium consisting of NJJ, Sofima (the telecoms investment vehicle managed by the Axian Group) and Teyliom Group, subject to customary closing conditions and regulatory approvals.

NJJ is a private holding company owned by French telecoms entrepreneur Xavier Niel. Incorporated in France, NJJ holds various stakes in a broad range of operations in Europe and the USA. Niel is also the founder and main shareholder of Iliad, the parent of Free in France.

Owned by the Hiridjee family, the Axian Group specialises in infrastructure and services in Indian Ocean countries and Africa. It has interests in energy, financial services, property, as well as in telecoms through Telma, Tom, TRM and Telco OI, which it jointly owns with Iliad.

Teyliom is said to be one of the precursors of mobile telephony in Africa and has been active in the sector since 1996. Focused on West and Central Africa, it is now a diversified investment holding group whose interests include, amongst others, a seven per cent stake in MTN Côte d'Ivoire.

Over in Kenya, Vodacom Group agreed to buy Vodafone Group's 34.94 per cent stake in Safaricom. Subject to all approvals, it planned to fund the acquisition by issuing 226.8 million new ordinary shares. Based on closing share prices at the time of the announcement in mid-May, the proposed transaction was valued at ZAR34.6bn (USD2.6bn).

Vodacom Group CEO Shameel Joosub said that given this was a related-party transaction, appropriate governance controls had been implemented to ensure that it will continue to be negotiated, evaluated and executed on an "arm's length basis." As a result, Vodafone, which owns 65 per cent of Vodacom, was precluded from voting at a general meeting in August where minority shareholders were due to approve the deal.

Joosub said acquiring a strategic stake in Safaricom will provide Vodacom shareholders with access to a "high growth, high margin, high cash generation business operating in a high growth market". He said that in addition to producing mutually beneficial opportunities for growth, the deal will create further incremental value through the close cooperation between the two businesses, particularly in driving *M-PESA* adoption across their operations. Safaricom's *M-PESA* is regarded as an important driver of Kenyan economic growth. Joosub said the proposed transaction will improve Vodacom Group's presence in East Africa, jointly increasing the firm's growth in financial services customers to 32 million.

In its 2017 fiscal year, Safaricom saw 8.8 per cent revenue growth. It is Kenya's leading MNO with a 71 per cent customer share, and is the only one with a network that currently provides 3G and 4G coverage to 85 and 25 per cent of the population respectively (also see interview with Thibaud Rerolle on p28).

Meanwhile in Nigeria, Etisalat was re-branded as '9Mobile' amid disputes about its ownership and financial difficulties. Abu-Dhabi-based Etisalat Group owns a 45 per cent stake and 25 per cent preference shares in Emerging Markets Telecommunication Services (EMTS) which had been trading as Etisalat Nigeria. According to some reports published by local outlets in mid-July, Etisalat gave EMTS a three-week ultimatum to stop using the Etisalat brand for its business in Nigeria. This followed the collapse of negotiations between Etisalat Nigeria and its lenders that comprise 13 local banks.

In 2013, these banks loaned Etisalat USD1.2bn for a network upgrade and expansion. But according to reports, the operator told its creditors that it was unable to make any further repayments without raising further funds, blaming the economic downturns and devaluation of the naira. The banks rejected Etisalat's argument and threatened to take over its local operation.

This prompted the Nigeria Communications Commission (NCC) to emphasise Etisalat's "network integrity" in a bid to allay consumer concerns. In a statement issued on 20 June it said: "The NCC wishes to reassure the over 21 million Etisalat subscribers that it will do all within its regulatory power to ensure that [they] continue to enjoy the services provided by the operator.

"The commission has taken proactive steps to cushion the impact of the takeover; this is without prejudice to the ongoing effort between Etisalat and the banks toward negotiated settlement."

The NCC continued by reminding the banks of the Nigerian Communications Act 2003. This states that a license is personal to the holder and cannot be operated by, assigned, sub-licensed or transferred to another party without the prior written approval from the regulator.

In conjunction with the Central Bank of Nigeria, the NCC mediated by holding several meetings with the banks, Etisalat and other stakeholders with a view to finding a resolution. However, talks between all parties ultimately collapsed, leading to the Emirates Telecoms Group walking away from the negotiations and the resignation of its board and management staff.

On 10 July 2017, EMTS issued a press release stating that it has a "valid and subsisting" agreement with the Etisalat Group which entitled it to use the Etisalat brand. It said that discussions about the continued use of the name were ongoing between the two companies, and added: "The final outcome on the use of the brand in no way affects the operations of the business as our full range of services remain available to our customers." A few days later, EMTS introduced '9Mobile' as the new brand identity for its operations.

March saw the announcement of a proposed merger in a share-for-share deal between Intelsat and OneWeb which is planning to launch a fleet of Low Earth Orbit satellites over the next few years. But on 1 June, Intelsat said that following the expiration of the deal on the previous day, the minimum tender conditions for the exchange offers and consent solicitations had not been satisfied. A company press statement said: "The Issuers have not accepted any of the Existing Notes for exchange; any Existing Notes tendered for exchange will be promptly returned to holders, and the Exchange Offers and Consent Solicitations have accordingly been terminated."

According to Intelsat CEO Stephen Spengler, there were many stakeholders' interests that needed to be satisfied in the "complex" transaction, and bondholders were unwilling to accept the terms of the exchange offers presented.

Although the deal was off, Spengler said the pre-existing commercial agreement between SoftBank, Intelsat and OneWeb would still continue. Japan's SoftBank Group owns 40 per cent of OneWeb and had previously agreed to make a cash investment of USD1.7bn in exchange for common and preferred shares of the combined company.

Speaking at the time, Spengler said: "Under this agreement, we plan to jointly develop integrated solutions utilising both of our fleets and to act as a sub-distributor to SoftBank for the attractive application segments of mobility, energy, government, and connected car. As we create integrated services for these applications, we expect to accelerate and enhance our goal of unlocking new and larger opportunities in the communications landscape."

Putting more money in

The continent's technology firms looked set to receive a big boost in 2017 with two separate investment initiatives from big name players.

In June, Orange announced the creation of a new Africa section in its flagship programme for investment in startups. *Orange Digital Ventures* Africa is the group's investment vehicle for early-stage innovation projects in areas such as new connectivities, fintech, IoT, energy and e-health. The operator said its aim is to target solutions from startups who are responding to Africa's fundamental challenges while leveraging its own assets on the continent.

Orange is committing EUR50m to support new entrepreneurs in the region. This corresponds to half of the direct investments that will be made via the programme; the other half is devoted to indirect investments through specialised funding for Africa. All innovative startups are eligible for support, whether they're based on the continent or address its issues from elsewhere. Orange planned to setup a dedicated *Digital Ventures* team based in Dakar in September.

The company claimed new services and business models in Africa have been one of the priority investment themes of the group's corporate venture business. With this latest announcement, Orange said it was "engaging a bit further alongside the African digital ecosystem which, like everywhere else and maybe even more than elsewhere, carries with it a development challenge".

In September, Silvertree Internet Holdings declared that it has now channelled more than USD15m (around ZAR200m) into African consumer-focused technology firms since it was established in 2014. The Cape Town-based firm, which claims to be the continent's leading internet platform, said its portfolio has achieved an average annual revenue growth rate of more than 200 per cent, helped by fast-growing companies such as car-buying site Carzar and meal-kit delivery company Ucook.

Silvertree planned to invest more than USD10m (ZAR130m) during the next 12 months into new and existing portfolio companies that make use of technology to reach consumers, with a focus on growth stage and buy-out opportunities. It believes the biggest opportunities for tech investment in Africa are in businesses driven by strong teams that are executing simple, proven models.

Furthermore, it claimed that a focus on all three long-term value creation drivers – net revenue growth, margins and cash – enable the group's operations to reach break-even much earlier in their lifecycle. "We want to partner with like-minded entrepreneurs looking to disrupt large and high margin industries in Africa," said Silvertree founder and MD Peter Allerstorfer. "It is still day one of the internet in Africa."

To help build on its success, the company appointed Freddy Caspers as non-executive chairman of the board. Caspers was previously an executive board member and CEO of emerging markets for UK-based multinational Reckitt Benckiser.

In April, Teraco announced that it had secured a medium-term funding facility from Absa Bank to help build what it said will be the largest commercial data centre in Africa. The company's current colocation data centres in South Africa include *CT1* in Cape Town, *DB1* in Durban, and *JB1* at Isando in Johannesburg. It said the facilities enable clients to "easily connect" to submarine cable systems, terrestrial networks and major IP backbones on the continent. Teraco is also home to NAPAfrica which is said to be Africa's largest carrier-neutral Layer 2 IXP.

Teraco CFO Jan Hnizdo said the ZAR1.2bn (USD87.24m) funding facility will be used to expand the Isando campus which has been established as the connectivity gateway into South and sub-Saharan Africa. "The site presently has 20MW of capacity which needs to all be brought online," he said. "We have also purchased land adjacent to the existing site allowing for further expansion. In addition, a component of the funding has also been earmarked for the construction of Teraco's new data centre in Bredell."

Absa's loan enabled the completion of the plant and data centre fit-out of the new facility located on the Isando campus. It also partly funded the Bredell facility where construction commenced in November 2016 and was due for completion towards the end of 2017. According to Hnizdo, the Bredell site will feature more than 6,000 square metres of technical deployment space and 24MW of power, thereby eclipsing the current campus for power availability. "Bredell will be the largest commercial data centre in Africa, and Teraco will be the largest commercial data centre operator in Africa," he said.

Staying in South Africa, Cell C, the country's third mobile operator, began 2017 on a sour note with news that its long-term corporate credit score had been lowered for a second time in recent months. In December 2016, Standards & Poor (S&P) downgraded the operator from 'B' to 'SD' (selective default), and in early February 2017 this fell again to 'D' (default).

At the same time, S&P also lowered the company's issue rating from CC to D on its EUR400m senior secured bonds due in 2018. The agency said it had revised the recovery rating on the debt from 3 to 4 because it expected an approximate 45 per cent recovery in the event of a payment default.

It added that the downgrades were mainly due to uncertainty over a potential buyer's ability to have unrestricted use of Cell C's spectrum, and the resulting impact to its value in a bankruptcy scenario. If the operators' restructuring negotiations – that had been ongoing since 2016 – concluded successfully, S&P said it could revise its recovery ratings based on the new capital structure and ownership.

In August, Cell C finally concluded its recapitalisation process which saw its net debt reduced to no more than ZAR6bn, including USD184m of bonds which are fully hedged into rand. The recapitalisation was made possible by a subscription for shares from Blue Label Telecoms of ZAR5.5bn and a further subscription from Net1 for ZAR2bn. Cell C said former bond and debt holders supported the debt restructure. Blue Label Telecoms now has a 45 per cent shareholding in Cell C, 3C Telecommunications has 30 per cent (which comprises 29.4 per cent by the Employee Believe Trust, 45.6 per cent by Oger Telecoms, and 25 per cent by broad-based black empowerment grouping CellSAf), Net1 has 15 per cent, and 10 per cent is held on behalf of Cell C management and staff.

The operator pointed out that its ownership by South African shareholders has now increased from 25 to more than 86 per cent, and that the participation of "historically disadvantaged" persons has risen from around 25 to more than 30 per cent at ownership level. It added that, for the first time, Cell C management and staff now have the opportunity to participate in the equity of the company.

The recapitalisation secured jobs for around 2,500 full-time Cell C staff, and a further 15,000 people that are employed in the industry value chain as a result of the company's operational and commercial activities.

Speaking at the time CEO Jose Dos Santos said: "The recapitalisation provides a sustainable growth platform for Cell C that will promote healthy competition in the South African telecom market to further drive down costs and improve our value offerings."

Following the successful recapitalisation, S&P upgraded its credit ratings for the company to B.

But that was not the end of Cell C's challenges in 2017. In October, South African regulator ICASA said the operator may not be complying with the terms of its license in the wake of the recent recapitalisation.

ICASA said it had received notification from the operator about its change of shareholding as per the 2010 Regulations on Standard Terms and Conditions for Individual Licences. But after considering the notification, ICASA said: "The preliminary view is that the Cell C recapitalisation transaction – on the face of it – triggers the provisions of Section 13 of the Electronic Communications Act of 2015 and ought to have been filed as an application for change of control of the licensee.

"The Authority is engaging Cell C to seek clarity on this apparent non-compliance with the legislative provisions. In addition, the Authority is also taking external legal advice on the matter, including on appropriate enforcement actions it can take to ensure compliance."

In a subsequent media statement issued online, Cell C said that despite "repeated requests", it remained "unclear" as to why the regulator had reached its conclusion without first discussing it. It said: "Cell C has received extensive legal advice and is comfortable that the recapitalisation does not amount to a transfer of control that would have required approval. The company is of the view that once ICASA, or whomever ultimately considers the transaction, has a proper understanding of it (which Cell C is at pains to provide), it will be clear that there has not been any transfer of control and that no approval is required."

Moving forward

More upbeat news for the continent came as the year began drawing to an end.

For instance, Nigeria was hailed as the most successful network sharing country in the world, according to IHS Markit's *Mobile Infrastructure Market Tracker* report. The analyst said Africa, India and Latin America are three regions where network sharing has been working well. It pointed out that although India pioneered network outsourcing in 2005 and has since moved fast to network sharing and managed services, it is EMEA that is now leading this area with sharing deals across Eastern Europe and Africa.

"We can't really pick a particular country because consolidation among service providers led to pan-African shared networks," said Stéphane Téral, IHS Markit's executive director of research and analysis, mobile infrastructure and carrier economics. "However, in Africa I think Nigeria, the most populous African [nation], is the most successful and innovative telecom infrastructure country."

IHS Markit said that as service providers all over the world operate in saturated markets, they increasingly focus on customer satisfaction and retention, and on business and network transformation. These require increasing dedicated resources.

However, because significant revenue growth may no longer be achievable, the analyst added it is necessary for MNOs to "de-emphasise" network operations through outsourcing, managed services, and network sharing to preserve margins and sustain cash flow.

The tracker report identified a number of trends that IHS Markit had seen in infrastructure sharing in emerging markets. As well as EMEA leading the way here, it said Africa-based IHS Towers (which is unrelated to IHS Markit) is the largest company of its type in emerging countries and is contributing to the success of Nigeria.

The analyst predicted that more towercos will emerge in the future because of market saturation putting pressure on revenue growth for cellcos. It said: "More and more service providers will sell their towers to companies like IHS Towers, which is in a strong position to keep growing. There is also the opportunity for others to create competition in the tower business."

IHS also believes NFV will provide the next wave of operational efficiencies in network sharing. It said: "By moving more network functions from hardware to software, using off-the-shelf IT components and platforms, the cost of network nodes decreases and new services can be turned up and down at the power of a click. Overall, with the concept of network slicing, it will become easier to share networks among several service providers."

Connectivity

In its annual *ICT Development Index* (*IDI*), the ITU publishes a benchmark of the level of ICT development in 176 member states. Unlike the previous three years, the Republic of Korea no longer tops the rankings for the global top 20 as the latest 2017 index sees it knocked into second place by Iceland (*see IDI 2017 – Global Top 20 table, opposite page*).

What has remained constant though is the fact that there are still no African nations in the top 50, let alone the top 20. Mauritius is the highest ranking continental representative and is up three places from 75 in 2016[2] to 72 in 2017. Other African nations in the top 100 include Seychelles, South Africa, Tunisia[3] and Morocco[3] (*see IDI 2017 – Africa table, below*). Botswana just misses out at 105.

ICT DEVELOPMENT INDEX (IDI) 2017 – AFRICA[3]

IDI 2017 RANK	ECONOMY	IDI 2017 VALUE	IDI 2016 RANK	IDI 2016 VALUE	RANK CHANGE
72	Mauritius	5.88	75	5.51	▲
90	Seychelles	5.03	92	4.8	▲
92	South Africa	4.96	88	4.91	▼
93	Cape Verde	4.92	91	4.83	▼
99	Tunisia	4.82	95	4.7	▼
100	Morocco	4.77	98	4.57	▼
102	Algeria	4.67	106	4.32	▲
103	Egypt	4.63	104	4.44	▲
105	Botswana	4.59	102	4.51	▼
114	Gabon	4.11	118	3.62	▲
115	Libya	4.11	112	3.93	▼
116	Ghana	4.05	113	3.88	▼
118	Namibia	3.89	123	3.33	▲
131	Côte d'Ivoire	3.14	134	2.84	▲
132	São Tomé & Principe	3.09	131	2.91	▼
133	Lesotho	3.04	130	2.94	▼
136	Zimbabwe	2.92	133	2.85	▼
138	Kenya	2.91	137	2.67	▼
142	Senegal	2.66	142	2.48	–
143	Nigeria	2.6	143	2.44	–
144	Gambia	2.59	145	2.43	▲
145	Sudan	2.55	141	2.56	▼
146	Zambia	2.54	149	2.19	▲
149	Cameroon	2.38	150	2.14	▲
150	Mozambique	2.32	147	2.23	▼
151	Mauritania	2.26	152	2.08	▲
152	Uganda	2.19	158	1.9	▲
153	Rwanda	2.18	151	2.1	▼
155	Mali	2.16	153	2.05	▼
156	Togo	2.15	159	1.86	▲
158	Djibouti	1.98	161	1.8	▲
160	Angola	1.94	156	2	▼
161	Benin	1.94	157	1.92	▼
162	Burkina Faso	1.9	163	1.74	▲
163	Equatorial Guinea	1.86	160	1.82	▼
164	Comoros	1.82	162	1.78	▼
165	Tanzania	1.81	164	1.73	▼
166	Guinea	1.78	166	1.71	–
167	Malawi	1.74	169	1.58	▲
169	Madagascar	1.68	167	1.7	▼
170	Ethiopia	1.65	171	1.42	▲
171	Democratic Republic of Congo	1.55	170	1.48	▼
172	Burundi	1.48	172	1.39	–
173	Guinea-Bissau	1.48	173	1.38	–
174	Chad	1.27	174	1.06	–
175	Central African Republic	1.04	176	0.89	▲
176	Eritrea	0.96	175	0.96	▼

SOURCE: ITU ICT DEVELOPMENT INDEX (IDI) 2017

Indices for African ITU member states, listed in order of their rankings.

And once again, as with the previous *IDI*, Africa dominates the latter parts of the index with Haiti being the only non-African country in the final 10 that sees Eritrea right at the bottom. These are among the nations classified by the ITU as 'Least Developed Countries' (LDCs). According to the union, the LDCs comprise 47 developing countries around the world that suffer from "severe structural impediments" to sustainable development. Twenty-eight of these nations are identified as African, although if Mauritania, Somalia and Sudan[3] are also included, that figure is 31.

But there are now signs that things are beginning to move in the right direction. In a report released towards the end of January 2018, the ITU said that the LDCs are now on track to meet the sustainable development goal on universal and affordable internet access by 2020. It said the LDCs are recording "impressive" progress toward achieving the UN's sustainable development goal (SDG) 9.c on increasing access to ICTs. It noted that all 47 LDCs have launched 3G services and more than 60 per cent of their populations are covered by such networks. These countries are also on track to reach on average 97 per cent mobile broadband coverage, and to make internet prices relatively affordable by 2020.

By the end of 2017, the report stated that the number of mobile subscriptions in the LDCs had increased to about 700 million with a penetration rate of 70 per cent. At the same time, more than 80 per cent of the population in these countries live within range of a mobile network.

Mobile subscriptions continue to rise

In its influential annual *Mobility Report* for 2017 published last November, Ericsson said that global mobile subscriptions were now growing at almost six per cent year-on-year. By 3Q17, it said there were 7.8 billion subscriptions worldwide, with 95 million users added during the quarter. China had the most net additions during the quarter (+30m), followed by Indonesia (+7m), the US (+4m), Angola (+4m) and Pakistan (+3m).

[2] Note that there are often variances in the IDI scores from year to year. For example, the table left states Mauritius' 2016 ranking as 75. However, in The African Wireless Communications Yearbook 2017, the country's 2016 rank was given as 73. According to an ITU senior statistician, values are recalculated to accommodate changes arising from corrections and updates received after the union first publishes its indices in its annual *Measuring the Information Society* report. It should also be noted that rankings may change due to the number of countries included in each report.

[3] Along with Algeria, Djibouti, Egypt, Morocco and Tunisia, the ITU does not include Mauritania, Somalia and Sudan in its Africa region and instead categorises them as "Arab States".

But the report also pointed out that the number of subscriptions exceeds the population in many countries, mainly because of inactive users, multiple device ownership or optimisation of subscriptions for different types of calls. As a result, Ericsson said the number of unique users is actually currently around 5.3 billion globally and therefore lower than the subscription figure above.

Nonetheless, the number of subscriptions continues to grow across regions, driven by a strong uptake in mobile broadband (Ericsson classes the following as mobile broadband: HSPA (3G), LTE, 5G, CDMA2000 EV-DO, TD-SCDMA and Mobile WiMAX. WCDMA without HSPA and GPRS/EDGE (2G) are not included). According to the report, the most common way to access the internet across the world is over a mobile network, and mobile broadband subscriptions now account for 50 per cent or more of total subscriptions in all regions (with the exception of India).

The GSM Association's Intelligence unit published three individual *Mobile Economy* reports last year that covered Africa.

In its Middle East and North Africa report, it said that there were 365 million unique subscribers across the region by mid-2017, accounting for 63 per cent of the population. According to the GSMA, global subscriber penetration overtook MENA during 2015, and as a result it is now the second least penetrated region in the world after APAC.

Meanwhile in West Africa, the association said there were 172 million unique subscribers by the end of 2016, accounting for 320 million mobile connections. It said the region's penetration rate is currently around 49 per cent which is slightly more than the 47 per cent rate across wider sub-Saharan Africa.

Over the next four years, the GSMA predicts West Africa will see average subscriber growth of six per cent. It said this represents one of the fastest rates globally, resulting in an additional 45 million individual users by 2020. The GSMA said the region's biggest market, Nigeria, will account for two-thirds of this growth, with another quarter coming from Benin, Côte d'Ivoire, Mali, Niger and Senegal.

Sub-Saharan Africa remains the fastest growing mobile market according to the GSMA's *Mobile Economy* report for the region. At the end of 2016, it said there were 420 million unique mobile subscribers here, which means a penetration rate of 43 per cent. The reports forecasts SSA will have more than half a billion unique mobile users by 2020 by which time around half the population will subscribe to a mobile service. It said the total number of SIM connections in the region reached 731 million at the end of 2016 and will grow to nearly a billion by 2020.

The GSMA believes that the adoption of mobile services by underserved groups, such as women and those under the age of 16, will help future subscriber growth. It added: "Four of the most populated markets in the region – DRC, Ethiopia, Nigeria and Tanzania – will account for nearly half the 115 million new subscribers expected by 2020."

ICT DEVELOPMENT INDEX (IDI) 2017 – GLOBAL TOP 20

IDI 2017 RANK	ECONOMY	IDI 2017 VALUE	IDI 2016 RANK	IDI 2016 VALUE	RANK CHANGE
1	Iceland	8.98	2	8.78	▲
2	Korea (Rep.)	8.85	1	8.8	▼
3	Switzerland	8.74	4	8.66	▲
4	Denmark	8.71	3	8.68	▼
5	United Kingdom	8.65	5	8.53	–
6	Hong Kong, China	8.61	6	8.47	–
7	Netherlands	8.49	10	8.4	▲
8	Norway	8.47	7	8.45	▼
9	Luxembourg	8.47	9	8.4	–
10	Japan	8.43	11	8.32	▲
11	Sweden	8.41	8	8.41	▼
12	Germany	8.39	13	8.2	▲
13	New Zealand	8.33	12	8.23	▼
14	Australia	8.24	16	8.08	▲
15	France	8.24	17	8.05	▲
16	United States	8.18	15	8.13	▼
17	Estonia	8.14	14	8.16	▼
18	Singapore	8.05	20	7.85	▲
19	Monaco	8.05	18	8.03	▼
20	Ireland	8.02	19	7.9	▼

SOURCE: ITU ICT DEVELOPMENT INDEX (IDI) 2017

	2016	2017	2018 forecast	CAGR 2017-2023 (unrounded figures)
Mobile subscriptions (millions)				
Middle East & Africa	1,390	1,440	1,800	4%
Sub-Saharan Africa*	660	700	990	6%
Smartphone subscriptions (millions)				
Middle East & Africa	470	600	1,340	14%
Sub-Saharan Africa*	260	340	850	17%
Data traffic per smartphone GB/month (active devices)				
Middle East & Africa	1.3	2.0	11	34%
Sub-Saharan Africa*	1.0	1.4	7.0	31%
Total mobile data traffic EB/month				
Middle East & Africa	0.71	1.3	14	48%
Sub-Saharan Africa*	0.25	0.41	4.6	50%

SOURCE: ERICSSON MOBILITY REPORT, NOVEMBER 2017

Key figures for Middle East and Africa (*figures for sub-Saharan Africa are also included in Middle East & Africa).

Ericsson agrees that factors such as a young and growing population with increasing digital skills, as well as more affordable smartphones, will lead to increased mobile data traffic across MEA. It said the rises will equate to a CAGR of 49 per cent from 2017 to 2023, while mobile subscriptions will increase at a CAGR of four per cent. Citing data from various sources,[4] the report said MEA has a young and growing population with a median age of 21 and represents 22 per cent of the world's total population. But it also pointed out that the region only accounted for seven per cent of GDP in 2016. As previously noted above, GDP growth in that year slowed to 1.4 per cent in sub-Saharan Africa due to the sustained effects of low oil prices and political instability.

Despite this, the report forecasts "strong" growth for both WCDMA/HSPA and LTE in MEA. Ericsson said that while half of all mobile subscriptions in the region are currently GSM/EDGE-only, by the end of 2023 90 per cent will be for mobile broadband with LTE being the dominant technology. The company also said that the first 5G subscriptions in MEA are expected from 2020, reaching around 17 million by the end of 2023.

Meanwhile in sub-Saharan Africa, Ericsson predicted that GSM/EDGE-only subscriptions will represent almost half of total mobile subscriptions by the end of 2017. It said that although GSM/EDGE-only subscriptions have been declining since

[4] The United Nations Organisation, *World Population Prospects* (2017); *CIA World Factbook;* and *IMF World Economic Outlook* (April 2017).

ITU AFRICAN COUNTRY REPORTS 2017

	POPULATION				SUBSCRIPTIONS PER 100 INHABITANTS				PERCENTAGE OF:		
COUNTRY	TOTAL	DENSITY	GNI PER CAPITA	INTERNATIONAL INTERNET BANDWIDTH PER INTERNET USER (bps)	FIXED-TELEPHONE	MOBILE TELEPHONE	FIXED BROADBAND	ACTIVE MOBILE BROADBAND	HOUSEHOLDS WITH A COMPUTER	HOUSE-HOLDS WITH INTERNET ACCESS	INDIVIDUALS USING THE INTERNET
Mauritius	1,257,630	674.33	9,760	63,490.79	30.65	144.24	16.90	51.75	61.23	63.80	53.23
Seychelles	94,188	233.14	15,410	52,432.77	22.12	161.23	14.90	22.65	56.67	55.17	56.51
South Africa	53,835,382	45.44	5,480	263,029.93	6.62	142.38	2.84	58.62	24.39	52.96	54.00
Cape Verde	512,896	127.17	2,970	23,356.75	11.65	122.02	3.03	70.01	37.39	62.00	48.17
Tunisia	11,351,043	69.15	3,690	31,166.81	8.59	125.82	5.65	62.97	37.00	33.00	50.88
Morocco	34,387,658	52.10	2,850	25,701.52	6.02	120.72	3.65	46.00	54.90	68.50	58.27
Algeria	41,316,407	17.35	4,270	40,014.54	8.24	117.02	6.92	46.81	38.42	34.67	42.95
Egypt	86,009,615	85.99	3,460	17,193.52	7.11	113.70	5.20	52.60	53.12	43.32	39.21
Botswana	2,074,620	3.61	6,610	7,879.92	6.85	158.53	2.85	67.93	28.47	43.70	39.36
Gabon	1,791,366	6.69	7,210	4,844.38	1.06	144.17	0.73	66.12	30.97	34.43	48.05
Libya	n/a	n/a	n/a	5,285.50	21.49	119.78	2.64	34.86	23.52	22.04	20.27
Ghana	27,532,054	115.53	1,380	9,850.94	0.91	139.13	0.31	71.34	20.84	32.51	34.67
Namibia	2,436,086	2.96	4,620	15,915.37	7.71	109.19	2.19	66.15	20.00	29.53	31.03
Côte d'Ivoire	21,784,182	67.56	1,520	6,825.19	1.33	126.01	0.63	47.53	10.40	22.65	26.53
São Tomé & Principe	n/a	n/a	n/a	37,317.03	2.76	85.28	0.69	24.04	16.80	20.04	28.00
Lesotho	2,142,077	70.59	1,210	4,484.09	1.92	106.57	0.10	36.94	8.18	27.93	27.36
Zimbabwe	15,483,220	39.67	940	9,119.43	1.97	83.18	1.10	38.12	12.89	22.07	23.12
Kenya	47,959,453	82.31	1,380	69,014.25	0.15	81.28	0.33	26.16	14.78	22.30	26.00
Senegal	15,389,936	78.23	950	4,976.72	1.86	98.68	0.64	26.08	15.10	19.93	25.66
Nigeria	188,630,392	204.18	2,450	11,256.53	0.08	81.82	0.01	21.80	10.56	15.23	25.67
Gambia	2,032,624	190.16	440	13,296.62	1.87	139.63	0.18	21.26	9.26	11.21	18.50
Sudan	40,518,825	21.77	2,140	2,034.50	0.34	68.63	0.06	25.19	17.96	33.61	28.00
Zambia	16,033,884	21.30	1,300	3,924.74	0.63	74.95	0.20	32.16	8.14	14.33	25.51
Cameroon	23,977,290	50.43	1,200	2,549.08	4.38	68.11	0.19	9.59	13.70	10.50	25.00
Mozambique	27,780,571	35.4	480	1,114.54	0.30	66.25	0.14	49.52	6.53	16.17	17.52
Mauritania	4,177,284	4.05	1,120	4,476.59	1.27	86.52	0.25	30.21	5.00	11.24	18.00
Uganda	41,468,240	175.28	660	5,509.90	0.89	55.07	0.26	33.71	7.60	8.90	21.88
Rwanda	12,759,695	484.61	700	7,454.72	0.11	69.92	0.17	27.01	4.50	9.30	20.00
Mali	16,774,653	13.53	750	598.17	1.20	120.31	0.03	24.40	3.18	8.95	11.11
Togo	7,349,312	129.42	540	4,489.86	0.46	74.91	0.61	19.55	6.81	7.74	11.31
Djibouti	912,918	41.5	N/A	15,227.96	2.73	37.82	2.96	11.61	20.31	9.10	13.13
Angola	23,520,528	18.87	3,440	8,796.24	1.29	55.28	0.52	17.11	10.51	10.00	13.00
Benin	11,164,695	99.13	820	1,655.59	1.12	79.65	0.81	5.58	5.81	6.61	11.99
Burkina Faso	18,419,797	67.2	640	2,810.14	0.35	83.63	0.05	19.87	5.82	10.59	13.96
Equatorial Guinea	820,924	29.27	6,550	2,397.35	1.22	65.90	0.49	0.07	16.02	9.35	23.78
Comoros	n/a	n/a	n/a	12,728.80	1.66	57.66	0.36	0.01	8.71	5.12	7.94
Tanzania	53,851,077	57.3	900	1,741.27	0.24	74.36	0.25	9.22	3.90	8.47	13.00
Guinea	12,656,200	51.48	490	589.37	0.00	85.33	0.01	15.01	2.84	7.65	9.80
Malawi	17,801,575	189.22	320	4,201.09	0.06	40.32	0.05	18.50	6.40	11.46	9.61
Madagascar	24,915,324	41.93	400	14,258.05	0.60	41.79	0.06	10.52	6.16	6.97	4.71
Ethiopia	101,407,490	82.88	660	2,242.35	1.13	50.51	0.55	5.28	5.03	15.37	15.37
DR Congo	73,172,515	31.2	420	770.25	0.00	39.48	0.00	14.18	2.68	2.80	6.21
Burundi	11,152,671	400.69	280	6,083.21	0.18	48.04	0.04	8.30	3.36	3.50	5.17
Guinea-Bissau	1,830,119	50.66	620	4,706.68	0.00	70.26	0.04	6.89	2.78	2.20	3.76
Chad	14,008,915	10.91	720	3,761.89	0.10	44.48	0.07	9.51	3.32	3.50	5.00
CAR	n/a	n/a	n/a	1694.63	0.04	25.49	0.02	3.28	2.93	3.06	4.00
Eritrea	n/a	n/a	n/a	3600.51	0.95	7.29	0.01	0.00	3.30	1.90	1.18

SOURCE: ITU ICT DEVELOPMENT INDEX (IDI) 2017

As well as ranking member states, the union also gives each an IDI value which is arrived at after measuring ICT access, use and skills. The above shows some of the indicators for African countries which are presented in order of their ranking as seen in the table on p14. Current and comparable data was not available for: Liberia, Sierra Leone, South Sudan or Swaziland.

2016, the technology "remains relevant", especially in rural areas where coverage and purchasing power are low. By 2023, GSM/EDGE are forecast to represent 12 per cent of total subscriptions.

"As investments continue to be made in faster networks in sub-Saharan Africa, WCDMA/HSPA and LTE are expected to represent around 90 per cent of total subscriptions in 2023," stated the *Mobility Report*. "The opportunity for operators to take advantage of these technologies relies on the ability to migrate GSM/EDGE-only subscriptions to WCDMA/HSPA and LTE, especially as smartphones become more affordable."

For sub-Saharan Africa, the company forecasts smartphone subscriptions to grow by 17 per cent per annum between 2017 and 2023. It also expects the first 5G subscriptions in the region in 2022, predicting that they will reach two million a year later.

According to the GSMA smartphones account for over half of total mobile connections globally and that growth is being led by African and Asian markets as affordability improves. It believes five markets will account for more than 40 per cent of the 1.6 billion new smartphone connections forecasted by 2020 – India, China, Nigeria, Indonesia and Pakistan. The organisation said lower cost smartphones from local manufacturers, such as AfriOne in Nigeria, are helping to address the affordability barrier.

But in spite of all the increases, and as has been well documented by the ITU and its research, half the world is not yet on the internet at all. The GSMA said that the digital divide is greatest in sub-Saharan Africa and India, which together account for 42 per cent of the world's unconnected people. It said that more than 60 per cent of their respective populations are not yet online.

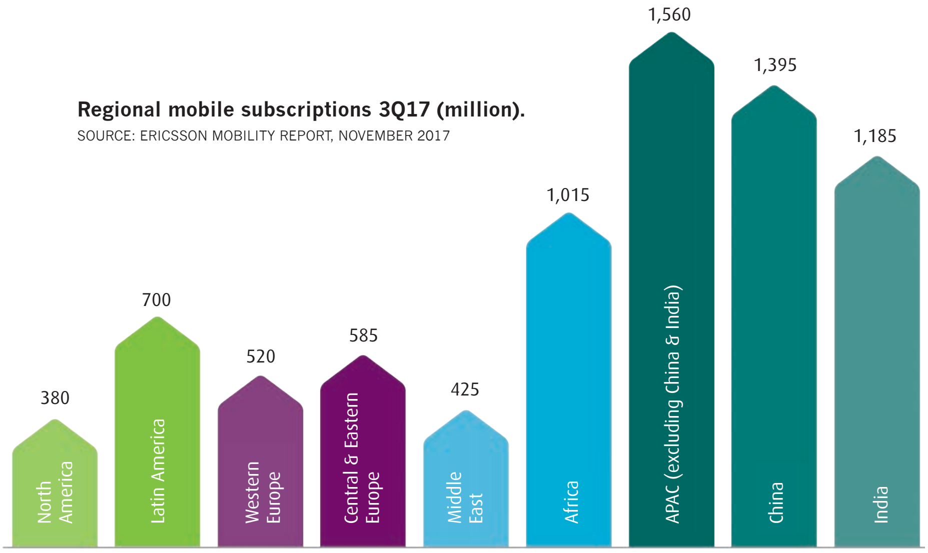
As the association pointed out, mobile coverage is not the only barrier: "The largely rural populations and lack of fixed line infrastructure make extending coverage a longstanding challenge for many developing countries. Of the 3.7 billion not yet on the internet, around a third (1.2 billion) live outside a 3G or 4G signal and so could be considered excluded because they don't have fast enough coverage.

"The corollary is equally important: for two thirds of the unconnected (2.5 billion), coverage is not the problem. Affordability, content relevance, literacy skills and gender factors are all part of the discussion."[5]

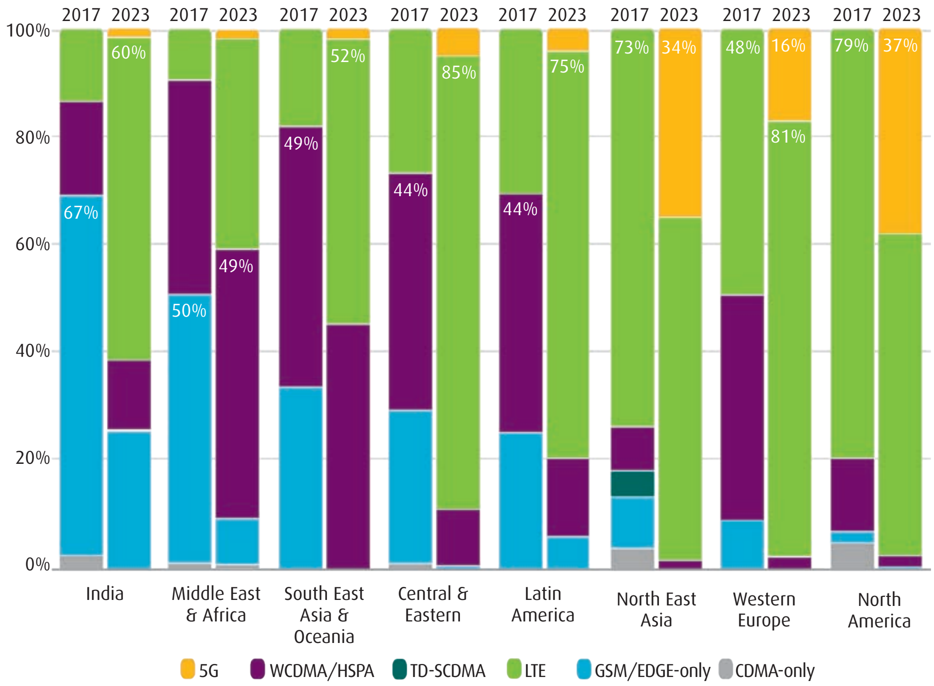
Satellite

The satellite industry has long claimed it offers the only technology capable of rapidly creating ubiquitous wireless networks, especially in remote, rural and hard to reach areas. Even the GSMA, in its *Global Mobile Trends 2017* report,

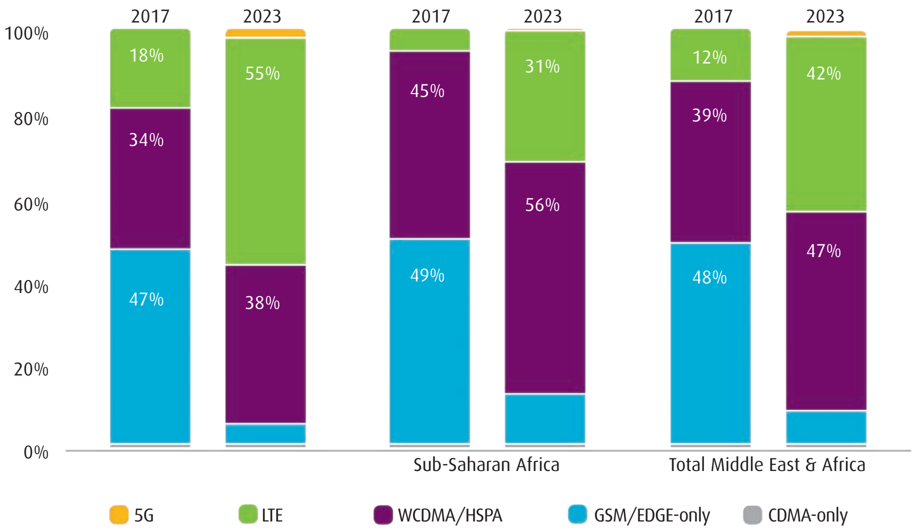
[5] All figures as of June 2017. Source: GSMA Intelligence.



Regional mobile subscriptions 3Q17 (million).
SOURCE: ERICSSON MOBILITY REPORT, NOVEMBER 2017



Mobile subscriptions by region and technology (per cent). SOURCE: ERICSSON MOBILITY REPORT, NOVEMBER 2017



Total mobile subscriptions by technology in the Middle East and Africa (per cent).

SOURCE: ERICSSON MOBILITY REPORT, NOVEMBER 2017 believes satellite has "re-emerged from the ashes of failed attempts in the early 2000s" as an alternative connectivity option.

According to the association, the significant difference is the new Low Earth Orbit (LEO) missions currently being developed by the likes of OneWeb, Sky and Space Global (see p74), SpaceX, *et al*. These companies are planning to launch hundreds of satellites at altitudes of around 1,100km that, as well as increasing end-user speeds, also aim to reduce latency.

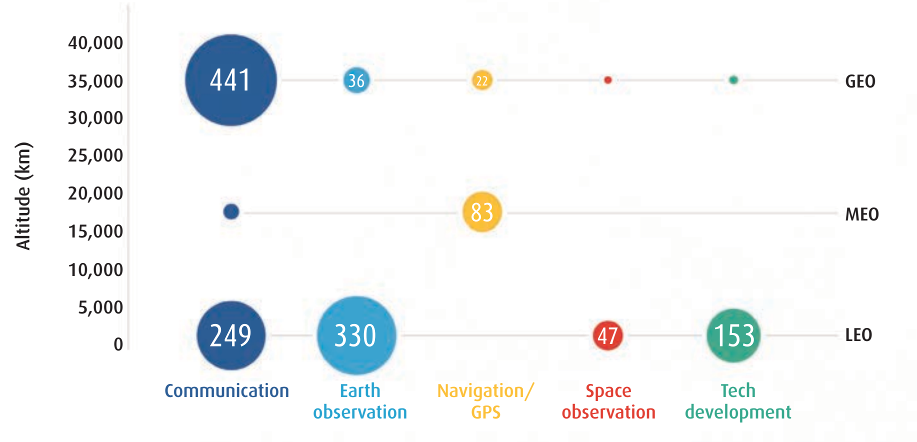
While conventional geostationary satellites, which orbit the equator at a distance of around 36,000km above sea level, suffer from latency of around 600ms, SpaceX is targeting latencies of 25 to 35ms. The GSMA pointed out this would be faster than terrestrial LTE networks which have a latency of around 80–100ms. "Over a 10-year period, SpaceX and OneWeb alone will at least quintuple the number of satellites in orbit worldwide, massively increasing industry capacity," said the GSMA. "This could provide an alternative backhaul option in reaching rural unconnected areas in emerging markets such as Africa. Satellite would be a complement to mobile networks, offering capacity wholesale to operators."

Northern Sky Research agrees that cellular backhaul represents a "huge future" for the satellite industry. In its *Wireless Backhaul via Satellite* report published in early June 2017, the analyst said the days of satellite being a "last resort" for universal service obligation with "negligible" returns for MNOs were now gone. It expects satellite backhaul to generate large global growth opportunities in the next 10 years, and forecasts growth at double-digit CAGRs with more than 110,000 units installed by 2026.

According to NSR, the arrival of high throughput satellites (HTS) together with advanced ground segment is making satellite a viable option for backhauling 3G and 4G base stations. "Looking forward, the majority of new opportunities will be generated from 3G and 4G/LTE deployments," said analyst Lluc Palerm-Serra. "2016 marked a key milestone in this transition. For the first time, 3G global data traffic surpassed 2G demand despite the latter still comprising 65 per cent of the installed base."

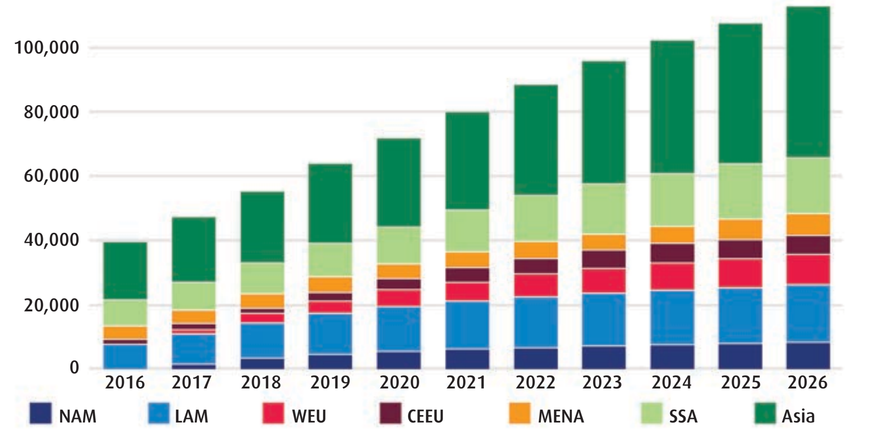
The firm added that broadband was taking over even in less developed markets like Africa where many new deals progressively include a 3G footprint. It predicted that the shift will be nearly complete by 2026 as more than 90 per cent of the installed satellite base will service broadband sites.

However, reiterating its warning from the *Satellite Capacity Pricing Index* above, NSR said price per Mbps will be critical to facilitating broadband services. "The efficiency at which the system transforms MHz into Mbps has an obvious impact in this equation," said Palerm-Serra. "Satellite power, ground segment design,

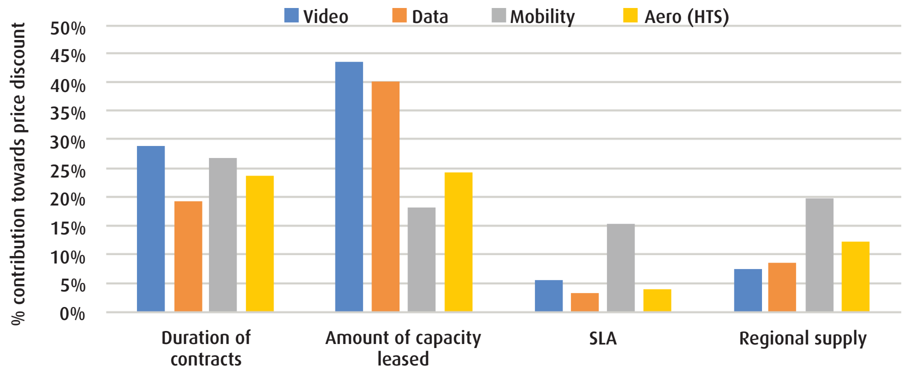


Bubbles show the number of active satellites currently in orbit worldwide.

SOURCE: GLOBAL MOBILE TRENDS 2017 SEPTEMBER 2017, GSMA INTELLIGENCE



Satellite-based cellular backhaul in-service units. SOURCE: NSR



Some of the key factors influencing price reductions in the satellite market. SOURCE: NSR

modem and other elements all have their roles to play in end-to-end system efficiency."

But in its separate *Satellite Capacity Pricing Index* released during 3Q17, NSR also predicted pricing to further decline. With operators and service providers focusing on a volume business in data and mobility verticals, the analyst said pricing had plummeted over the past couple of years from a high of USD3,000-4,000 per MHz per month, to below USD1,500.

According to the index, 13 factors can exert influence over pricing. NSR said these depend on a company's growth strategy and sales positioning, consolidation in its value chain vertical (operator, service provider or anchor client), customer relationships, and deal contracts. NSR analyst Gagan Agrawal added that while the factors shown in the chart above represent satellite leasing contracts historically, other influences, such as SLA ("premium versus frugal" maritime customers), regional oversupply and HTS fill rates below 40 per cent, and high spectral efficiency leading to low per Mbps pricing and bargaining power, are all becoming more important and resulting in large retail/wholesale discounts.

He noted that data/backhaul deals consistently come in at prices under USD500 per Mbps per month during 2017. "Some of the most prominent examples of the deals include backhaul capacity leased at sub USD400/Mbps/month in Western Europe and Africa, aero capacity leased at sub USD700/Mbps/

month in South East Asia, and video capacity at sub USD2,000/MHz/month in North America."

NSR expects mobility and data pricing to drop between five to 15 per cent and 10 to 30 per cent globally during 2018. For a leasing economy to maintain/grow top line revenues, it said operators would need anchor customers in the aero, backhaul and broadband businesses for their upcoming satellites and, in addition, fight off competition from new entrants to maintain the relevance of their "ageing" FSS fleets.

Given these price drops, Agrawal reckoned a wholesale business with a pseudo-lease or mixed lease-service model could be one of the winning strategies for operators to adopt. He said a mixed lease-service business at the operator's end or upstream vertical integration on the service provider side has potential to grow top line revenues for either of the players in the value chain. "Ultimately, the companies which pivot early based on efficient fleet consolidation and customer matching, stand a chance in winning the pricing battle," said Agrawal.

There were similar warnings for the satellite industry from Moody's Investor Service. In October, it said a "marked decline" in prices in the data services segment of the global satellite services markets will constrain operators' revenue growth over the next four years. Senior analyst Alejandro Núñez said: "We anticipate price declines in the data and enterprise segment to average around 15 per cent per year, including the impact from cannibalisation of traditional widebeam capacity by high-throughput satellite capacity."

In its *Satellite Services Sector – Global: Pricing Declines, Sustained Capex and Dividends to Pressure Credit Quality* report, Moody's stated that pricing pressure had arisen mainly due to increasing deployment and cheaper production costs (per unit of Mbps) of HTS capacity targeted at the data and enterprise market. It said this had led to overcapacity in that market as well as growing supply of conventional widebeam capacity, particularly in emerging regions such as Africa and Latin America.

The report warned that falling revenue and earnings bases over the next two years will lead to either declining free cash flow generation, or the need to adjust more discretionary elements of capex and opex budgets and/or dividend payouts to maintain deleveraging capacity and credit quality. It expected most operators to generate negative free cash flow in 2016 and 2017 with the exception of Eutelsat and Telesat.

The firm said all operators offering data and enterprise services will be affected to some extent. It believes the revenue impact here will be about -5 to -8 per cent per year through 2020. Overall, Moody's expected the sector's weighted average revenue to decline by 2.4 per cent in 2016 and remain flat in 2017. It added that Avanti Communications Group (rated as Ca negative) and Intelsat (Caa2 negative) are the "most vulnerable" as a result of their exposure to the data and enterprise services segment.

Moody's continued by saying revenues and earnings in the video segment provide a "stronger buffer" against credit deterioration than other segments. It said revenue streams in the broadcast sector were steadier, and that operators that are more exposed to video markets, such as SES (Baa2 stable), Eutelsat SA (Baa3 stable) and Telesat Canada (B1 ratings under review), should continue to be less susceptible to earnings variability over the next few years. The agency added that emerging markets continue to offer higher growth potential than developed markets in this segment.

Moody's believes revenue growth from the government services segment will be insufficient to offset weak growth in the data business. It also expects softer than previously expected growth in demand in some emerging markets, such as Africa and Latin America. Beyond 2020, the firm believes HTS technology has the potential to expand markets such as mobility and the IoT.

The Internet of Things

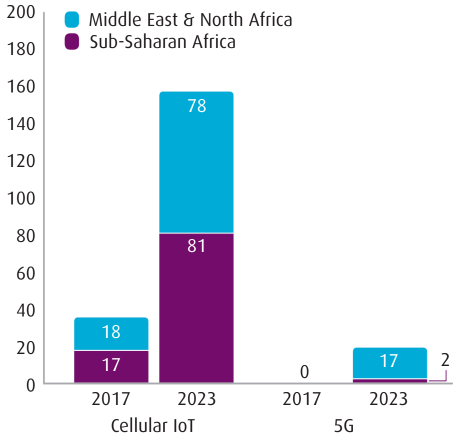
There are high hopes for the IoT as it continues to grow around the world, including parts of Africa. For instance, according to Vodafone, the percentage of companies globally with more than 50,000 connected devices active in the IoT has doubled in the last 12 months.

For its fifth annual *IoT Barometer Report* published at the end of September, the operator surveyed 1,278 key decision makers across various industries in 13 countries. They included the US, Germany, UK, India, China, Brazil, Italy, Spain, New Zealand, Ireland, Australia and Japan, as well as South Africa where 96 respondents were polled.

The study found that IoT technology is increasing revenues or opening up new revenue streams for 51 per cent of adopters, and that 66 per cent of all companies agreed that digital transformation is impossible without IoT. Energy and utility companies are at the forefront of the largest projects worldwide, with applications such as smart meters and pipeline monitoring.

EMEA polled higher than the global average (71 per cent) when it came to the topic of the future of IoT, with 74 per cent of the region's respondents stating that by 2022 they will no longer talk about IoT as it will just be another factor influencing business outcomes.

Ericsson's *Mobility Report* forecasts that cellular IoT connections in the Middle East and Africa will increase from 35 million in 2017 to 159 million by 2023 (a CAGR of around 30 per cent). It predicts cumulative earnings across MEA to hit USD242bn through 2026 as mobile operators continue to seek new revenue streams in the face of decreasing incomes from traditional sources.



Cellular IoT connections and 5G mobile broadband subscriptions in the Middle East and Africa (millions).

SOURCE: ERICSSON MOBILITY REPORT, NOVEMBER 2017

Even though IoT is still in its infancy throughout most parts of the MEA, Ericsson said there are still examples of how it has helped improve the livelihood of communities and industries in the region. For instance, it said Narrowband-IoT (NB-IoT) technology is being introduced in South Africa to address the utilities sector, enabling tools for energy efficiency such as smart meters.

Vodafone's report offers more insight for Africa. Among some of the key research findings for South Africa, its *IoT Barometer* said 86 per cent are optimistic about the possible business outcomes of connecting almost everything, and 57 per cent revealed that they will be using IoT in the next 12 to 24 months to manage risk.

As the scale of IoT projects increases globally, the report also noted a rise in connectivity requirements. Vodafone said organisations are looking to use a mix of technologies from fixed line to LPWAN depending on the application. Mobile and Wi-Fi are the two most popular options for large-scale projects, but there is also increasing interest in newer technologies such as NB-IoT with 28 per cent now considering it as well as other LPWAN options for new IoT projects.

"Over the five years of this report, we have seen the number of companies that have adopted IoT double, and projects have grown from small pilots to global rollouts of tens of thousands of connected devices," said Vodafone's Erik Brenneis (now CEO at Vodafone Global Enterprise). "IoT is clearly here to stay and the future looks exciting as 79 per cent of adopters are saying that [it] will have an enormous impact on the whole economy in the next five years."

Brenneis said the IoT has now "come of age" and is proving itself across all industries and geographies. His words were echoed by Deon Liebenburg, managing executive for IoT at Vodafone subsidiary Vodacom. Speaking last September, he said that the IoT was "no longer hype" and claimed Vodacom was averaging 55,000 new IoT connections per month in South Africa. ■