

# The Future of African Bandwidth Markets

African International Capacity  
Demand, Supply and  
Economics in an Era of  
Bandwidth Abundance

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& SAMPLE PAGES



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Analytics



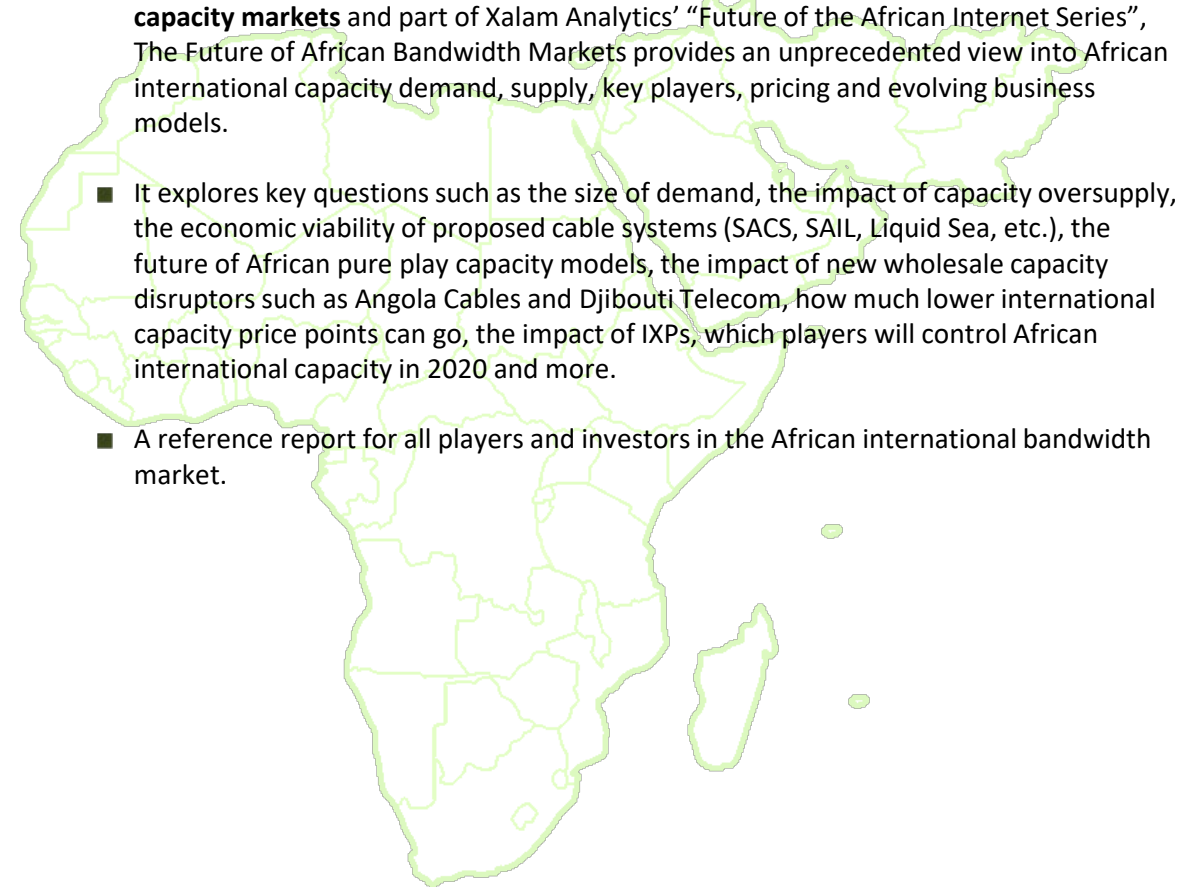
 HEAVY  
READING

## The African International Capacity Market Has Entered a New Era

- **The African international capacity market has entered a new era**, a new phase that comes after a period of dynamic growth between 2010 and 2015, and follows a miserable decade of bandwidth scarcity between 2000 and 2010.
- Things are different in 2017. **Today's African international capacity market is facing a seminal challenge to its economic structure**, a paradoxical predicament at a time when Internet traffic is booming across the continent. The dynamics behind these changes and their implications for market players and investors are at the heart of The Future of African Bandwidth Markets report.
- **There is much to assess. Our research says Africa's international capacity demand profile looks excellent.** The headline number of broadband connections in Sub-Saharan Africa has grown 10x between 2010 and 2016 and should hit close to 300m by 2020. African demand for international capacity has been doubling every two years and will double again between 2016 and 2020. **This market, unquestionably, will continue to need international bandwidth – and lots of it.**
- **International capacity supply has been growing too.** Between system upgrades, new cable rollouts and technology improvements, **African international cable capacity will reach twenty times 2010 levels -and almost four times 2016 levels by 2020.**
- **If the 2000-2010 decade was a decade of bandwidth scarcity, the 2015-2020 period will be a phase of African international bandwidth abundance. How will the marketplace handle this bandwidth bonanza?**

## An Unprecedented View into African International Capacity Markets and Models

- **The most comprehensive independent report available on African international capacity markets** and part of Xalam Analytics' "Future of the African Internet Series", The Future of African Bandwidth Markets provides an unprecedented view into African international capacity demand, supply, key players, pricing and evolving business models.
- It explores key questions such as the size of demand, the impact of capacity oversupply, the economic viability of proposed cable systems (SACS, SAIL, Liquid Sea, etc.), the future of African pure play capacity models, the impact of new wholesale capacity disruptors such as Angola Cables and Djibouti Telecom, how much lower international capacity price points can go, the impact of IXPs, which players will control African international capacity in 2020 and more.
- A reference report for all players and investors in the African international bandwidth market.





The insights derived from that our research on African international capacity markets are distilled in this report, covering critical key questions and points, including:

- Why we're projecting African international capacity demand requirements to double by 2020;
- Why we are projecting equipped subsea cable capacity to double from 2016 levels by 2020;
- Why African capacity surplus volumes are actually trending upwards despite a market that is already nominally oversupplied;
- Why we say that despite oversupply at macro level, only one market has a true bandwidth glut, a third of SSA markets have a bandwidth deficit and bandwidth is being rationed in almost a fifth of African markets;
- Why there is a deepening divide on African capacity pricing – with material long term implications
- Why we still see a solid case for building out new capacity – despite the fact that bringing in new international capacity into Africa does indeed look like overkill;
- Why we say that in an era of bandwidth abundance, the business case for stand-alone, single promoter pure play international wholesale carriers will probably no longer be viable in Africa – We don't expect any more Seacoms
- Why we say Angola Cables ambition to be a global first tier carrier is credible – but will not be simple
- Why we say Djibouti Telecom's strategic moves may be the smartest set of bets we've seen by an African operator in a long time;
- Who, of Angola Cables, Camtel Cameroon, Djibouti Telecom and Telecom Namibia will do most to disrupt the African international capacity market, and why;
- And more..

The Corporate/Premium version of this report includes more than 50+ supporting charts and data points in Excel format (See Report Specs).

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This report focuses on sub-Saharan Africa at a broad level, with countries covered at varying levels of depth. Countries and players covered are as follows:

## Markets Covered with Good Depth

- The core analysis of the report is driven by insights and data generated primarily from these markets;
- We provide a top level view of key international cables and routes, along with market dynamics;
- Country-focused profile, key trends, projections and other analysis:

- Burkina Faso
- Cameroon
- Senegal
- Ivory Coast
- South Africa
- Zimbabwe
- Ghana
- Kenya
- Nigeria
- Uganda

## Other Markets Covered

- The core analysis of the report is driven by insights and data generated from these markets;
- At a minimum, some top line numbers and projections are provided in specific tables;
- Key trends and dynamics explored, but no specific country profiling

- Djibouti
- Ethiopia
- Tanzania
- Rwanda
- Guinea
- Mauritius
- Zambia
- Botswana
- Namibia
- Mali

## Companies Mentioned

- Camtel Cameroon
- Djibouti Telecom
- Angola Cables
- Telkom SA
- WIOCC
- PCCW Global
- Orange Group
- Liquid Telecom
- Seacom
- MainOne
- Globacom
- MTN Group
- Vodafone Group
- Telecom Namibia
- Sonatel
- Maroc Telecom
- Benin Telecoms
- Expresso/Dolphin Telecoms
- TTCL

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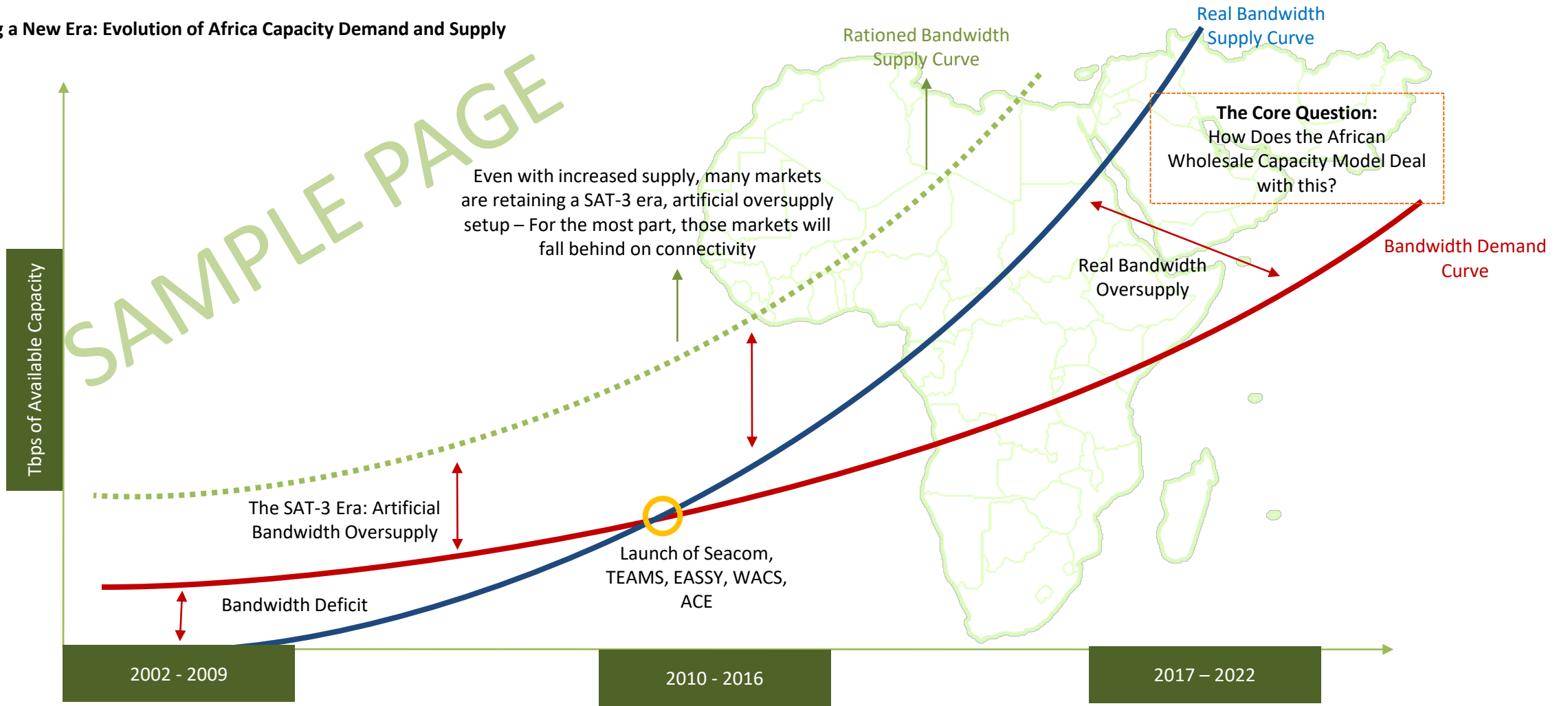




The following are sample pages for this report, provided for indicative purposes only, and in no particular order.

# After a Decade of Bandwidth Scarcity, a Decade of Bandwidth Abundance

Entering a New Era: Evolution of Africa Capacity Demand and Supply

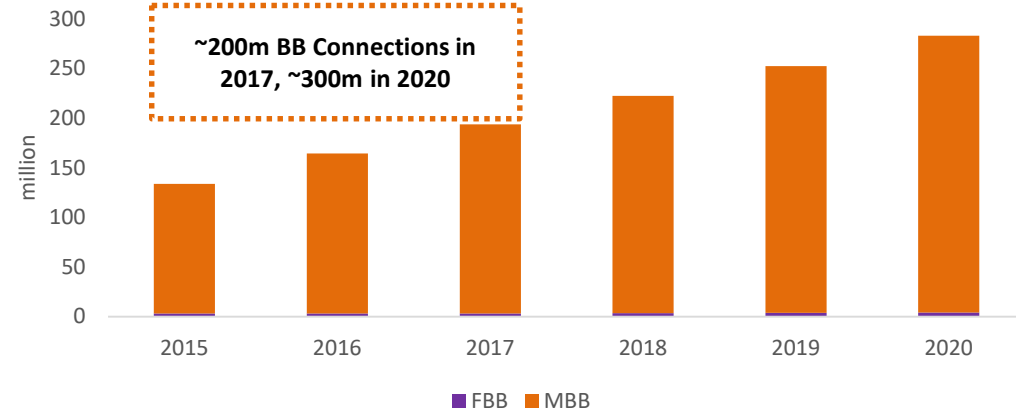


# Backhaul Capacity Demand Catalysts – A Remarkable Growth in Retail Broadband Connections

## The Number of Broadband Connections in Africa is Growing Fast

- ~175m broadband connections in Sub-Saharan Africa at the end of 2016
- The headline number of BB connections in SSA has grown 10x between 2010 and 2016
- Average annual broadband connection growth of ~55% over 2010-2015 period
- ~20 SSA countries have a broadband connection base >1m
- Growth has been mobile-driven – MBB accounts for 98% of connections
- But this is about more than mobile
- FTTH rising fast, to be second largest access technology in SSA by 2020

## Broadband Subscriber Base in Sub-Saharan Africa – 2010-2020

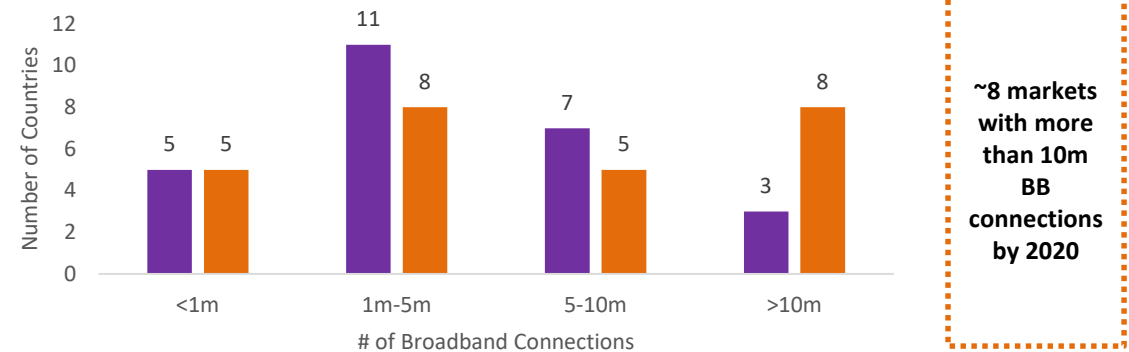


\*MBB including 3G and 4G connections only; FBB including wireline and fixed wireless connections higher than 1Mbps  
Source: Xalam Analytics Research

## ...And there's Still Room for Further Top Line Growth

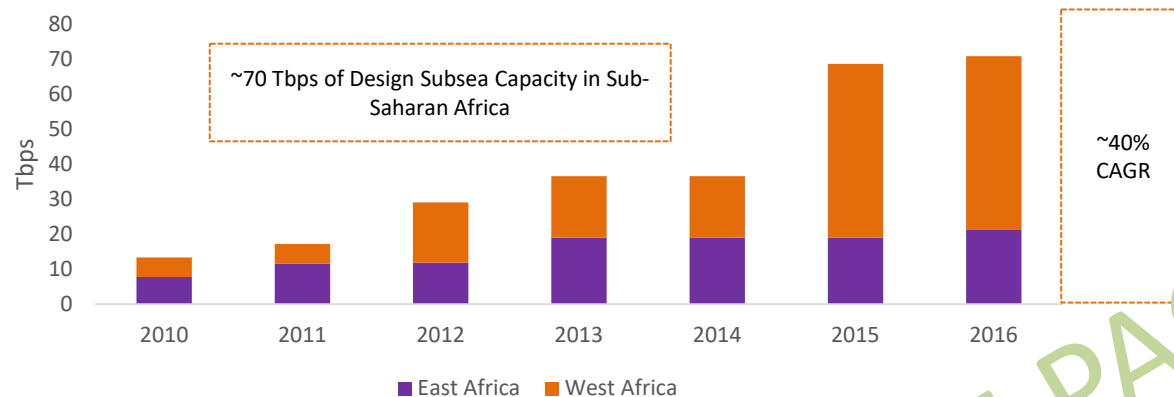
- Number of broadband connections in SSA projected to break the 200m mark in 2017, hit close to 300m by 2020
- Average top line BB connection annual growth around 15% over 2015 -2020 period
- Top line median broadband penetration was ~20% in 2016 – projected to rise to ~35% by 2020
- ~8 markets will have more than 10m BB connections by 2020 (from only 3 in 2016)– around 21 of SSA's countries will have more than 1m broadband connections

## Distribution of Sub-Saharan Africa Broadband Markets by Size – 2016E

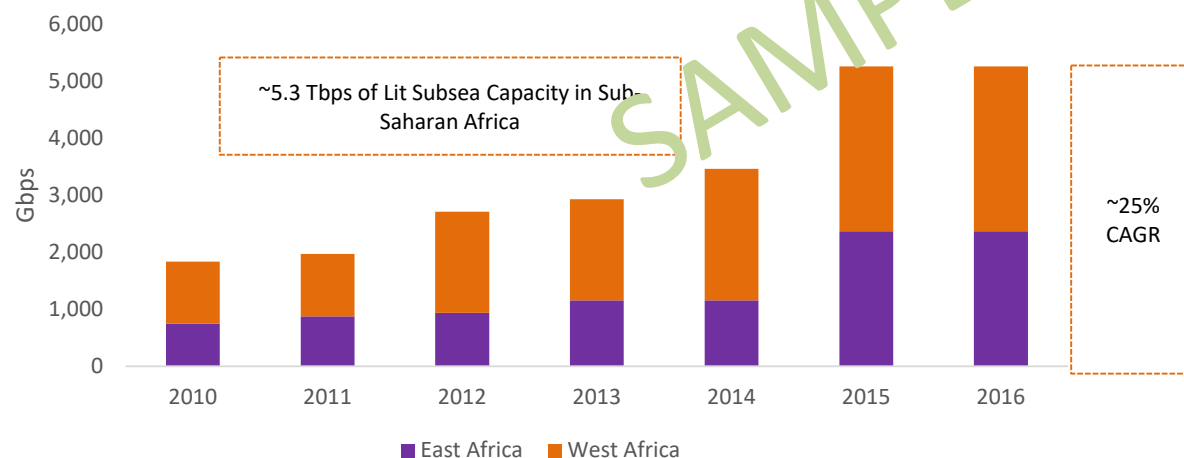


# Africa Bandwidth Supply – A 5 Tbps Market

## The Supply Side Historical View: Africa Subsea Design Capacity – 2010-2016



## The Supply Side Historical View: Africa Subsea Lit Capacity – 2010-2016



## Sub-Saharan Africa's International Capacity Supply - ~25% Annual Growth

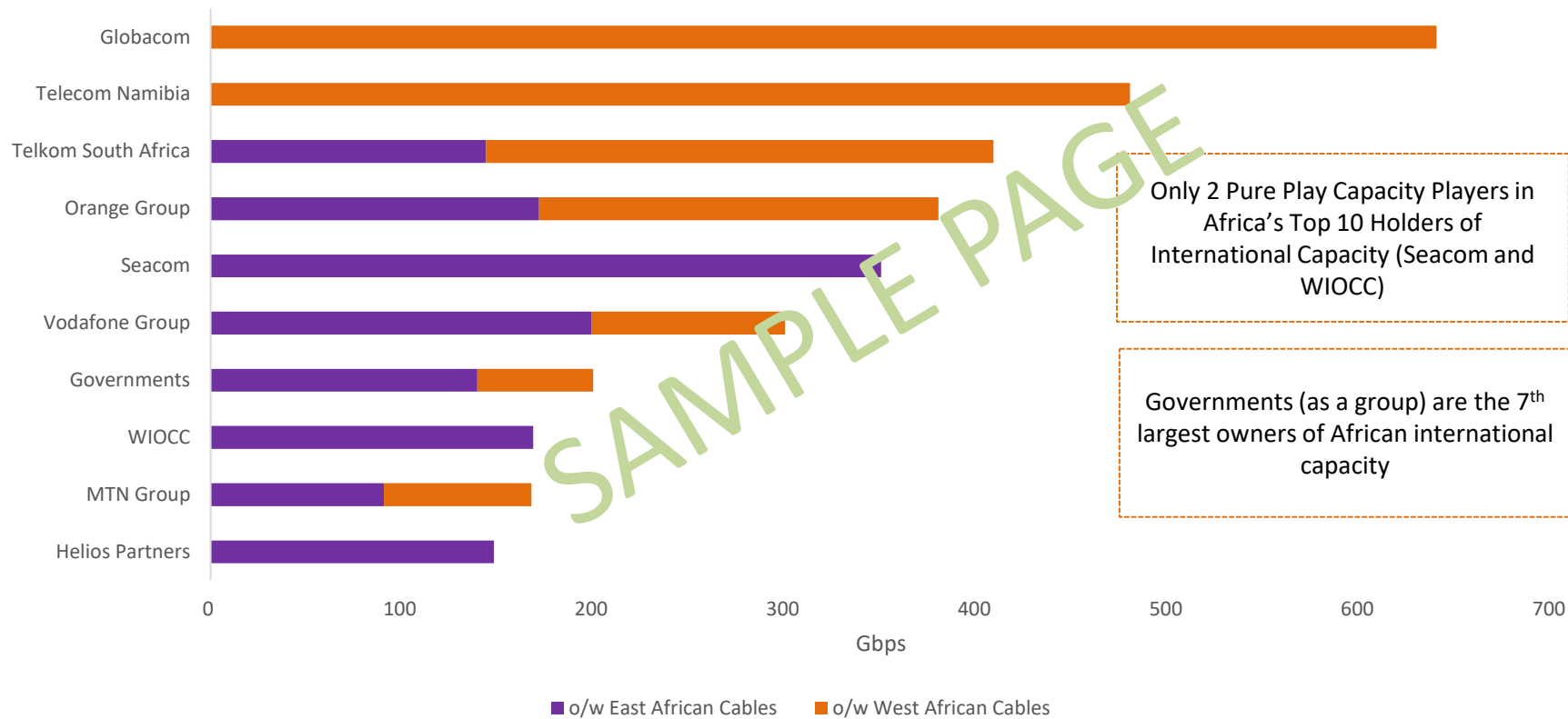
- **~14 operational, major submarine cables** (including regional cables and excluding international cables)\*
- **11 new cables rolled out between 2009 and 2016, providing ~70 Tbps of design capacity**
- **~5.3 Tbps of lit capacity, an average lit to design ratio of around 7%.**
- **Average annual lit capacity growth of around 25% between 2010 and 2015.**
- **Overall capacity supply has been nearly doubling every other year since 2011**
- **Other than a regional connection between Cameroon and Nigeria, no cross country submarine cable was launched between 2012 and 2016.**
- **The near-entirety of incremental lit capacity over that period (~2500 Gbps, almost half of Africa's 2016 equipped supply) has come through system upgrades.**
- **The West African coastline attracts around 40% of all operational subsea cables in Africa – but 55% of the continent's equipped capacity.**

\*Submarine cables only; including regional cables, but excluding International cables – cables passing through an African landing point (typically on the African East Coast), but not dedicated to, nor targeting African markets (e.g. SE-ME-WE-3, EIG, AAE-1, etc.). Source: Xalam Analytics Estimates



# Who Controls African International Capacity? – A 2016 View

Top 10 of Pan-African Carriers' Ownership of Africa Submarine Cable Lit Capacity – 2016 - Gbps



Globacom - Large Capacity Holdings – but Not a True Pan-African Wholesale Play (Nigeria and Ghana Only)

Only 2 Pure Play Capacity Players in Africa's Top 10 Holders of International Capacity (Seacom and WIOCC)

Telecom Namibia – Vaulted to Top 3 with Increased Stake in WACS

Governments (as a group) are the 7<sup>th</sup> largest owners of African international capacity

This chart, in our view, highlights the strategic impetus in Liquid Telecom building out its own subsea cable

\*Based on on-net lit capacity only (excluding IRUs and leased assets); Numbers aggregate capacity owned directly and by country subsidiaries; Sonatel considered as a group separate from Orange for the purposes of this chart; Governments refer to capacity held directly (or through non-telco assets) by governments; Submarine cables only; Based on African Trans-oceanic Cables only; Excluding regional and International cables – cables passing through an African landing point (typically on the African East Coast), but not dedicated to, nor targeting African markets (e.g. SE-ME-WE-3, EIG, AAE-1, etc.).  
Source: The Companies, Xalam Analytics Research

## ACE – Ownership Structure Has Been Excellent for Penetration, Tough on Upgrades

### ACE Cable – A Significant Disrupter of the Leased Capacity Market on the West Coast

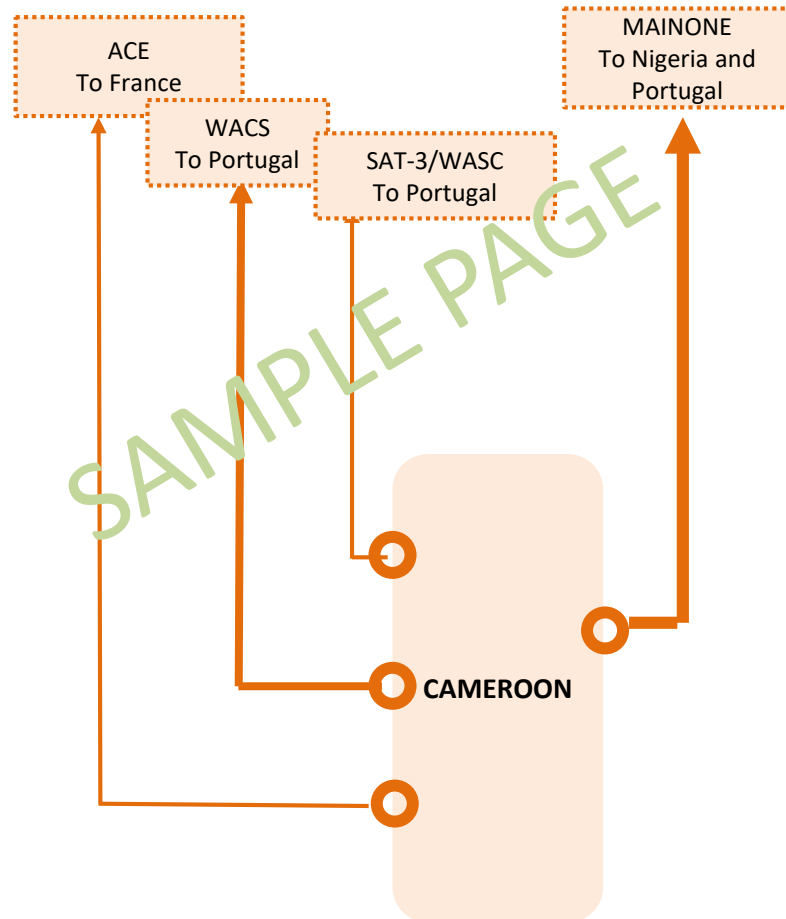
- **The Orange-led ACE cable has been one of the largest cable projects in Africa (only WACS cost more).** It is Africa's largest subsea cable consortium, with more than 50 direct and indirect investors.
- At the time of its launch (2012), the ACE cable offered the largest design capacity in Africa (along with WACS) – it has since been overtaken by a few others as more providers move to 100Gbps wavelength technology.
- **Few African submarine cables have been as impactful;** ACE was the very first direct access to an international cable for 7 of the countries hosting its landing points. It provided first-time subsea redundancy to 4 others, directly impacting internet access prices.
- **The ACE cable has also been one of the most significant disrupter of the leased capacity market along the West African coast.** Many providers that typically would lease international capacity from third parties were suddenly able to self-provision, with many ending up with more international capacity than they could use.

### Wide + Diverse Ownership Base = Limited Flexibility

- **While mostly a benefit, the nature, size and diversity of the ACE consortium also carry the seeds of its weaknesses.**
- The consortium includes about 4 SPVs and 8 governments. **About 20% of the capacity is directly owned by governments, the highest such proportion among sizeable African subsea cable projects.**
- Most of the governments were only able to invest thanks to World Bank funding.
- **In turn, capacity upgrades have been more difficult to execute;** markets at different levels of development, carriers with materially different requirements, slow government decision-making, and at times shareholder disputes within the SPVs as some want to move forward, others do not (or cannot) but do not want to get diluted.
- **Mostly as a result, ACE has one of the lowest lit to design ratio amongst African submarine cables** – but in fairness, this is really only a challenge for upper-tier shareholders who may want to increase capacity but are held back by others.
- An ACE upgrade is highly likely in 2017, coinciding with the launch of the Sao Tome to South Africa Southern leg.

# International Capacity Country Snapshot: Cameroon

## Cameroon – Key International Links



Line thickness represents estimated lit bandwidth owned and leased by local providers and allocated to the market  
Source: The Companies, Xalam Analytics research.

## International Capacity Market Snapshot

- **The largest economy and largest telecoms market in Central Africa**
- **Excellent bandwidth supply** – Access to four separate international cables, average bandwidth per connection is in Africa’s top 10\*\*
- **Market structure is the primary impediment to more dynamic growth** – the wholesale capacity market is a monopoly of state-owned Camtel (see our analysis in the Disrupter Analysis” section of this report)
- **Very low utilization** - Actual leased capacity is less than 3% of available/equipped bandwidth
- **Direct market impact** – Cameroon is a market where average FTTH is < 2Mbps
- **New cable planned (SAIL) should bring more capacity** – without material effect on the domestic market
- **Overall outlook is mixed; strong increase in available capacity, but quality of Internet will lag**

## Country International Bandwidth Indicators

	Indicator (2016 E)	Ranking vs. SSA Sample (Out of 22 Countries)
Number of Subsea Cables Landing in the Country	4	NA
Country Broadband Penetration	~21%	12th
International Capacity Supply (Gbps)*	~100 Gbps	5th
International Capacity per BB Connection*	~21 (Kbps)**	7 <sup>th</sup> **
Bandwidth Demand vs. Supply Context	Bandwidth Rationing	NA

\*International lit bandwidth owned and leased by local providers and allocated to the market

\*\*Ratio is misleading (based on capacity owned); if based on capacity used/leased, Cameroon’s ratio is ~2kbps, in the bottom quartile of our sample.  
Source: Xalam Analytics research.

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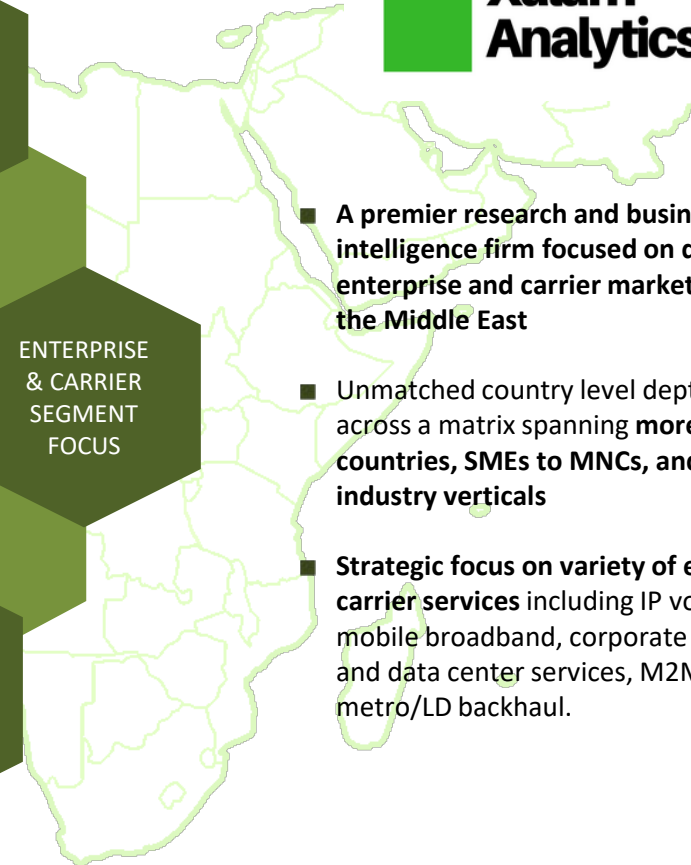
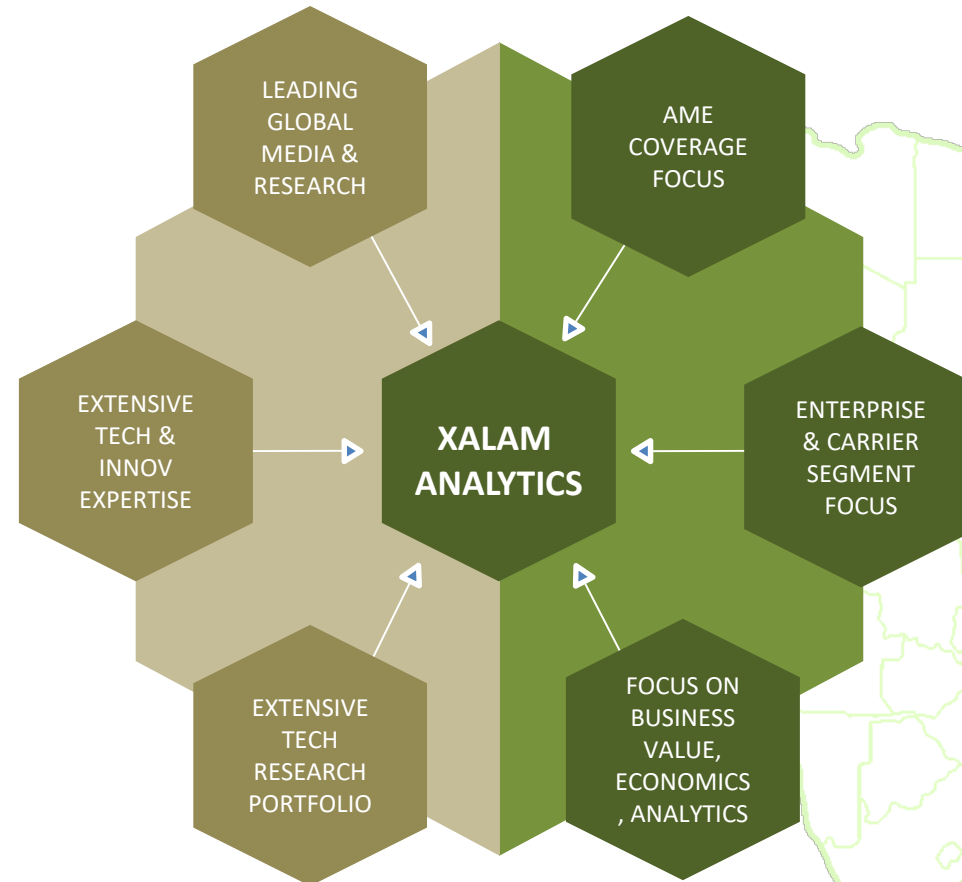
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50 Charts with underlying chart  
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