Saharan African telecoms operators and investors have witnessed phenomenal market gains and returns in a continent once considered unsuitable for large scale private investment. With penetration levels now greater than 41.4%, the scope for continued rapid growth is arguably less remarkable, but the scale of the opportunity remains significant, given that the next lowest regional penetration rates in the world are 67.8% in the Asia and Pacific region. Going forward, as we transit into the next phase of the African telecoms growth trajectory, the consensus appears to be that data and internet penetration (still at year 2000 levels when the history of African investment during the first decade of the 21st century is written, no opportunity. While it is expected that mobile voice services will continue to be the major source of income for operators, there appears no doubt that data content transmission is one of few areas where the kind of growth witnessed over the last ten years can be replicated in the next ten. To achieve this, the mechanism for wider transmission of large packets of information, internet connectivity, and wider availability of bandwidth within and across countries, especially into the hinterland, become critical barriers that must be overcome.

The objective of this quarterly review is to share with you our perspective on topical issues relating to infrastructure development, financing and investment in Africa. We hope to offer practical and innovative solutions, based on our expertise, local knowledge, and unique insight into the African infrastructure space. This quarter, we focus on regional broadband telecoms penetration in Sub-Saharan Africa. As mentioned above, the recent history of African telecoms is one of unprecedented growth and profit in almost every area (social, financial, developmental, and environmental). I will not dwell here again on the details of this already well-known story.

"...there appears no doubt that data content transmission is one of few areas where the kind of growth witnessed over the last ten years can be replicated in the next ten."
What next for African Telecoms Infrastructure?

While the explosion in growth of the telecoms services sector is quite well known, what is perhaps less publicized is the narrative surrounding the emerging broadband future of sub-Saharan Africa, and the key market factors, operators and private investors leading the drive for growth and profit in this arena. As with the mobile voice story, the potential for profit in broadband data infrastructure penetration and service delivery is accompanied by a great degree of risk and uncertainty. Indeed, given the peculiarities of each product offering, the investments and physical infrastructure required to deliver the service, and the competitive realities of the marketplace, it could be argued that broadband data constitutes a much higher risk opportunity than voice. However, given the near absolute dearth of the service across sub-Saharan Africa (3.6% mobile broadband and 9.6% internet penetration in 2010), the scale of the opportunity is also unarguably large. While there are about 333.0m subscribers to mobile cellular services (mostly voice) in sub-Saharan Africa, there are only 29.0m mobile broadband subscribers and an estimated 77.0m internet users.

Clearly, if gross broadband subscriber numbers, penetration levels and average spend per user were to come anywhere close to the levels achieved in the mobile voice market over the last ten years, the market opportunity could be just as phenomenal. One obvious cause for restraint is the more significant infrastructure investment requirement, relative to user propensity to pay for internet use and broadband data service. Payment models that are typically based on large-scale contracts (rather than road-side retail) also give reason to pause. Nonetheless, as with voice services, similar inertia was experienced in the early days of the evolution of mobile services, which were managed using customised “pay-as-you-go” payment models suitable to spending patterns of the African consumer (which can, and are being replicated for internet connectivity).

Taken together, I believe there is a strong market opportunity for operators who understand the key market factors driving market demand, possess the critical technical and operational competence to deploy required solutions, and are able to put together the most optimal financing arrangements to deliver a highly competitive long-term market solution to end-users. This review seeks to highlight some of the markets and operators in sub-Saharan Africa where we at AFC believe the above combination of underlying demand, market insight, operational capacity and appropriate financing exists to make a private-sector led success of broadband capacity expansion. We focus particularly on capacity borne via terrestrial cable networks, which ultimately have the greatest potential to link sub-Saharan Africa to the rest of the broadband universe.

At AFC, we have already expressed our belief in (and commitment to) making that important link for Africa by significant investment exposure to the sector. As one of the...
largest investors in the US$240.0m Main One submarine cable into West Africa, we have invested in the wholesale segment of the sub-regional broadband future. Across the continent, many other operators and investors have also committed capital and talent to addressing the wholesale element of the market opportunity. This has resulted in more than US$3.4bn invested or committed to deliver 72,700km of submarine cable transmission with capacity ranging from 1.28Tb/s to 5.12Tb/s across seven projects along the African coastline by Q2 2012.

**Broadband Demand and Supply Dynamics**

According to Hamilton Research, in the year to June 2010, Africa’s fixed line and alternative operators brought a further 57,560km of terrestrial fibre and microwave transmission network into service. They further estimate that Africa’s total inventory of terrestrial transmission network increased by 26.0% in the last twelve months to reach 585,471km.
Hamilton reports that Africa’s total inbound international internet bandwidth reached 300Gb/s in the first quarter of 2010, and for sub-Saharan Africa exceeded the 100Gb/s mark. This growth has been driven by the entry into service of four submarine cables during the 2010: TEAMs, SEACOM, Main One, and EASSy. The entry of GLO1, WACS (2011) and ACE (2012) are expected to increase capacity and country landing points, with Eritrea and Guinea Bissau becoming the only seaboard countries without a direct connection point. Hamilton further estimates that as of 2010 there was more than 10Gb/s of cross-border terrestrial network capacity, both as primary backhaul and to provide alternative, protected transmission routes for content.

According to AfricaNext Investment Research, baseline purchased bandwidth forecasts came to about 1.2Tb/s by 2015 and 1.7Tb/s by 2020. AfricaNext suggests further that sub-Saharan Africa will face a lit bandwidth surplus (the oversupply gap between equipped bandwidth and purchased bandwidth) that will average around 1.7Tb/s over the majority of the 2010-2020 period. This is happening at the same time as:

1. A sustained growth in internet usage (particularly via mobile devices) across the continent (see chart below)
2. An increased incentive on the part of Mobile Network Operators (MNOs) to offer value-added services beyond just voice (given competitive realities as the market matures), and
3. Strong financial capacity on the part of the major mobile operators to invest in the required terrestrial infrastructure (given their remarkable investment returns over the last decade)

Source: http://manypossibilities.net/african-undersea-cables
BOX ONE: A SHORT OVERVIEW OF SUB-SAHARAN AFRICAN BANDWIDTH

Over the last two decades, sub-Saharan Africa has evolved in bandwidth terms from being predominantly dependent on low capacity, wireless-based infrastructure designed to carry voice communications, with international traffic being mainly transmitted via a single wholesale cable owned by incipient national monopolies to one served by a number of submarine cables. In sharp contrast to the growth in the mobile sector (driven by liberalization and private sector financing), broadband access has been severely limited in Africa with the lowest regional penetration rate in the world at 3.6% in 2010.

The market structure of the backbone network infrastructure in the region has historically been a major factor constraining the development of the broadband market. These were typically owned by vertically integrated operators that built end-to-end networks. Competing downstream operators and service providers were therefore not able to obtain access to affordable backbone capacity and so the provision of broadband in the region did not develop as well as in other parts of the world. A number of factors were responsible for this state of affairs, and the level of development in individual countries over the last decade has been largely due to the difference in pace of resolving these issues:

- **Regulatory Frameworks** – In many countries across Africa, the regulatory frameworks historically provided disincentives to investment in backbone infrastructure by limiting the types of infrastructure that can be built and constraining the range of services for which these networks can be used. For example, some countries prevent mobile operators from selling backbone services to other operators on a wholesale basis. This reduces the potential demand for the service and therefore limits the incentives to invest in the required infrastructure.

- **Technology Constraints** – The primary means of providing customers with broadband connectivity around the world has been through fixed telephone line access networks of the telecommunications operators or the cable TV networks. The high rates of coverage of these networks, often combined with a policy of unbundling to facilitate services competition in the market, resulted in rapid roll-out of broadband services. In sub-Saharan Africa, the coverage of fixed telephone access networks is extremely limited with a penetration rate in 2010 of about 1.6% according to the ITU. Moreover, much of the infrastructure that does exist is of poor quality and not capable of supporting the service without significant investment. Companies wishing to offer broadband have been largely constrained to the limited base of subscribers with upgraded access lines or to using expensive wireless access solutions.

- **Market Economies of Scale** – Africa is large, with vast under-populated rural areas, tightly populated urban areas and very often a lack of sufficient scale concentrated in a single location to justify investments in the terrestrial fibre infrastructure to serve the area. The advent of mobile telecommunications over the last decade has significantly ameliorated this disadvantage, with large numbers of base-stations essentially aggregating traffic at single locations that can be looped by backbone networks. However, given the extent and state of built-out infrastructure across much of urban Africa, the cost of laying high capacity terrestrial fibre networks can be quite prohibitive. Some operators (in Kenya, Benin and Nigeria for example) have been able to gain advantage by winning concessions to roll-out aeronautics on existing power transmission and distribution infrastructure. The cost per kilometre of cable laid aeronautically on High Voltage Lines is estimated at US$12,500, half the cost of in-ground terrestrial cable laying. Hence, the build cost to connect individual homes or businesses via cable is still sufficiently prohibitive across Africa to ensure this will only happen in rare instances, and mobile networks will remain the “last-mile” content carrier well into the foreseeable future.

As privatization and liberalization have become more widely accepted and implemented across most of the continent, progress with broadband penetration has differed from one country to another. Markets with historically superior technology and infrastructure (particularly fixed telephone networks) and/or sufficient economies of scale to justify additional investments have progressed faster. Similarly, markets were private operators were allowed to enter and compete have also seen faster levels of growth. In Kenya, for example a private operator called Kenya Data Networks (KDN) Limited has managed to grow into the dominant fibre and radio infrastructure in East Africa. This has been achieved partly by leasing existing capacity on the Kenya Power & Lighting Company Limited (KPLC) fibre optic network, which is licensed as a Network Facility Provider by the Communications Commission of Kenya. In West Africa, Phase 3 Limited, a provider of transmission and IP services using the aerial fibre optic transmission executed an exclusive right of way concession agreement with the Communauté Électrique du Benin (CEB), the authority responsible for the operation of high voltage power lines in both Benin and Togo. The Company also operates a similar network in Nigeria, and has conveyed this into a position of advantage as an emerging regional terrestrial fibre operator.

**Where is the Terrestrial Retail Capacity?**

Generally speaking, there is typically a time lag (up to 12-18 months) between wholesale capacity availability and investments at the retail level to take up that capacity. In the intervening period, additional supply helps push prices to more affordable levels for end-users, opening up wider market demand at the lower end, and encouraging retail infrastructure investments. Clearly, market dynamics across much of the continent are now moving in favour of...
investments in onshore terrestrial infrastructure to carry broadband capacity inland from the coasts. Mobile Network Operators (MNOs) will be primarily expected to undertake a significant amount of the investment required. This is particularly so given their status as the primary interface with end-users in a largely mobile-dominated market, technological advancements enabling mobile broadband access, and long-term market realities which suggest a demand evolution away from voice to broadband data services. It is expected that consumer demand, bandwidth pricing and competitive realities will be the primary drivers of investment activity by MNOs. However, there is also an opportunity for open-access data infrastructure providers to serve both MNOs and other wholesale users of bandwidth.

The key questions I would therefore like to discuss in this review are: In which markets will these infrastructure investments come on stream the fastest? What would be the characteristics of operators (existing and potential) who will be in the best position to execute on this opportunity, and how is the Africa Finance Corporation positioned to help bring it all together? To help answer the first question, I will explore briefly an overview of broadband in Africa, and highlight the impacts of liberalization, market size and financing availability on private-sector led infrastructure investments. I will then profile three leading operators in East and West Africa that appear to be well positioned to win in the emerging market environment, using the East African operator as a case study for how a multi-country terrestrial fibre network can be successfully deployed by a purely private operator. I’ll also discuss briefly some of the emerging opportunities in west and central Africa, particularly for transmission capacity into landlocked and historically under-invested countries. The review concludes with some ideas as to how AFC can be of assistance, using our successful early stage investment in Main One as an illustration of how the Corporation can help in bringing bold projects to fruition in Africa.

**Overcoming Technical and Regulatory Challenges. What is Required?**

**Technical Overview:** While technical solutions are readily available to address the challenges of deepening broadband penetration on the continent, the challenge lies in seamlessly implementing a combination of solutions to ensure wider access and profitability. Ideally, a wider roll out of optic fibre would be best to address the terrestrial challenge of broadband access and service provision. In reality, this would not likely make the most economic sense.

At AFC, we envisage that a combination of wireless broadband solutions with fibre optic cable infrastructure, including the use of electricity transmission and distribution lines (as successfully implemented in Kenya), railways, and
pipelines (where they exist) will ultimately be the model to address the backhaul and terrestrial challenge to wider availability of broadband in Africa. Wireless solutions including WiMAX and CDMA are widely available at affordable costs. Properly combined and with the right incentives, we foresee the emergence of broadband aggregators who provide commercially viable solutions to the broadband needs of the continent.

**Alternative Transmission Infrastructure Solutions:** The use of electricity transmission systems in particular could prove to be most economical for intra and inter country deployment of broadband systems to inland areas and landlocked countries. Most of Africa’s electricity transmission networks are increasingly being inter-connected and could provide the right platform for addressing the terrestrial broadband challenge. Also, where there are trunk railway lines, (historically, in most African countries with functional railway systems, the tracks run from the coast to the hinterland) these could serve as viable infrastructure solutions to the terrestrial broadband challenge. In addition, oil and gas pipeline systems could also serve as conduits for accelerated deployment of broadband infrastructure. The commercial development of any of these options constitutes a potential business opportunity for existing and potential operators to exploit. These would however require the appropriate fiscal and regulatory environment to facilitate private investment in these opportunities. Furthermore, most countries of Africa are planning or implementing huge road and power transmission infrastructure projects, some of them linking huge corridors within and across countries. Each of these could serve as cost effective modes of addressing the terrestrial broadband challenge faced on the continent. Infrastructure planners across Africa would do well to integrate options for roll-out of broadband capacity into their development blueprints, in consultation and collaboration with private-sector service providers.

**Regulatory Overview:** On the regulatory front, most of the countries in Africa have liberalized their telecommunications market with two or more operators currently providing mobile services and other value added services. The situation in the backbone segment of the market is not as clear. In most countries, mobile service providers invest in backhaul infrastructure designated solely for own use. In Nigeria for example, three of the key GSM/CDMA operators have built long stretches of proprietary fibre optic backbone, solely dedicated to own network operations. Strong regulatory incentives for better collaboration in the area of infrastructure sharing would be ideal, even though market realities (capacity, demand and pricing) may not always be conducive for such open access models. Tower
Background: Kenya Data Networks (KDN) is a data communications carrier that was licensed by the Kenyan telecoms regulator, Communications Commission of Kenya (CCK) in January 2003 as a Public Data Network Operator. KDN currently operates the largest data and Internet backbone in East Africa. The company provides a wide-ranging suite of services over its fibre optic network including Internet Protocol (IP) services, broadband transport, infrastructure services and colocation services. In addition to widespread national coverage in Kenya, KDN operates a 15,000km terrestrial fibre optic cable network across East Africa, including major regional markets, Tanzania and Uganda, with plans to lay additional 400km of underground fibre into Mombasa to the rest of East Africa, creating a five-country fibre-optic based terrestrial network linking Kenya, Tanzania, Uganda, Rwanda and the Democratic Republic of Congo.

Strategy and Business Model: KDN operates a multi-franchise business model which focuses on offering backhaul services to MNOs in the region (on long-term contracts), while also selling spot wholesale bandwidth to large consumers in the area. For example, Airtel Kenya has recently partnered with KDN to upgrade its transmission network in readiness for the launch of its third generation network. Under a five year partnership agreement, KDN will inter-link Airtel sites through its extensive countrywide fibre optic network. The company has also established itself as a leader in the provision of commercial leased lines, constituting 75.0% of Kenya’s outbound traffic. KDN’s network operations cover all the major cities and towns of Kenya. The company is also developing a data centre project in the region with commitments already received from major customers. Now 60.8% owned by JSE-listed technology investment holding company Atech, KDN has grown rapidly in less than a decade from a single country Internet Service Provider (ISP), into a dominant regional terrestrial fibre operator. The company now owns a minority (8.5%) equity stake in TEAMs, the 5,000 km, US$130m undersea fibre optic cable project led by the Kenyan government, stretching from the coastal towns of Mombasa in Kenya to Fujairah in the United Arab Emirates. The TEAMs investment is expected to allow KDN secure bandwidth from the cable for onward sale through its proprietary distribution network.

Key Success Factors: The company’s growth has partly been due to a willingness to invest early in the requisite infrastructure to transmit inbound bandwidth capacity from sub-sea cables into sub-Saharan Africa. For example, in 2008, KDN became the first ICT company to construct a multi-million-dollar termination point at the Kenyan coast in anticipation of East Africa’s three international subsea cables. In addition to a willingness to invest early, the strategic focus on multiple revenue sources and partnerships with consumers and MNOs has also been partly responsible for the company’s growth. KDN has also benefitted from having strong financial sponsors with a long-term orientation and funding capacity. Atech made a US$75.0m investment in 2008 to acquire a 51.0% stake in KDN and two other regional ISPs, and has since increased its stake to 60.8% following a robust infrastructure development program over the last three years. Atech has committed a further US$39.5m to the company since the buyout that is mainly targeted at network expansion.

Financial Performance: Atech consolidates its regional financial reporting for KDN and other East Africa subsidiaries as Atech Stream East Africa (ASEA). For the year ended August 2010, ASEA reported ZAR314.0m (approx. US$46.9m) in revenue (up 20.7% from 2009 gross earnings). However, operating profits declined by nearly 40.0% to ZAR53.0m (US$7.9m) following operational challenges including subsea cable outages, longer than anticipated satellite capacity redundancy, and delays in 2010/2011 capital funding. Nonetheless, the division remains an important part of the ZAR4.8bn (US$717.8bn) Atech Group (measured by 2010 revenues), and is expected to remain a significant growth driver over the next five years.

Strategic Implications for Operators in West Africa

Clearly, there is a need for regulatory agencies to work on frameworks that encourage better collaboration in the development of backhaul broadband systems. Given the right incentives and fiscal measures, we believe that this is possible and should be encouraged. The situation with cross border infrastructure is somewhat less straightforward. In most regions of the continent, regulatory regimes for telecom services have been harmonized (although full implementation of adopted protocols at the country level of is somewhat sketchy) to promote more regional play by key operators. Notwithstanding this, terrestrial infrastructure providers have to be licensed in each country of a given sub-region. Common licenses for providers of terrestrial telecom infrastructure across sub-regions could facilitate investments in required infrastructure on a regional basis, ensuring effective linkages to existing and planned submarine cable systems. Notwithstanding this, a number of companies in West and East Africa are already undertaking multi-country roll-outs of terrestrial broadband infrastructure. Improvements in regional broadband regulatory policies would accelerate investments in this area.

BOX TWO: CASE STUDY - KENYA DATA NETWORKS LIMITED, PIONEER EAST AFRICAN TERRESTRIAL FIBRE OPERATOR

sharing by MNOs has already become a widely acceptable model (due to the obvious cost benefits), and a further extension of this model could be highly impactful in expanding access across the terrestrial broadband segment. There is therefore a need for regulatory agencies to work on frameworks that encourage better collaboration in the development of backhaul broadband systems. Given the right incentives and fiscal measures, we believe that this is possible and should be encouraged. The situation with cross border infrastructure is somewhat less straightforward. In most regions of the continent, regulatory regimes for telecom services have been harmonized (although full implementation of adopted protocols at the country level of is somewhat sketchy) to promote more regional play by key operators. Notwithstanding this, terrestrial infrastructure providers have to be licensed in each country of a given sub-region. Common licenses for providers of terrestrial telecom infrastructure across sub-regions could facilitate investments in required infrastructure on a regional basis, ensuring effective linkages to existing and planned submarine cable systems. Notwithstanding this, a number of companies in West and East Africa are already undertaking multi-country roll-outs of terrestrial broadband infrastructure. Improvements in regional broadband regulatory policies would accelerate investments in this area.
provides a pointer as to how a private, open-access operator could potentially develop a market leading position in broadband data transmission across sub-Saharan Africa (an estimated US$20.0bn total revenue market by 2015 according to Pyramid Research).

I have summarized some of the most important learning points into the three items below:

1. **Strategic Market Positioning:** To succeed, an operator seeking to play and succeed in the terrestrial fibre business will need to be appropriately positioned for the long term consumer/data market opportunity. However, in the short term, wholesale backhaul services for MNOs who are still largely dependent on voice business for revenues may still be the primary target market. In addition, given the on-going investments in backhaul infrastructure by mobile operators particularly in Nigeria, an open access network would need to be positioned to offer complementary coverage (supporting MNO roll-out plans) while targeting areas of growth in currently uncovered areas. Various other alternatives could be explored in this regard, including a strategy involving backward integration into data centres (creating wholesale clusters) similar to KDN data centre project in Kenya (scheduled to be operational in early 2011). Another approach could be to secure long-term contracts from single off-takers (e.g. governments or large corporates) in currently under-served or landlocked areas as a basis for a primary cable investment into the region. This would be similar to KDNs contract to supply bandwidth to Rwandan government in tandem with its network expansion plans to Kigali. In summary, a detailed understanding of the market terrain and demand-supply dynamics would be critical to developing an investment plan for such a network.

2. **Partnerships and Alliances:** Strategic partnerships are a crucial requirement for success. Given the significant investment requirements, competitive market landscape and potential for duplication of effort, the leading operators will be the ones that are best able to strike mutually rewarding partnerships with key market participants. MNOs are a first obvious constituency given their firm grip of the consumer mass market. ISPs, large corporates, and other wholesale users may also need to be incorporated into broader long-term partnerships beyond sales and purchase agreements. Similarly, partnerships with sub-sea cable operators may also need to go beyond purchase of bandwidth for transmission. Altech-KDNs equity investment in TEAMS for example will allow it broaden the scope of its operations with guaranteed long-term access security. Governments and their various agencies will also be an important group to partner with, given the public benefits of the infrastructure, public sector capacity to stimulate demand, the extensive licensing and Right-of-Way requirements for various elements of the business. Again, using KDN as an example, in 2010 the company signed a five year agreement to lease a pair of dark fibres on the government-owned Kenya Power & Lighting Company Limited (KPLC) fibre optic network along the Nairobi-Mombasa power transmission line for an annual fee.

3. **Long Term Financing Availability:** Strong, stable capital with a willingness to take on long-term project risk is an important element of any infrastructure investment. This is more so given the significant capital outlay and market risk inherent in a broadband infrastructure roll-out in sub-Saharan Africa. Conventionally, telecoms infrastructure is generally capital intensive particularly in the early stages, with returns only fully accruing once sufficient traffic volumes are being transmitted over the network. The history of mobile telecommunications in Africa suggests that the payback periods can be quite short. Nonetheless, any investments will need to be predicated on conservative market uptake assumptions, and financiers of projects of this nature will need to make long-term commitments. The long-term commitment of a JSE-listed, US$670m (2010 total assets) multinational group like Altech of South Africa to KDN in East Africa can be considered a major element of their success to date. Operators in West Africa that are best able to secure such financial support and access broad financial markets will be in the best position to replicate this success.

**Conclusion:** I am optimistic about the potential for private investors to replicate the success of Africa’s mobile telecom revolution in the internet and broadband market segment. This will be essential to unlock the immense opportunities for productivity, value-addition and employment across the continent. Despite the substantial potential for upside, however, careful planning and partnership will be essential to making a success of the opportunity. We at the AFC are already closely involved with the sector through our investment in the Main One Cable Company, and are actively exploring next level investments to further expand the reach and developmental impact of the newly arrived capacity. We are confident that significant investments will be catalyzed over the next few years into projects and companies to make this happen. Our objective is always to work with our partners to ensure that projects are properly
BOX THREE: THE WEST AFRICAN CONTENDERS: SURBURBAN TELECOM AND PHASE 3 TELECOM

Suburban Telecom describes itself as “the largest supplier of wholesale internet solutions to Nigeria’s GSM operators and ISPs, offering location to location connectivity, wholesale internet connectivity and network monitoring to various telecom operators and enterprise customers in Nigeria and across West Africa”. Suburban was started in 1999 as equipment supplier and advisory service provider. Since then, the company has evolved into essentially a wholesale supplier offering access to hundreds of Internet Service Providers (ISPs) and enterprise customers. The company offers national service in Nigeria and the Republic of Benin, and is positioned essentially as a provider of global internet access, with a proprietary local fibre network. Locally, the Suburban network offers connectivity across majority of the southern cities of Nigeria and extends to the north as far as Kano. The company reports extensive coverage in major cities such as Lagos, Abuja, Benin, Port Harcourt and Kano. Suburban also offers dedicated leased line capacity to large, multi-located corporates like commercial banks seeking reliable interconnection between their local branches.

Overall therefore, the company operates a business model and product line that appears more targeted at bespoke service offerings to large consumers of bandwidth, rather than seeking to deploy national terrestrial fibre infrastructure to support backbone requirements of MNOs. However, the company does own a nationally competitive fibre and WiMax network, offered at fixed rental to carriers (including MNOs), ISPs and large enterprises. The company currently lists all the major MNOs and ISPs in Nigeria as its customers. The privately held company says it has invested more than US$100m to develop a national and regional backbone network. As a 12 year old operator with a strong understanding of underlying market demand, competitive network infrastructure and strong existing customer base, Suburban could be one likely contender to lead the next phase of expansion in terrestrial broadband infrastructure across West Africa.

Phase 3 Telecom describes itself as the company that “operate(s) & maintain(s) the largest private fibre optic network in Nigeria and the West African sub-region. The company says it is connecting its aerial fibre optic network in Nigeria to other West African countries commencing from Republic of Benin, Togo and Niger Republic, with on-going plans to extend the network to Ghana, Ivory Coast all the way to Senegal; cutting down the extremely high cost of connectivity and making capacity available to all. The company appears more defined by its proprietary network, which it has commenced expanding via aerial national infrastructure in two countries to extend its current combined length of fibre from 600km to over 3,000km. Phase3’s aerial infrastructure in Nigeria is deployed on the 330kV and 132kV high voltage lines; whilst aerial infrastructure in Togo & Benin are deployed on 161kV high voltage lines. The company’s infrastructure targets existing regional telecommunication service providers currently operating in these countries, as well as the transmission needs of operators who plan to interconnect with operators in Togo and Benin. This also positions Phase3 as the infrastructure provider for the distribution of broadband services to various locations in these countries.

Overall therefore, the company operates a business model and product line that appears more targeted at deploying sub-regional terrestrial fibre infrastructure to support backbone requirements of MNOs, while also serving wholesale customers along the way. It defines its objective as to “leverage on our fibre optic backbone infrastructure for the maximum benefit of all Nigerians and the West African Sub-Region’s backhaul requirements, with a clear understanding of the linkage between a high bandwidth per capita metric and GDP improvement in modern economies”. Phase 3 currently lists all the major MNOs and ISPs in Nigeria as its customers. As the leading owner of proprietary network infrastructure across the sub-region, Phase 3 is clearly another contender to lead the next phase of expansion in terrestrial broadband infrastructure across West Africa.

structured, and financed in such a manner as to be sustainable over the long-term. In addition to our capacity to co-invest, we also offer project development, technical advisory and financial arranging services. AFC sources telecoms infrastructure projects with strong sponsors, favourable offtake, operations, maintenance and other commercial agreements, as well as partners that can meet appropriate legal, technical and regulatory requirements. Typically, our sector experts are closely involved in providing the necessary technical support to reassure financiers that projects will succeed. We are also able to bring our global network of relationships to bear in sourcing the appropriate management and technical talent that is a critical aspect of successfully executing on this market opportunity.

I look forward to hearing from you in the weeks and months ahead as we continue on this journey, following the exciting African telecoms story from the mobile revolution through sub-sea cables and into sub-Saharan Africa.

Andrew Alli
President and Chief Executive Officer
**BOX FOUR: HOW CAN THE AFRICA FINANCE CORPORATION HELP? THE MAIN ONE CASE STUDY**

**Overview:** Main One Cable Company is a special purpose vehicle incorporated to own and operate a submarine fibre optic cable system from Portugal to South Africa with links to key countries along the Atlantic west coast of Africa. Main One provides wholesale bandwidth capacity to telecom operators and internet service providers in the West African region and beyond. The project consists of a 12,378km cable, with landing stations in key markets across West Africa. The cable’s 1.92Tbps bandwidth capacity is ten times the current size of SAT-3, Nigeria’s previous monopoly cable. The system is based on a trunk-and-branch topology and includes branching units to the Canary Islands, Morocco, Senegal, and Côte d’Ivoire. The Project was developed and promoted by Main Street Technologies Limited a wholly Nigerian-owned company. The Project was conceptualized as being developed in two phases: Phase 1, which was completed in June 2010, has approximately 6,906km of cable connectivity between Portugal and the key markets of Nigeria and Ghana. Phase 2, which is yet to commence, is to involve the continued deployment of 5,473km of cable connectivity to Angola and South Africa. The company is now fully operational, with a business model focused on leases and capacity sales to leading local telecoms operators in West Africa. Remarkably, the US$240m project was completed on-time and to budget, with no material delays or cost overruns.

**Business Model:** Main One is the holding company that owns and operates subsidiary companies in the various countries designated for landing stations and distributes the company’s wholesale international telecommunications services in the immediate and neighbouring country markets. Main One currently has operational subsidiary companies in Nigeria, Ghana, and Portugal. The company operates on an open access business model where all operators are able to access capacity without discrimination to non-shareholders in the Company, either via capacity sales agreements or on an ongoing lease basis. This is different from the consortium model, which is financed and controlled by operators who would have preferential rights to capacity similar to the SAT-3 system. Since the commencement of operations, the Main One network has been stable, maintaining 100% service availability. Contracts have been signed with a good number of customers, with most of these customers already connected to the cable.

**Developmental Impact:** The considerable increase in available bandwidth from the Main One cable is providing telecom operators and ISPs with the additional capacity required to expand networks and mobilize a broader range of services. The system is also contributing to a drop in the price of bandwidth in Nigeria and Ghana as well as improvements in quality of services rendered to customers by telecom operators and ISPs. Main One was designed to contribute to addressing the challenges of the region to broadband capacity and bandwidth that had seriously constrained West African telecommunications market, a potential constrain on the economic development potential of the region. The cable was developed to provide the much needed fibre-optic broadband connectivity to help meet the growing international connectivity needs of the region.

**The Role of the Africa Finance Corporation:** AFC engaged very early with the sponsors of this project, assisting with the early stage (greenfield) project planning and structuring, culminating in the corporation securing an approval for an equity investment in November 2008. AFC’s early stage investment disbursements during 2009 helped ensure that the project was able to meet all its obligations to contractors and lenders, and ultimately reach financial close on a fully funded basis. The corporation was fully engaged in ensuring that the project was well-structured in such a manner as would appeal to local and international investors and lenders, resulting in a diverse group of financiers committing to the project at financial close, including: the African Development Bank, DEG, Pan-African Infrastructure Development Fund (PAIDF) and Nigerian banks (First and Skye Bank).
APPENDIX - ABOUT THE AFRICA FINANCE CORPORATION

AFC is an African-led international financial institution whose mission is to improve African economies by proactively creating, developing and financing infrastructure, industrial and financial assets.

Founded in 2007, the corporation has as its key shareholders the Central Bank of Nigeria and leading regional financial institutions. The institution was established by international treaty, and current signatories to its Charter are the governments of Ghana, Liberia, Gambia, Sierra Leone, Guinea-Bissau, Guinea and host country, Nigeria.

AFC is involved as an investor, developer and financier of various infrastructure projects across Africa. In addition to the US$240m Main One cable project where AFC is co-largest equity investor, the Corporation has also provided expansion financing to Essar Telecoms Limited, a Mobile Network Operator in Kenya. AFC is the lead investor in the Cenpower Generation Company Limited (Cenpower), which is developing the Kpone Independent Power Producer (IPP) project. This is a 340MW combined cycle gas turbine power plant near Tema in Ghana. In Cape Verde, off the coast of West Africa, AFC has underscored its commitment to pioneering renewable energy investments on the continent with a lead investor role in a US$90m, 28MW wind farm project under development. AFC is the main African participant in a seven-year US$750m syndicated reserve base lending facility to develop the landmark Ghanaian Jubilee Oil Field, West Africa’s largest offshore deepwater find in over a decade. AFC has invested in the international oil and gas exploration and production company, Seven Energy Limited. Through its local subsidiary, Seven is playing a pioneering role in developing alternative sources of gas for domestic utilisation in the Nigerian power and industrial production sector. AFC is also a co-investor in the fully operational Bakwena Toll Road in South Africa.

For more information, please contact:

Ini Urua
Senior Vice President, Heavy Industry
Telephone: +234 1 279 9608
Email: ini.urua@africafc.org

Fola Fagbule
Special Assistant to the President and CEO
Telephone: +234 1 279 9618
Email: fola.fagbule@africafc.org
Africa Finance Corporation

Headquarters
3a Osborne Road
Ikoyi
Lagos State
Nigeria

T: +234 1 279 9600
E: info@africafc.org
W: www.africafc.org