

Gamtel National Broadband Network investment case study



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DESCRIPTION OF THE BROADBAND INVESTMENT

The Gambia Telecommunications Company Limited (GAMTEL) was established in 1984 as the sole licensee to provide telecom services. This means that Gambia joined the global community of telecommunication players as early as the 1980s. Today, broadband is considered one of the key drivers fueling the global economy and is critical for inclusive and sustainable growth. Access to high-speed, dependable, and sustainable broadband connectivity has progressed from a luxury to a necessity.

In 2015, as part of its policy priority agenda and infrastructure plan, the government of Gambia, through GAMTEL, successfully deployed the backbone ECOWAN network integrated with GAMTEL's legacy fiber network infrastructure of 947km of 24-pair fibers in four rings. Subsequently, 2019 saw the deployment of the National Broadband Network (NBN) consisting of 420km of fiber optic links and access networks around 31 central office sites. The NBN deployment extended the ECOWAN network and created a very secure national backbone network for the provision of broadband services across all key areas of the country that is also accessible to private service providers ie the national backbone network is accessible to private service providers. The NBN deployment also served to ease the provision of fiber optic broadband access to end customers.

THE RATIONALE FOR THE BROADBAND INVESTMENT

As part of the deployment of the NBN, about 420km of additional fiber optic cables were deployed. This helped reduce the cost of accessing broadband infrastructure and provide last-mile distribution for settlements within the network. As a result, it extended the geographic reach of broadband access to communities. The project made it possible to provide broadband services to previously underserved areas.

Apart from increasing coverage and reducing the cost of accessing broadband infrastructure, this broadband investment has played a significant role in the proliferation of digital applications and services in Gambia, most notably in urban and peri-urban areas. The availability of more online government or public services to citizens has opened more communication channels between government and citizens, thus enhancing citizen engagement and participation in governance.

Furthermore, because of this broadband investment, a significant leap in digital innovation and entrepreneurship has been observed in both the public and private sectors. There has also been an increase in online and digital businesses, with a positive trickle-down effect on employment creation, business visibility, profit margin, and revenue generation. This will yield dividends in sustainable and inclusive socio-economic growth and development in Gambia.

HOW THE BROADBAND INVESTMENT VIABILITY WAS IMPROVED

The deployment of these major fiber backbone and broadband access networks not only ensures the availability of significant bandwidth capacity for all types of first-, middle-, and last-mile customers but also makes internet connectivity prices much more affordable to all customers through a significant reduction in cost. Although the cost of internet access is still expensive in the country (compared with the global and sub-regional prices), the network investments have significantly improved access to broadband services throughout the country.

The increase in the internet penetration rate for both fixed and mobile internet services over the years—as well as the proliferation of various online platforms, systems, applications, and services throughout the country—is clear evidence of the value of such network investment.

The networks deployed help support GAMTEL's major corporate customers, including

- World Bank
- Medical Research Council (MRC)
- Gambia Revenue Authority (GRA)
- United Nations Development Programme (UNDP)
- Food and Agriculture Organization of the United Nations (FAO)
- Kairaba Hotel
- US Embassy
- Chinese Embassy
- Ministries Departments and Agencies (MDAs)
- United Nations Population Fund (UNFPA), World Food Programme (WFP)
- United Nations Children's Fund (UNICEF)
- Central banks (i.e., GT Bank, ECO BANK, Trust Bank, and Standard Chartered Bank)
- Mobile network operators (MNOs) (i.e., AFRICELL, QCELL, COMIUM, and Gambia Telecommunications Cellular [GAMCEL])

THE FINANCING MODEL USED FOR THE BROADBAND INVESTMENT

The NBN Project was financed through a concessional loan between Gambia and the Export-Import (EXIM) Bank of China at a cost of \$25m. This is a concessionary loan where the government acts as a guarantor.

THE BROADBAND BUSINESS MODEL USED FOR THE BROADBAND INVESTMENT

Investment models offer enticing opportunities for key players in the development of broadband infrastructure. Broadband investment models include a variety of options in terms of technology, network, market, services, and funding, such as public-private partnerships and community networks.

The ECOWAN, NBN, and GAMTEL CG2 (the Cross Gambia Fiber Cable network of middle-mile fiber infrastructure) broadband investments were made using a publicly-led business model. Under this model, GAMTEL owns and operates all broadband infrastructure (ECOWAN, NBN, and legacy fiber) and also uses its own sales and marketing departments for advertising, marketing, and sales of the broadband infrastructure. Other players in the public and private sectors can use the broadband infrastructure via lit and dark fiber for backhaul or to resell services to their end customers. To do this, such players pay a service fee to GAMTEL or purchase capacity from GAMTEL. In essence, all MNOs and ISPs piggyback on GAMTEL's network with payment arrangements either monthly, quarterly, or yearly.

RESULTS OF THE BROADBAND INVESTMENT

The successful nationwide fiber optic deployment has enhanced the nation's broadband connectivity access as well as GAMTEL's productivity and operational efficiency. Furthermore, the project has provided cost-effective and dependable internet services to the operators and consumers it serves.

The advent of the Africa Coast to Europe (ACE) submarine cable first-mile network, ECOWAN, NBN, and CG2 networks has brought positive transformational effects to companies and enterprises because many of them today depend partially or entirely on the internet for their business activities and transactions in Gambia. Internet access helps increase these businesses' footprint (locally or globally), customer base, and profit margins. This, in turn, increases the government's overall revenue base, improves the quality of life and livelihood of the general populace, and ultimately enhances socio-economic growth and development. In addition, the various network projects have delivered positive results in terms of direct employment creation by GAMTEL/GAMCEL and indirect employment resulting from the emerging online businesses connecting to GAMTEL/GAMCEL's networks, including the NBN, ECOWAN, and even the GAMTEL private cloud data center.

This fundamental network infrastructure has resulted in the following advantages:

BANDWIDTH CAPACITY AND COST

The ECOWAN and NBN projects have affected the bandwidth, cost of internet access, and broadband customer base throughout the country positively. The benefits are as follows:

- Bandwidth offered increased from a minimum of 0.5Mbps to 10Mbps
- GAMTEL's broadband customer base has increased from less than 500 in 2015 to over 4,000 by the end of 2018 (1,584 connected in 2018) and more than 6,000 by now.
- Bandwidth cost for corporate customers has reduced significantly from D80,000 to D8,000 for 10Mbps
- Internet penetration rate of 51%
- Mobile penetration rate of 150%+
- International bandwidth capacity increased from 10Gbps in 2015 to 220+ Gbps between 2020 and 2022

ISP AND SUBSCRIBER GROWTH

Another benefit of the national backbone networks (i.e., ECOWAN and NBN) and the ACE submarine cable is the rise in the number of internet service providers (ISPs) entering the Gambian information and communications technology (ICT) market, and the rate at which their associated customer or subscriber bases are growing. This growth also reflects improvements in bandwidth and capacity costs resulting from the deployment of these networks. **Table 1** shows the number of ISPs in Gambia and their pace of growth over time:

TABLE 1

ISPs	Subscribers				
	2016	2017	2018	2019	2022
INSIST NET	NA	287	591	1060	1,124
UNIQUE	321	311	345	260	254
NETPAGE	961	1,000	977	1,675	2,305
QCELL	1,210	645	795	791	1,008
GAMTEL	1,086	1,455	1,746	4,622	5,005
AFRICELL	NA	NA	NA	154	310
DK Telecoms	-	-	-	-	5,64
Total	3,578	3,699	4,454	8,562	10,570

SOURCE: PURA

In terms of future development, given the demand for high-capacity bandwidth, GAMTEL plans to deploy dense wavelength-division multiplexing (DWDM) technology and four optical line terminals (OLTs) in 2024. This will modernize the SDH transport network infrastructure and enhance the GPON access network to enable and provide universal access to broadband connectivity.

APPENDIX

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