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This edition of GISWatch came into being alongside a brand new baby boy. Welcome to the world, Ronan Diga!

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NIGERIA

THE REHABILITATION OF A RURAL COMMUNITY NETWORK IN WAR-TORN NORTHERN NIGERIA



Fantsuam Foundation

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Introduction

Nigeria boasts high ambitions for broadband penetration. For example, the Nigerian Communications Commission (NCC), whose mission is to promote universal broadband access,¹ has listed this as the first point in its eight-point agenda.² With such commitments coming from the highest information and communications technology (ICT) policy bodies in Nigeria, there seems to be an enabling environment to fast-track the provision of affordable access supported by skills and tools to enable people to solve their connectivity challenges.

However, to what extent is this the case?

At the moment, Nigeria has achieved 21% broadband penetration, most of which is urban based and relies on 3G and 4G mobile technology. The country hopes to increase its broadband penetration to 30% by 2018³ and to “increase rural access coverage by 40% by 2020.”⁴ This modest target has to contend with the absence of appropriate first-mile infrastructure.

The Fantsuam Community Wireless Network, which was set up in 2008 and operated until 2011, was established to meet the needs of the subsistence farming communities and peri-urban slums of Kafanchan in the Jema’a Local Government of Kaduna State. These communities are typical in that they lack electricity and road access, and do not have educational and health institutions or many small-scale businesses.

The experience of the Fantsuam Community Wireless Network will be of particular interest to African countries that have experienced or are in the grip of sectarian violence, with its disproportionate

negative impact on women, girls, older persons and people with disabilities.

Policy context

Nigeria operates a complex system of regulation for its communication infrastructure, with different regulatory functions located in different agencies within the Ministry of Communications. The ministry’s mandate is to “facilitate universal, ubiquitous and cost effective access to communications infrastructure throughout the country”⁵ through its departments and agencies: the National Information Technology Development Agency (NITDA),⁶ Galaxy Backbone,⁷ Nigeria Communications Satellite (NIGCOMSAT),⁸ Nigerian Communications Commission (NCC)⁹ and Nigerian Postal Service (NIPOST).¹⁰ The main government regulators are the NCC and NITDA.

The NITDA regulates, monitors, evaluates and verifies progress on all national IT policy implementations. Although one of its mandates is “to serve as a clearing house for all IT procurement and services in the public sector,”¹¹ this has been interpreted to mean that both public and private network equipment deployed in Nigeria must get the approval of the NITDA. This may be because the agency is focused on the local high-demand hardware and software market,¹² not on the low-cost, open source resources typically used in community networks.

The NCC and NITDA were responsible for setting up 867 networks intended to serve marginalised and underserved communities. Fantsuam Foundation’s efforts to engage these regulators in dialogue on how to make these networks viable and self-sustaining have yet to yield any positive results.

The nearest projects that may look like community networks in Nigeria are actually networks

1 <https://www.ncc.gov.ng/about-ncc/who-we-are>

2 <https://www.ncc.gov.ng/documents/728-8-point-agenda-milestones/file>

3 <https://www.ncc.gov.ng/stakeholder/media-public/speeches-presentations#2016>

4 Federal Ministry of Communications. (2017). *Nigeria ICT Roadmap 2017-2020*. www.commtech.gov.ng/Doc/Nigeria ICT Roadmap_2017-2020.pdf

5 www.commtech.gov.ng/the-ministry/mct-mandates.html

6 <https://nitda.gov.ng>

7 www.galaxybackbone.com.ng

8 www.nigcomsat.gov.ng

9 <https://www.ncc.gov.ng>

10 www.nipost.gov.ng

11 <https://nitda.gov.ng/mandate>

12 Amanze-Nwachuku, C. (2016, 12 September). Nigeria: Coscharis Tech Gets NITDA Approval for Production of Cosmos Computers. *This Day*. <https://allafrica.com/stories/201609120558.html>

set up by the government, the private sector and philanthropic organisations for disadvantaged, underserved and marginalised communities.

The titles of these projects may give the impression that they function as community networks, but this is not the case:

- Community Resource Centre
- Community Learning Centre
- Community Communication Centre
- Community ICT Centre
- Public Access Venue
- Rural Information Technology Centre.

The top-down mode of establishing these projects, almost entirely funded externally, does not make them qualify to be recognised as community networks. The communal ownership of infrastructure is one of the identifying and sustainability-enabling features of community networks. The absence of this critical element may explain the non-viability of most of these projects.

For example, the NCC, which funded several of these projects, observed that “many schools and communities where the NCC had set up resource and school knowledge centres, have not put them to adequate use and this is affecting internet penetration in rural areas.”¹³

The size and political complexity of Nigeria creates a challenge for accessing information for marginalised communities. The licensed private sector operators do not have the incentive to provide services to under- and unserved rural communities, especially because they are able to make substantial profits from their urban operations.

The Ministry of Communications has developed an ICT Roadmap¹⁴ which is intended to create two million jobs by 2020. Achieving this laudable target can be facilitated if community networks are given the enabling environment for their establishment and operations.

There is currently no regulation on community networks in Nigeria. Frequencies are allocated from the office of the regulator and are sometimes allocated by auction, and are also managed from the regulator’s office.

One of the yet-to-be explored communication technologies that can be available and accessible to marginalised communities in Nigeria is television white space (TVWS). However, this resource is yet

to be made publicly available. Recent research by APC¹⁵ also showed that the process for obtaining the regulator’s approval for access to this resource can be quite complicated and too expensive for interested community networks. In this regard, Fantsuam Foundation, in partnership with the Centre for Information Technology and Development (CITAD),¹⁶ another member of APC, have lobbied the regulator, and have also enlisted other civil society organisations working in the IT field in Nigeria. Fantsuam’s application to the regulator for permission to do a pilot using TVWS was turned down.

The Fantsuam Community Wireless Network

The cycle of sectarian violence that started in 2011 and continued into 2018 in our host communities has rendered thousands homeless, and led to an increase in marginalised, vulnerable and impoverished families and individuals. The war also led to the deaths of thousands of young men, leaving behind older persons, traumatised adolescent girls and young women. However, the cycle of violence has also destroyed what little communications infrastructure was available in these communities. The hub of the Fantsuam Community Wireless Network was located in the Fantsuam offices in the peri-urban slum of Bayanloco. From there, radios were set up within a 10 km radius of the hub.

In this context, Fantsuam Foundation provides a suite of integrated services as part of its mission of poverty elimination in northern Nigeria. Our key activities lie in sustainable livelihoods, health, education and social protection, with gender, volunteering and ICTs as cross-cutting concerns.

Our constituency is the rural poor in northern Nigeria,¹⁷ who are among the poorest in the world.¹⁸ Literacy levels in the region are also among the lowest in Nigeria. With little disposable income, and just emerging from the period of prolonged sectarian violence, the provision of basic necessities such as food, clothing and shelter remains the over-riding

13 Nigerian NewsDirect. (2017, 29 September). Schools, Communities not using ICT Centres – NCC. *Nigerian NewsDirect*. nigeriannewsdirect.com/schools-communities-not-using-ict-centres-ncc

14 Federal Ministry of Communications. (2017). Op. cit.

15 Association for Progressive Communications. (2012). *Spectrum for development: Nigeria*. https://www.apc.org/sites/default/files/countries/factsheet%20nigeria_eng.pdf; Jensen, M. (2013). The role of TV white spaces and dynamic spectrum in helping to improve internet access in Africa and other developing regions. In E. Pietrosoli & M. Zennaro, *TV White Spaces: A pragmatic approach*. Abdus Salam International Centre for Theoretical Physics. wireless.ictp.it/twvs/book/8.pdf

16 <https://www.citad.org>

17 Amzat, A. (2017, 24 July). Despite decades of funding, literacy level in the northern states remains low. *The Guardian*. <https://guardian.ng/news/despite-decades-of-funding-literacy-level-in-the-northern-states-remains-low>

18 Eweniyi, O. (2017, 10 November). Nigeria Is Set To Become The Poverty Capital Of The World By 2018. *Konbini*. <https://www.konbini.com/ng/lifestyle/nigeria-poverty-capital-world-2018>

priority. While our activities are always determined by the host communities' priorities, we have been exploring ICTs as an enabler of these priorities.

Making communications accessible and affordable to these populations provides a lifeline for rural communities. Among other things, it allows them to stay in contact with distant relatives who send remittances. The low disposable incomes of the survivors, coupled with the sparse remaining communications infrastructure, dictate that information that rebuilds the local economy ought to be prioritised.

Fantsuam's experience with provision of micro-finance services has also shown that women and girls, while being the most traumatised from the crisis, remain the most resilient and reliable with regards to the use of their loans. Therefore, the same approach was taken in our efforts to set up the community network. As far as available records show, the Fantsuam Community Wireless Network was the only rural internet service provider (ISP) in Nigeria.

Physical infrastructure

In 2008, when the network was set up, it provided intranet and internet access to local partners in the community.¹⁹ The community network was formed by community-based organisations such as educational institutions, faith-based institutions, health services, small enterprises and individuals. We connected to the internet using satellite dishes and paying a subscription to Broadband Global Area Network (BGAN), a global satellite network,²⁰ but this was ultimately unsustainable due to the high costs.

Since 2008, the location, size and operations of the network have changed in response to the unstable political situation and socioeconomic challenges of the rural host communities. Now the only surviving equipment is located in the network operation centre at the Fantsuam premises. There are, however, no clients such as rural farming communities and small businesses currently connected to it. Its user sites have been lost to vandalism and the violence.

From 2008 to 2011, when the Fantsuam Community Wireless Network was fully operational, it served a major hospital, two private clinics and three educational institutions, and was also frequently used by the security services. The network served 23 individual homes within the 10 km radius of its operations

The power infrastructure consisted of a hybrid system of a deep-cycle battery bank and 2 KW solar panels. The system charged from three different sources: the grid when electricity was available, a diesel generator and an array of solar panels. The network operation centre ran solely from solar energy. The solar power system had been designed to provide 12V and 24V DC output in order to fit the input voltage of all low-power servers and workstations that ran the centre infrastructure and training classrooms. The centre provided training in basic computer literacy, computer maintenance and network configurations, among others. The network operating centre was designed to host a battery bank of approximately 70 batteries and 24 south-facing solar panels on its 20-degree roof.

In order to reach the participating communities, a 45-metre-tall mast, equipped with earthing and lightning protection, together with a mandatory signal light, was erected at the network operating centre.

The wireless backbone was built with smart-Bridges airClient multiband point-to-multipoint outdoor wireless links which included integrated multiband sectoral antennae that could operate both in 2.4 GHz and 5.1/5.8 Ghz frequencies. The airClient equipment used the IEEE 802.11e standard to support traffic prioritisation and bandwidth management per client.

Now we continue to provide training in basic computer literacy, and internet and computer maintenance at the centre. The centre is now also government accredited to offer online university entrance examinations. As mentioned, the equipment at the centre survived the sectarian violence, including the solar panels. However, we now have to rely on mobile phone connectivity, which is expensive.

Conclusions

There is an increasing international interest in the promotion of community networks, and Fantsuam Foundation's participation in the various interest groups may provide an avenue for reaching out to the Nigerian regulators to engage in a dialogue on the topic. It is also important to engage the regulators on how marginalised communities can get access to TVWS. Our international partners include APC,²¹ the Net Rights Africa Coalition,²² the Dynamic Coalition on Community Connectivity (DC3),²³

19 Balancing Act. (n/d). Nigeria's Fantsuam pioneers wireless service dubbed Zittnet. <https://www.balancingact-africa.com/news/telecoms-en/3562/nigerias-fantsuam-pioneers-wireless-service-dubbed-zittnet>
20 www.bgansatellite.com

21 <https://www.apc.org>

22 <https://rightscon2018.sched.com/event/EHks/africas-digital-rights-secretariat-net-rights-africa-coalition-and-its-prospects>

23 <https://www.comconnectivity.org>

ISOC²⁴ and the ISOC Community Networks Special Interest Group (CNSIG).²⁵

The specific issues of post-war reconstruction, rehabilitation and reconstruction have to be addressed within a framework that ensures that the injured and traumatised female populations of the affected communities are supported so that their voices are heard in the unfolding development agenda of their communities. This has led us to explore the use of TVWS for which Fantsuam Foundation has made efforts to get the regulators' approval. As mentioned, Fantsuam had applied for permission to undertake a pilot of the TVWS to serve its internally displaced population, but this has not been approved yet.

The survival of the Fantsuam Community Wireless Network – even if it is just the centre – throughout the period of crisis represents a hope for a better future and a reminder of what has been lost and needs to be replaced in order to restore normalcy to this rural economy. The deployment of ICTs for use in education, health and agriculture are the current priorities. The process is being made as inclusive as possible by providing a range of ancillary services to complement the communication mandate of the network. Basic digital literacy programmes have now been established for older persons above the age of 70, while information and support services, including reproductive health both for rape victims and teenage mothers, are being provided.

Action steps

The absence of a coherent policy and strategy for achieving the stated objectives of the regulators²⁶ may benefit from the diplomatic engagement at ISOC and other international organisations. As a keen participant in many of these international forums, the Nigerian regulator may be persuaded to support local initiatives such as those by Fantsuam Foundation, and liberalise access to TVWS.

While the Fantsuam Community Wireless Network is actively engaged in the social and community development services of reconstruction, rehabilitation and reconciliation, Fantsuam Foundation is lobbying the regulators for improved access to affordable communication infrastructure for its partner communities. The absence of clear policy guidelines on the processes of setting up community networks means that permission has to be obtained for every major community network activity.

Local initiatives such as the Fantsuam Community Wireless Network are already focused on marginalised communities. In our case we have a special interest in facilitating access to ICTs and supporting the development of internally displaced women and girls. But an enabling environment is needed to help similar local initiatives to come on stream.

²⁴ <https://www.internetsociety.org>

²⁵ [cnsig.info](https://www.cnsig.info)

²⁶ See <https://www.ncc.gov.ng/about-ncc/who-we-are> and www.commtech.gov.ng/Doc/Nigeria_ICT_Roadmap_2017-2020.pdf

Community Networks

THE 43 COUNTRY REPORTS included in this year's Global Information Society Watch (GISWatch) capture the different experiences and approaches in setting up community networks across the globe. They show that key ideas, such as participatory governance systems, community ownership and skills transfer, as well as the "do-it-yourself" spirit that drives community networks in many different contexts, are characteristics that lend them a shared purpose and approach.

The country reports are framed by eight thematic reports that deal with critical issues such as the regulatory framework necessary to support community networks, sustainability, local content, feminist infrastructure and community networks, and the importance of being aware of "community stories" and the power structures embedded in those stories.

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