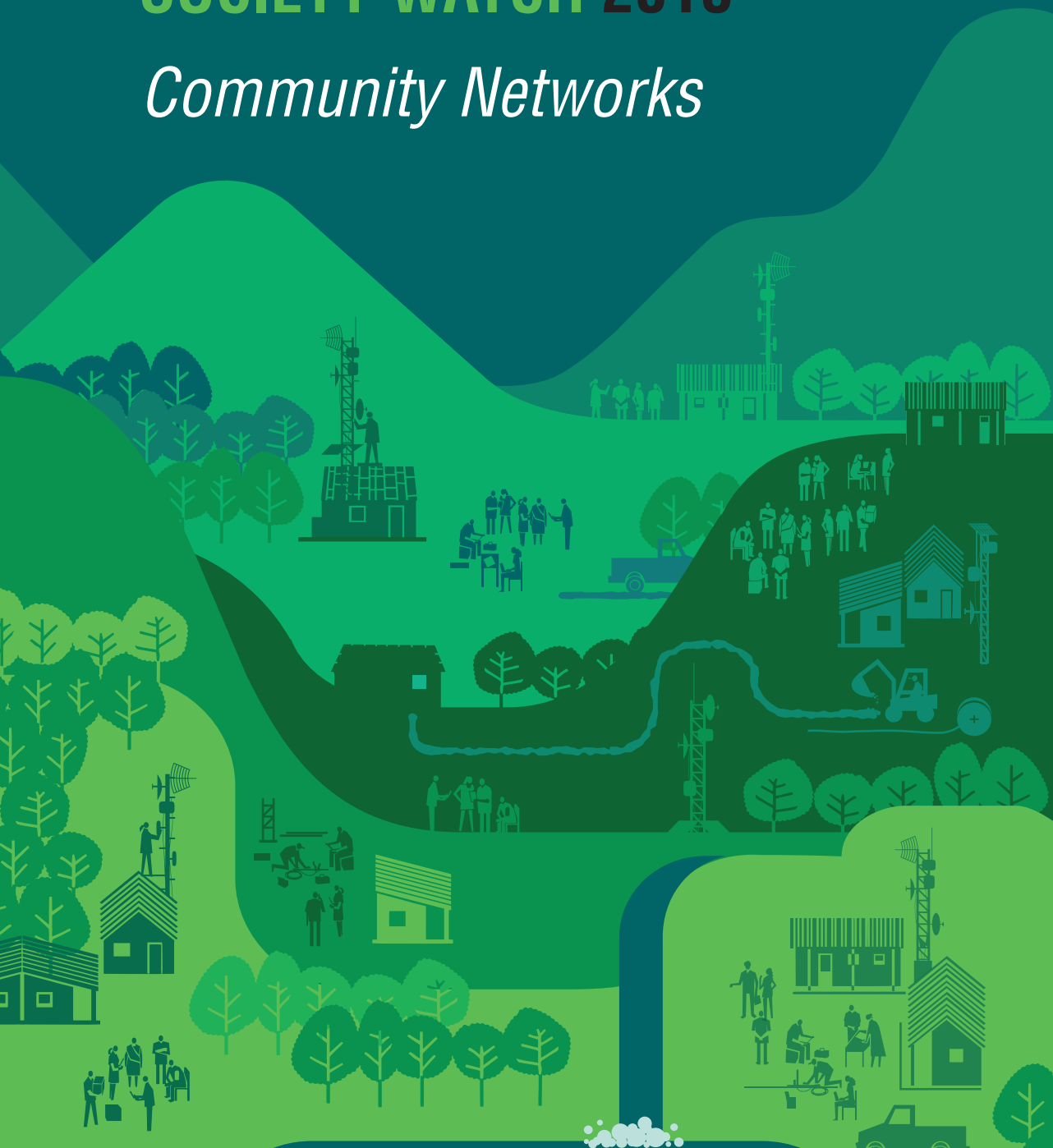
GLOBAL INFORMATION SOCIETY WATCH 2018

Community Networks



Association for Progressive Communications (APC)
and International Development Research Centre (IDRC)

Global Information Society Watch

2018

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CONGO, DEMOCRATIC REPUBLIC OF

A FREE WIRELESS NETWORK IN THE DRC: AN ANSWER TO INTERNET SHUTDOWNS AND EXORBITANT ACCESS COSTS

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Introduction

The Democratic Republic of Congo (DRC) has distinguished itself for the past four years in restricting the freedoms of its citizens and violating their rights to information and communication, which are guaranteed not only by its own constitution but also by the international law to which it has freely adhered. The Congolese authorities have repeatedly ordered the shutdown of the internet throughout the country – including the mobile messaging system – cutting 80 million Congolese off from the rest of the world, sometimes for several days.

The DRC is a vast country with an area of over 2,345,000 km², with infrastructure almost non-existent in many parts. Mobile telecoms companies such as Orange, Vodacom and Airtel are the main internet service providers (ISPs) in the country. Although the internet is of paramount importance for the Congolese population, access costs are high, which means that the majority of the poor population cannot access it.

This report discusses the Mesh Bukavu project in the DRC, an innovative community network initiative that achieves two things: it allows people in the city of Bukavu with low incomes, and especially those living in poor neighbourhoods, to have free access to a Wi-Fi intranet network, and it allows communities to bypass internet shutdowns.

Access to telecommunications and the internet in the DRC

The DRC has 46 million mobile telephony users, which corresponds to 54% of the overall population.[1] At the same time, 84% of Congolese access the internet on mobile phones, according to a study published in 2016 by Target Cabinet.[2]

In May 2016, the price of the internet packages offered by the three mobile phone companies, which are the main suppliers of the internet in the DRC, suddenly increased. The South African mobile phone group Vodacom, the country's largest telecommunications operator, started charging USD 100 instead of USD 28 for its 4 GB data bundle that expires after a month. The French group Orange, the second-largest ISP in the DRC, is now charging USD 62 for an equivalent package, as opposed to USD 35 before.[3] At Airtel, a subsidiary of the Indian group Bharti, customers have seen their bill triple – they now have to pay USD 100 for 25 GB.[4]

The emergence of community networks in the DRC – and the government's response

There is no specific policy for community networks in the DRC. However, there is Law No. 013/2002 of 16 October 2002, which regulates the telecommunications sector, including mobile telephone companies as well as the internet and all its applications.[5] On the basis of this law, the Post and Telecommunication Regulatory Authority of the Congo (ARPTC), an organ of the state in charge of granting radio frequencies and regulating the spectrum, was set up. In February 2018, the Congolese Minister of Posts, Telecommunications and New Information and Communication Technologies forced all VSAT owners, companies and ISPs to register with the ARPTC.[6] In this process the minister did not distinguish between commercial ISPs and community networks that do not aim to earn money through their activities, but which rather work for communities.

The Mesh Bukavu community network does not have VSAT and does not provide internet service, as its Wi-Fi network remains entirely local. However, it was included in the ARPTC's list of service providers, meaning it is considered a service provider by the regulator. Congolese human rights organisations suspect that the Congolese authorities have used the process of registering with the ARPTC to identify all initiatives that can enable citizens to continue to

1 https://actualite.cd/2017/03/16/45-millions-de-congolais-abonnes-a-telephonie-mobile-selon-target

2 https://www.target-sarl.cd/fr/content/rdc-84-des-congolais-accedent-internet-sur-support-mobile-selon-une-etude-de-target

3 www.information.tv5monde.com/afrique/rdc-envolee-des-prix-de-l-internet-112843

4 www.africa.airtel.com/wps/wcm/connect/africarevamp/drc/accueil/individuel/internet/offre-internet

5 www.leganet.cd/Legislation/JO/2003/JO.25.01.2003.PT.pdf

6 https://pbs.twimg.com/media/DVblcjkWkAAQ3dG.jpg:large

communicate freely with each other, and with the outside world, each time they decide to shut down the internet.

Mesh Bukavu

Bukavu is a city in eastern DRC, about 60 km² in size, and with a population of just over 870,000 people.

Like everywhere else in the DRC, the city experiences frequent electricity cuts, and many parts of it have no electricity at all. Insecurity is growing, and people are regularly attacked in their homes by armed bandits, which increases their need for communication. But, with the majority of the Congolese population living on less than one US dollar a day, the internet is a luxury.[7]

Because of this, the idea was to set up a wireless mesh network accessible to poor citizens in the community, allowing them to communicate and exchange information with their friends and relatives or anyone else in the community at any time.

Mesh Bukavu was set up in January 2015 by a group of journalists, bloggers and computer scientists with technical support and equipment being provided by Free Press Unlimited[8] and the Open Technology Institute.[9] It was a particularly difficult context, because it was during this time that the Congolese authorities had forced the mobile phone companies to cut both SMS and internet access across the country – a shutdown that lasted for three weeks.

Mesh Bukavu is a mesh network – a type of network in which "nodes" can connect as "peers" and dynamically route traffic across the network.[10] However, it does not give the community direct access to the internet. Rather, it functions as a kind of intranet, where people access internet resources, including websites, that have been downloaded by the Mesh Bukavu team and shared on the network. According to Benjamin Murhesa, a technician and the Mesh Bukavu Network project manager, Rocket M2s, NanoStations and TP-Link routers were used. "These devices are connected to each other remotely and can both receive and transmit information," he said.[11] They were placed on the roofs of houses to ensure wide coverage of the neighbourhood.

A central server has been set up at the local community radio station, Radio Maendeleo, a key partner in the initiative. Because there are many interruptions to the electricity supply, a generator has been installed, allowing the server to alternate between electricity supply and the generator, and to stay on permanently.

Even if people do not need the internet to use the mesh network, the team working on the network nevertheless needs the internet to regularly refresh the server and download new content to share across Mesh Bukavu. This is why we have mentioned the particularly difficult context in which it was set up. Just as two Open Technology Institute technicians arrived from the United States in the city of Bukavu in January 2015 to supervise the mesh network installation work, the Congolese authorities ordered the internet shutdown. The intelligence service (ANR) even monitored those who tried to illegally connect to the internet using their own VSATs. Since then the Congolese population has regularly had to deal with internet shutdowns, especially when the political opposition or civil society plan demonstrations. This was the case not only in January 2015 when Congolese citizens were protesting the government's initiative to change the constitution, but also in December 2016, August 2017 and recently this year in January when citizens were protesting the probable mandate of the current Congolese President Joseph Kabila.

Because of this vulnerability, the project turned to the ISPs in Rwanda, a country neighbouring the DRC, to help with the configuration of the network's equipment – Bukavu, which is right on the eastern edge of the DRC, is separated from the Rwandan city of Cyangugu by the Ruzizi River. Rwandan ISPs also use fibre optic connectivity rather than mobile. To circumvent any red tape, the project was set up under the auspices of Radio Maendeleo, which has a good reputation in the city – and across the country as a whole – especially for its editorial line oriented towards the defence of the interests of the citizens of the DRC, and of the Media Women Association (AFEM), an organisation of women journalists working for the promotion of women's rights in the country.[12] The boards of both Radio Maendeleo and AFEM were initially very supportive of the project, with AFEM organising volunteer girls from among its members to participate actively in the installation of the network.

7 Kanku Tubezele, P. (2007). *L'Afrique est à reconstruire, la responsabilité spirituelle*. Bern: Editions Scientifiques Internationales.

8 Free Press Unlimited. (2014, 30 October). People of DR Congo will communicate using their own mesh network. https://www.freepressunlimited.org/en/news/people-of-dr-congo-will-communicate-using-their-own-mesh-network

9 https://www.newamerica.org/oti

10 https://commotionwireless.net/files/cck/networking/2-Introduction_to_Mesh.pdf

11 Interview with Benjamin Murhesa, network technician and Mesh Bukavu Network project manager.

12 The city experienced extreme violence during the regional conflict following the Rwandan genocide – much of this targeted at women. In 2004, for example, about 16,000 women were reportedly raped in a single weekend by Rwandan-backed soldiers who had been given the "freedom of the city". See: https://en.wikipedia.org/wiki/Bukavu

Services available on Mesh Bukavu

Mesh Bukavu allows residents living in neighbourhoods covered by the network to communicate, but it also gives them access to online content. Chat Secure is an application that has been installed on the network and allows network users to chat instantly with each other. In addition, the network gives free access to the Wikipedia site, which is downloaded and placed on the network, and a digital library containing more than 360,000 books. Course material for online computer science and English courses is also available.

The community has participated actively in the creation of Mesh Bukavu. This has included participating in its conception, during its deployment, as well as in the management of its infrastructure. According to Murhesa, 10 boys and girls were trained on how they can repair the network when breakdowns happen.

The homeowners in neighbourhoods covered by the network have agreed that the network equipment can be installed on the roofs of their houses, and they take care of this equipment without any compensation.

During the project's installation phase, young people helped transport equipment such as antennas and climbed onto the roofs of the houses every day without asking to be paid in return.

This positive attitude to the project was in part due to a period of awareness raising prior to the installation phase, which helped orientate the community to the benefits of the network.

In 2016, Mesh Bukavu actively participated in the FASTAfrica 2016 campaign. The campaign, which involved a "week of action" with events hosted in 20 countries in Africa, aims to create an internet in Africa that is "fast, affordable, safe and transparent".[13] With support from the Web We Want initiative, the event brought together 40 students from six universities and three colleges in Bukavu for two days to discuss mesh networks: how they can be deployed and used, how content can be shared across the network, and about their right to have access to the internet. Participants also suggested the kind of content that they would like to access through the local mesh network, including courses and news.[14]

Some challenges we have faced

The city of Bukavu is in a mountainous region – a geography that does not facilitate the expansion of the network in all the targeted neighbourhoods, because it requires a lot of equipment that unfortunately the project does not have right now. Electricity cuts that go on for a long time in the neighbourhoods where the equipment is installed also affect the quality of the network. Some equipment is powered by solar energy, but not all.

Recently, changes in the boards at both Radio Maendeleo and AFEM have not been beneficial for Mesh Bakavu because the new board members are not as involved in the project. This is restricting the network's ability to extend its coverage. It is also difficult for us to go "independent" in the current context of strict regulation and internet shutdowns. It feels unlikely that the authorities will grant a legal status to Mesh Bukavu knowing that it is there as an alternative communication channel when they cut internet connectivity.

Conclusion

A mesh network is an alternative to the problem of a lack of access to the internet in the DRC, especially in poor neighbourhoods. Although it does not necessarily offer access to the internet, it can attend to many local-level communications needs and be set up so that the community has access to significant resources of information. Its maintenance is relatively inexpensive, and it does not require in-depth knowledge in network studies to keep going. It allows the community members to take responsibility for their own network. In the case of Mesh Bukavu, the community members behave like owners of the equipment that is installed on the roofs of their houses, which means that the security of equipment is provided by the community itself. As long as the community can exchange information and communicate through instant messaging, including during an internet shutdown, it is clear that they will do everything to keep the network in good condition for as long as possible.

But equipment and the will of the community are not enough: support from the authorities is also necessary so that community networks like Mesh Bukavu or any other community network can really serve the local population. This support can be provided through specific measures that promote the establishment and protection of community networks across the country. And this also means revising Law No. 13 of 16 October 2002 on telecommunications in the DRC, which allows the government to shut down the internet at will.

13 https://webwewant.org/fast-africa/toolkit/what-we-want

14 Web We Want. (2016, 27 May). FASTAfrica / Mesh Bukavu Workshop in Democratic Republic of Congo. https://webwewant.org/news/fastafrica-mesh-bukavu-workshop-democratic-republic-congo

Actions steps

The following advocacy steps are recommended for the Mesh Bukavu project:

- Speed up the process of obtaining a licence for its activities from the government so that Mesh Bakavu can be recognised as a non-profit project. Once this has been secured, the network will be freer to reach agreements and partnerships to ensure its future and growth in the community. These would include partnerships with universities, especially those that run computer science courses.
- Coordinate lobbying activities with civil society organisations, especially human rights advocates, to encourage the Congolese authorities and parliamentarians to review the telecommunication law and to develop a new law specifically on the internet and community networks. This law should formally restrict the government's use of internet shutdowns. It should also make it easier to obtain a licence for a community network, and should exempt them from paying taxes.
- Residents should be strongly encouraged to define appropriate strategies for sustaining community networks in their community. The main barriers faced by community networks in the DRC include a lack of money to pay for bandwidth, a lack of access to electricity, and the surtax on ISPs which drives up the cost of access for community networks.[15]

15 Deloitte. (2015). *Digital inclusion and mobile sector taxation in the Democratic Republic of the Congo*. GSMA. https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/01/gsma-digital-inclusion-and-mobile-sector-taxation-in-the-democratic-republic-of-the-congo-report.pdf

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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.

GLOBAL INFORMATION SOCIETY WATCH
2018 Report
www.GISWatch.org

ISBN 978-92-95102-07-1

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