

## Alternatives for Affordable Communications in rural South Africa: Social Purpose GSM Licenses

Submission to the Parliament of South Africa on “The Cost to Communicate in South Africa”  
From: Research ICT Africa, Association for Progressive Communications

### POLICY BRIEF

Providing affordable universal services and access to communication services to rural areas in South Africa is an ongoing concern for policy makers. An in-depth look at the affordability of communications in rural areas show that the targets (5% of the disposable income for 90 minutes of voice calls and 500 MB a month<sup>1</sup>) are far from being met. Let alone the more ambitious goals in the Broadband National Plan.

Through a case study of a telecommunications co-operative in a rural community with 3,500 members in the Eastern Cape and the analysis of similar operators in other countries worldwide, this submission presents alternatives for policy implementation that could contribute meeting those targets.

### SUMMARY OF FINDINGS

**22% of disposable income for a limited basket of services**

**Rural communities can set up their own mobile services to reduce costs**

**GSM spectrum is not used efficiently in rural South Africa**

Access to communications is widespread in rural communities. Despite limited income levels (~R400/month), mainly coming from social grants, people expend 22% of disposable income for a limited basket of communications services (including 7 SMS, 77 minutes of calling time, and 25-30 MB). Findings one year later in the same community, and in 2016 using nation wide data, show that reductions in Mobile Termination Rates (MTRs) has had no impact on percentage of income for communications in these areas.

Zenzeleni Networks Mankosi Ltd. is a fully licensed (PECN/ECSLE) telecommunications co-operative owned and operated by local people that provides free internal calls, and discounted rates to call mobile phones and landlines from a set of public phones spread in the community connected via a network of WiFi access points. In Mexico, the national communication regulator has granted Social Purpose GSM Licenses specifically to enable rural community to provision themselves with mobile services.

GSM is the most effective way to reduce the Cost to Communicate in rural South Africa. Yet, operators with access to that spectrum are either not providing affordable services or are choosing not to make use of it for the modest return on investment expected. A small portion of that spectrum could be designated for Social Purpose GSM operators reusing the PECN/ECSLE scheme granted to Zenzeleni Networks. With current VoIP rates, this would bring the Cost to Communicate to be less than 5% of the disposable income for those at the bottom of the pyramid.

### OPERATIONALIZING SOCIAL PURPOSE GSM LICENSES

In particular we request the committee to consider the following recommendations:

1. GSM spectrum needs to be made available to enable Social Purpose GSM providers.
2. Identify available spectrum in the GSM bands to be allocated for Social Purpose GSM licensees.
3. Implementation of “Use or share it” mechanisms to allow Social Purpose GSM licensees to access nationally allocated GSM spectrum that is not used in rural areas.
4. Require Mobile Network Operators to allow Social Purpose GSM providers access to their core network.
5. Utilize Universal Service Funds or other mechanisms available for rural communities to self-provide (using GSM or other technologies).

<sup>1</sup> Republic of South Africa, “Electronic Communications Act: Determination: Universal access to and universal provision of electronic communications services and electronic communications network services,” South African Government Gazette, vol. 85, no. 32939, June 2010.

### INTRODUCTION

Universal service and access is a fundamental goal within the Electronic Communications Act. The responsibility for achieving it has been entrusted to various agencies since the beginning of democracy, however, a solution to the scale of the problem has yet to be found. Most of the efforts on this regard has been entrusted to Mobile Network Operators (MNO) and affordability enforced via the reduction of the Mobile Termination Rates (MTR). This study, first, analyzes the expenditure on communications of a rural community, and compare it to the national average. It is clear that that these policies have not achieved their intended results in rural areas. Then, this document explores alternatives to reduce the percentage of income dedicated to them.

### RESEARCH

A multi-method study was used to investigate the expenditure on communications and the alternatives to reduce the amount dedicated to them. The statistics provided are the result of a stratified random sampling panel survey conducted in a rural traditional community in the Nyandeni Local Municipality, Eastern Cape, one of the more disadvantaged areas of the country, and has been published in a peer-reviewed international journal<sup>2</sup>. The baseline study took place in January 2013 with a follow-up in one year later. The results are compared with national data from 2016 for people in similar socio-economic situations. Additionally, it builds on a 4 year partnership with that community to establish a locally owned and run, licensed telecommunications co-operative, Zenzeleni Networks Ltd.. Finally, similar initiatives implemented in other regions of the world have been reviewed in order to provide evidence to support and strengthen alternative models such as Zenzeleni.

### RESULTS ON COST TO COMMUNICATE

Research results show high levels of access to digital communications (87% of people using mobile phone services weekly). This comes at a very high costs, since, on average, 22% of disposable income is dedicated to a very limited basket of services (including only 7 SMS and 77 minutes of calling time a month - a week). Moreover, 40% of their time their SIM cards do not have airtime making it impossible to use those services, mainly due to the cost to communicate. Factors like charging the battery

of the mobile phone and additional costs on the airtime added by resellers account for 23.24% of the total expenditure. Regarding data, 22.2% of the people access Internet monthly, but with very constrained use (25-30 MB a month).

MTN is the main operator in the community with 94% of the users' SIM cards (similar percentages apply to neighbouring communities visited). In general, respondents are not aware of how much they pay per minute, and only 30% were able to report on their price plan. From those, 92% of them use MTN Zone, whose dynamic pricing makes it difficult to assess per minute prices. Research suggests that MTN Zone is more expensive than other price plans<sup>3</sup>. This high cost per minute matches calculations with the data collected from the participants phones.

On average people spend R85 a month on these communication services resulting on a monthly aggregate of more than R150,000 for the entire community. This comes at a high cost for the government as from the reported individual monthly income that averages R388/month, 55% of which comes from government social grants. The social impact of this high cost to communicate is immense: 41.2% reported sacrificing on other items to purchase airtime. From those, 34.5% reported sacrificing on essential food items, 16.7% for essential items for cooking and lighting, and an additional 2.4% on both.

The percentage of disposable income dedicated to communication services shown (22%) is considerably above the 5% that the government is targeting. Additionally, the basket of services this expenditure is allowing is considerably below both the number of calls considered by the OECD in its low-usage basket (40 calls/month) and the number of voice and data services per month the government targets people should be able to use with the 5% of their disposable income (90 minutes and 500 MB).

Results from the follow-up study conducted one year later (January 2014) show a very similar picture, with no significant statistical difference. Thus, effects of a reduction of the Mobile Termination Rates (MTR) are not reaching rural communities, who are reluctant to change to cheaper products or providers due to long distance and cost to reach urban centres where portability can be done,

<sup>2</sup> C. Rey-Moreno, R. Bignaut, W. Tucker, and J. May, "An in-depth study of the ICT ecosystem in a South African rural community: unveiling expenditure and communication patterns," *Journal of Information Technology for Development*, 2016. dx.doi.org/10.1080/02681102.2016.1155145

<sup>3</sup> Since MTN does not release ARPU and MoU data, for comparative purpose Research ICT Africa has calculated MTN Zone price based on assumed dynamic discounts and the resulting price is more expensive than other price plans. See OECD low-usage basket price of MTN prepaid products at <http://www.researchictafrica.net/prices/operator.php?o=65>

and the difficulty to produce the documents required for this.

At the national level, MTN and Vodacom has more than 85% of the market share of those with a individual income of R3,000 or less/month, and more than 95% of the market share of those living in traditional huts<sup>4</sup>. Considering income per month per household member from the South African National Planning Commission Development Plan poverty datum line in 2012 for those at the bottom of pyramid adjusted with the inflation until 2016<sup>5</sup>, the price of the cheapest Voice and SMS basket for MTN and Vodacom form the most recent Policy Brief from Research ICT Africa<sup>6</sup>, and the percentage added by additional expenses observed in the community under study (charging the mobile phone and mark-up by resellers), low-income population spends 22% of their income in electronic communications. This figure is probably higher as in the community under study the number of minutes of calling time observed is more than the ones in the Voice and SMS basket used above (50 vs 77), and the individuals were not using the cheapest price plans.

#### **AN ALTERNATIVE MODEL FOR AFFORDABLE ACCESS IN RURAL SOUTH AFRICA**

In 2012 a partnership began between the Mankosi community and the University of the Western Cape (UWC). The aim was to create a model for the sustainable implementation of bottom-up local telcos in rural communities in South Africa that contributes to reducing the cost of communications for its dwellers. Currently, a concept network has been trialed and is operational in the community above.

The partnership resulted in a locally-owned, not-for-profit telecommunications cooperative, Zenzenleni Networks Ltd., which is providing free internal calls, and discounted rates to call mobile phones and landlines from a set of public phones spread in the community connected via a network of WiFi access points. Charging stations deployed in the community have contributed to a 55% reduction in the price people pay to keep their mobile phone charged. For the moment, Internet access has been granted to facilitate 12 young community members to attend High Education Institutions via government grants.

Additionally, tests are being done to offer these discounted rates on WiFi-enabled phones, as well as cheaper Internet access to the local school, high school, and users and business in the community. However, the high cost, reduced battery life and literacy required to make use of WiFi enabled devices may prevent a higher uptake of this model in the short term.

#### **AN ALTERNATIVE MODEL FOR AFFORDABLE ACCESS IN OTHER COUNTRIES**

Another approach to allow this discounts to mobile users is via Community Cellular Networks (CCN). The appearance of low-cost cellular equipment for this purpose has allowed communities worldwide to have fully operational GSM networks providing affordable access, i.e. there are 15 CCNs in Oaxaca (Mexico)<sup>7</sup>. Based on their success the Mexican regulator has allocated 10 MHz of GSM spectrum for social use in small communities and indigenous regions, called Social Purpose GSM License. Similar initiatives at a smaller scale are taking place in Brazil, Philippines and Papua New Guinea. In the case of the Philippines, off-the-self, basic mobile phones are being used to crowdsource information about the unused channels in a given area to avoid interference with existing providers<sup>8</sup>.

In rural South Africa, where an oral tradition prevails, most people own a basic mobile phone. This situation will remain similar in the future given the low levels of digital literacy and the cost and short battery life of smartphones. Thus, GSM is the most effective way to provide voice communications. In rural areas there is considerable GSM spectrum that is available. Small amounts of unallocated GSM spectrum may be available to be dedicated for social purpose use. Furthermore, GSM spectrum assigned to existing MNOs but not currently in use in rural areas could be made available for social purpose use. Even if agreement with spectrum license holders were to be reached to use it in a particular community, current regulation does not allow for operation by anyone other than the license holder. With access to GSM spectrum, and the current VoIP rates offered in South Africa, PECN/ECSLE holders would bring the Cost to Communicate to be less than 5% of the disposable income for those at the bottom of the pyramid.

4 Data from the 2015 "All Media and Products Survey" (AMPS) from the South African Audience Research Foundation (SAARF)

5 Research ICT Africa, "Mobile Usage at the Base of the Pyramid in South Africa", The World Bank, 2012.

6 Research ICT Africa, "Top operators for personalised prepaid products", Policy Brief 3, 2016.

7 "It feels like a gift: mobile phone co-op transforms rural Mexican community" <https://www.theguardian.com/world/2016/aug/15/mexico-mobile-phone-network-indigenous-community>.

8 S. Hasan, K. Heimerl, K. Harrison, K. Ali, S. Roberts, A. Sahai, and E. Brewer., "GSM Whitespaces: An Opportunity for Rural Cellular Service," in IEEE DySPAN, 2014.

Observation of the processes followed in other countries like Bolivia, Argentina, Poland or the United States, makes it clear that multiple benefits<sup>9</sup> are realised by allocating specific funding mechanisms for the creation of small-scale operators. From providing more affordable and customized services to the users, to other spillover effects into the communities, such as employment.

In South Africa, the Universal Service and Access Fund (USAF) was established under the Electronic Communications Act (ECA) to fund projects and programmes that strive to achieve universal service and access to ICTs by all South African citizens. Additionally, there are some mechanisms such as the Cooperative Incentive Scheme or the Incubator Support Program, that could be used for this. However, to access them small telecommunication operators need to compete with other applicants coming from all sectors of industry. That could be one of the reasons behind Zenzeleni Networks being the only telecommunications cooperative in South Africa.

## **CONCLUSION**

The results show that providing access to voice and data communication services to an area does not necessarily mean that the services offered are affordable to the population. This comes at a onerous economic and social cost to the country. At the same time, results also show that rural communities in South Africa, and elsewhere in the world, can run their small-scale operators to reduce their communications bill. We recommend that in order to reduce the Cost to Communicate in rural South Africa the Parliament considers the allocation a Social Purpose GSM Spectrum to PECN/ECSLE holders and the allocation of specific funding mechanisms for the licensees to flourish.

Carlos Rey-Moreno | Post DoctoralFellow | C.S. Dept |  
U. Western Cape carlos.reymoreno@gmail.com

---

<sup>9</sup> S. Ó Siochrú and B. Girard, Community-based Networks and Innovative Technologies: New models to serve and empower the poor. United Nations Development Program, 2005.