

TV white spaces beneficiary profile:

St. Mary's Girls Secondary School & Seismology Section of the Geological Survey Department, Malawi

University of Malawi – Chancellor College Physics Department TV White Spaces Pilot Project

Dr. Chomora Mikeka, Professor of Physics at Chancellor College of the University of Malawi, has established a powerful TV white spaces pilot project in collaboration with the Malawi Communications Regulatory Authority (MACRA) and Marconi Wireless Lab at the International Center for Theoretical Physics (ICTP). The pilot has significant potential for widespread broadband access throughout the nation of Malawi and Africa at large, with demonstrated benefits to the education and security sectors, as well as life-saving seismic activity monitoring and mitigation improvements.

The pilot project has a base station with three sub-stations, one at St. Mary's Girls Secondary School, another at the Malawian Defence Force, and a third at the Malawian government's Geological Survey Department Seismology Section. The station locations range from one kilometer to nearly 19 kilometers apart, proving the white spaces technology's capacity to expand broadband across distances. The trial also shows the affordability of broadband when delivered via TV white spaces.



St. Mary's Girls Secondary School students learning to use email (Source: Mikeka)

St. Mary's Girls Secondary School students **Sandra Khasu and Elizabeth Kananji** rave about the improvements to their education as a result of the TV white spaces deployment. Ms. Khasu says having Internet access at school has improved her studies as it allows her to research topics discussed in class if she did not fully understand them during lecture. Both students agree that Internet connectivity is hugely beneficial to the school and their future academic careers, and that the pilot sparked an interest in technology exploration.

Another application of the Malawi TV White Spaces network is a life-saving machine-to-machine (M2M) use case improving efficiencies and reliability of seismic data access at the Geological Survey Department Seismology Section (GSD). **Patrick Rafiki Chindandali** and his team at the GSD are responsible for analyzing and regularly disseminating geo-scientific earthquake activity data obtained from the organization's seismic monitoring stations. The analyzed data is used by government bodies, the construction industry, other worldwide research organizations and the general public to prepare for and predict earthquakes.

In the event of an earthquake, data must be disseminated to these bodies within 2-30 minutes, and it must be available on demand via digital bulletins. For near real-time data access, connectivity between the GSD data center and its remote seismic stations is crucial. The Malawi TV White Spaces

Pilot makes the transfer of data more efficient by linking a GPS system to a local server, which uploads the data to a remote U.S. UNAVCO server regularly. The TV white spaces technology enables Mr. Chindandali to download the seismic data remotely and upload his analysis on a daily (and hourly, when necessary) basis. Previously he needed to travel to the seismic stations to obtain data, so the analyzed data was only made available on a weekly basis. Anecdotally, Mr. Chindandali and his GSD colleagues report increased work productivity as a result of a faster Internet connection, which is hugely helpful when downloading research papers and information to supplement their data analysis efforts.

The Malawi TV White Spaces Pilot provides a benchmark and success story for other countries and entities considering deployment of TV white spaces networks to create affordable, widespread broadband connectivity enabling impactful societal and commercial benefits. For additional information on the Malawi TV White Spaces Pilot, please contact Dr. Chomora Mikeka at mikeka_chomora@yahoo.co.jp.