

Long- and medium-distance displaced subscribers from flood-affected areas of the Lower Volta River: Situation as of 22 October 2023

Executive summary

The release of excess water from behind Akosomobo Dam on 11 October 2023, following heavy and unpredictable rainfall, has resulted in the flooding on communities in nine districts along the Lower Volta River. Large displacements have been reported as a result of the flooding (over 26,000, source: [EU ERCC](#)).

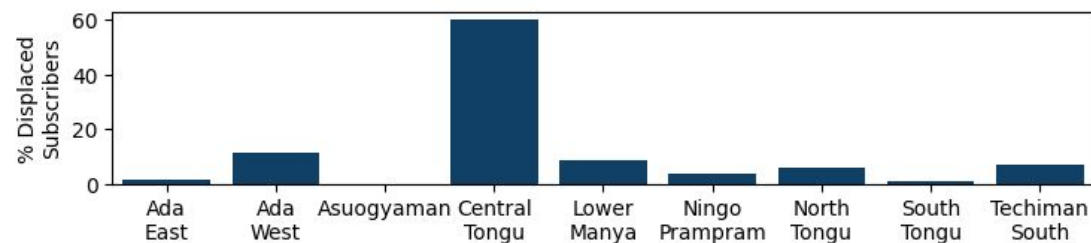
In this report, we focus on medium- (5–25km) and long-distance displacements (greater than 25km). We estimate that 1,430 Vodafone Ghana subscribers have been displaced from the areas around cell clusters in the affected districts. This represents only a portion of the total number of displaced persons, as these figures do not include those without a subscription to Vodafone Ghana or those who were displaced very short distances (less than 2km). We observe very few long distance displacements or displacements to urban centres, such as the Accra Metro area. The largest displacements observed were from the area around Mepe and Aveyime in North Tongu, to Mafi-Adidome in Central Tongu. We estimate that approximately 853 additional subscribers are residing in the area around Mafi-Adidome. We also observe that the increase in the number of subscribers displaced from the affected area has slowed. However, we do not yet observe any indications that subscribers are returning to their previous home locations.

Where have residents of the affected area been displaced to around Ghana?

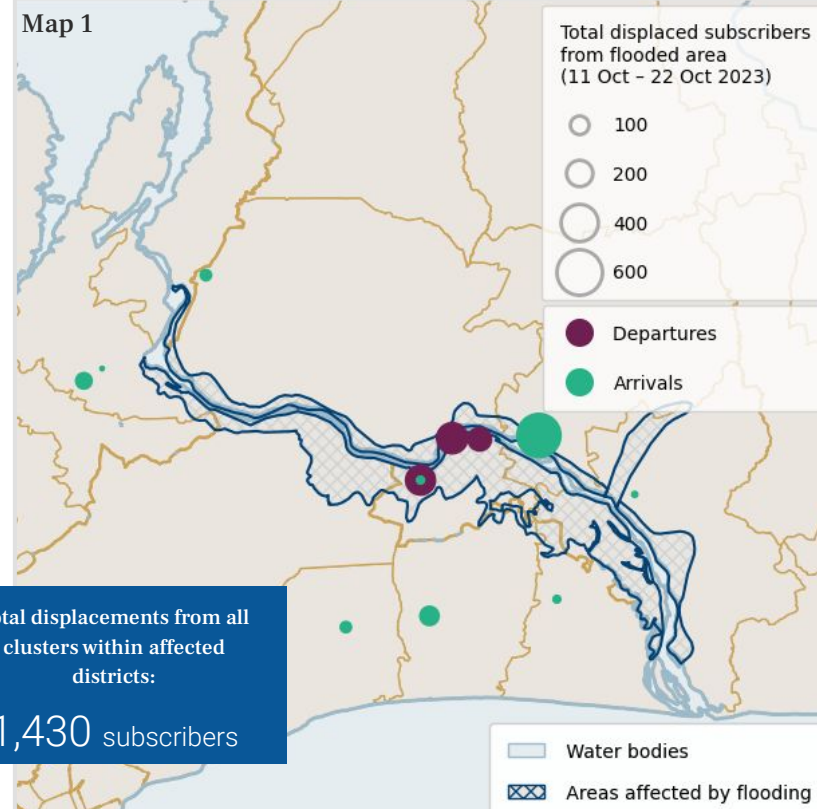
Origins and destinations of displaced subscribers

The bubbles on Map 1 (right) correspond to the **number of displaced subscribers** who have departed areas affected by flooding (purple) and the areas which have received displaced subscribers (green). The density of cell clusters means that we do not observe very short-distance displacements (less than 2km). **The largest number of displaced subscribers depart from the areas around Mepe and Aveyime in North Tongu. The cluster with the largest number of arriving displaced subscribers is close to Mafi-Adidome in Central Tongu.** We observed very few displaced subscribers outside of Eastern, Volta or Great Accrea regions.

Graph 1 (below) shows that the **majority of displaced subscribers (60.1%) relocated from the affected area to Central Tongu.**



Graph 1: Percentage of the total displaced subscribers from the affected area who have relocated to each district



The mobile operator data provided to Flowminder for this report was fully anonymised. No personal data was made available at any time (e.g. an individual's identity, demographics, location, contacts or movements). All results are aggregated (for example, subscriber density in a given municipality), meaning that they do not contain any information about individual subscribers.

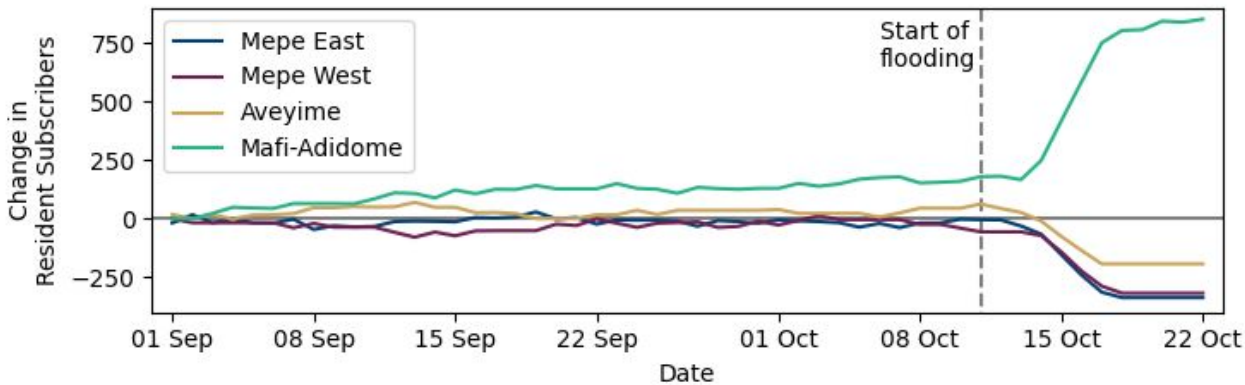
Flows of displaced subscribers

The arcs on Map 2 (right) correspond to the **number of displaced subscribers** who relocated from one area to another (purple indicates the origin of the flow and green indicates the destination). **Most observed displacements are to areas in neighbouring or nearby districts.** We observe **very few long distance displacements or displacements to urban centres** such as the Accra Metro area. **The largest flows of displaced subscribers are from the area around Mepe and Aveyime in North Tongu, to Mafi-Adidome in Central Tongu.** Subscribers residing near Mepe and Aveyime also relocated to the Great Accra region.

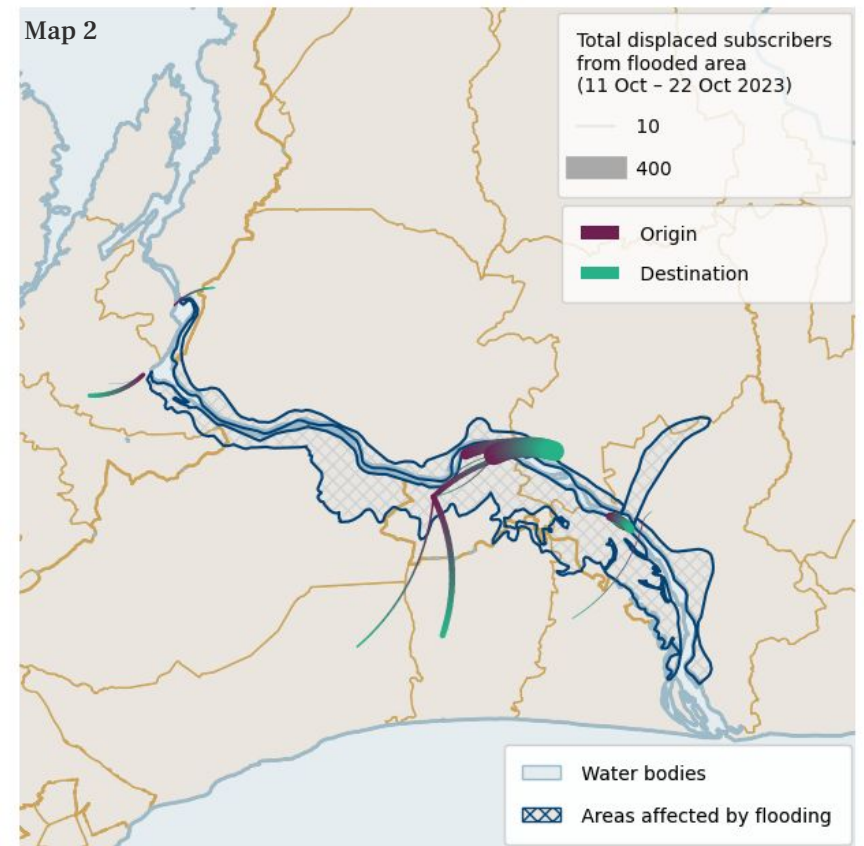
How have the numbers of subscribers residing in the affected area changed?

We observe **large changes in the number of residents in North and Central Tongu**, in the Volta region (Graph 2). **The number of subscribers residing in the vicinity of Mafi-Adidome increased rapidly in the period following the start of the flooding**, but this increase has since slowed. As of 22 October 2023, **an additional 853 subscribers are residing in the area of Mafi-Adidome.** We can observe contemporaneous **decreases in the number of residents in the area around Mepe and Aveyime in North Tongu.**

We do not yet observe the population in these areas starting to return to their pre-flood baseline, which indicates the **subscribers remain displaced** and are not yet returning to their previous home locations.



Graph 2: Percentage change in the number of resident subscribers in area around Mepe and Aveyime-Battor in North Tongu and Mafi-Adidome in Central Tongu.



Conclusions

Based on anonymous aggregated mobile phone data from Vodafone Ghana, **most displacements caused by the flooding on the Lower Volta River may have been local** (less than 25km). Furthermore, most displaced subscribers are likely to remain within the affected or neighbouring districts.

The number of new displacements may also have slowed since the initial large displacement. However, we do not yet observe the population around the cell clusters starting to return to their pre-flood baseline, indicating that **subscribers remain displaced.**

Data & data privacy

The mobile network data provided to Flowminder is fully anonymised. This means that **no personal data**, such as an individual's identity, demographics, location, contacts or movements, is made available to the government or any other third party at any time. All results produced by Flowminder are aggregated results (for example, subscriber density in a given municipality), which means that they do not contain any information about individual subscribers. This approach complies with the European Union's General Data Protection Regulation (EU GDPR 2016/679). Data is processed on a server installed behind Vodafone Ghana's firewall in Ghana, and no personal data leaves the operator's premises.

Data considerations

The estimates shown are our best current assessment of movements from non-traditional data: anonymised data from a mobile network operator. However, there are a number of uncertainties. The information should be interpreted together with other available evidence.

Acknowledgements

This study was made possible thanks to the anonymised data provided by Vodafone Ghana.

This report was funded with UK International Development from the UK government. The analysis presented has also been possible thanks to funding by the William and Flora Hewlett Foundation and Vodafone Foundation that support Flowminder's activities in Ghana, where Flowminder is partnered with Ghana Statistical Service and Vodafone Ghana, under the Data for Good partnership, to integrate mobile operator data into official statistics and enhance development planning.

We welcome feedback to help us improve future reports and requests for specific types of analysis

Please email info@flowminder.org with any feedback and suggestions, or if you have any specific analytical requirements we can support.

This report and its contents may only be shared with attribution to the Flowminder Foundation. Adaptation is permitted as long as the changes are indicated and the Flowminder Foundation is cited. Use of the report and its contents is limited to humanitarian and development purposes.

Disclaimer of Warranties and Limitation of Liability: *To the extent possible, Flowminder offers this report and its contents as-is and as-available, and make no representations or warranties of any kind concerning this report and its contents, whether express, implied, statutory, or other. This includes, without limitation, warranties of title, merchantability, fitness for a particular purpose, non-infringement, absence of latent or other defects, accuracy, or the presence or absence of errors, whether or not known or discoverable.*

To the extent possible, in no event will Flowminder be liable on any legal theory (including, without limitation, negligence) or otherwise for any direct, special, indirect, incidental, consequential, punitive, exemplary, or other losses, costs, expenses, or damages arising out of the use of the report or its contents, even if Flowminder has been advised of the possibility of such losses, costs, expenses, or damages. The disclaimer of warranties and limitation of liability provided above shall be interpreted in a manner that, to the extent possible, most closely approximates an absolute disclaimer and waiver of all liability.