IWRM Action Hub

CASE STUDY

Malawi: BASEflow’s Cyclone Idai Flood Response using mWater

Summary

In March 2019, Cyclone Idai wreaked havoc in southern Malawi, destroying livelihoods and innocent lives. Leveraging an existing database of 120,000 water points, previously mapped in mWater, the social enterprise BASEflow managed to effectively coordinate the rehabilitation and repair of 364 boreholes within the flood zones and supported the WASH cluster’s emergency response. Using the capabilities of mWater, a versatile data management platform, BASEflow facilitated the coordination of both response efforts, including tracking rehabilitation progress and verifying internally displaced populations in flood victim camps; thereby contributing to a better coordinated disaster response.

Background

mWater is a free WASH data management platform used across the globe. It allows users to flexibly map and monitor information about water and sanitation infrastructure across time, effortlessly share key information within and across sectors, and additionally record any other data with customized surveys that users can design online.

BASEflow is a Malawian social enterprise working to improve the sustainability of groundwater sources for rural populations to access safe drinking water. BASEflow uses mWater as their primary WASH data management platform and, between 2017 and 2019, provided technical backstopping support to a network of 354 local government extension workers to facilitate the national mapping of more than 120,000 water points across Malawi, using mWater; thereby creating the most comprehensive water point infrastructure database in Malawi’s history.

After a year of drought in 2018, an Intense Tropical Cyclone Idai, made landfall in Mozambique on 6th March 2019, causing torrential rains to southeastern Malawi, enhancing the risk for widespread floods. Widespread flooding began on 9 March, causing substantial, in some cases irreparable, damage to 288,371 households across 14 districts; this negatively affected 975,600 people – an estimated 460,000 being children – displaced 86,976 people rendering them displaced or homeless. 60 people were reported to have been killed, while a further 3 were reported missing, their bodies never found.

Following the Declaration of National Disaster, the WASH Cluster, part of Malawi Government's post-disaster response and management apparatus, was activated to mount a coordinated response effort to address the WASH-related challenges in flood victim camps and surrounding communities; BASEflow was one of the participating organizations in the WASH cluster.

During cluster meeting discussions, it was noted that, in the immediate aftermath of the floods, there was not only substantial damage to water infrastructure within the flood zone, but there was also the added complication of uncertainty over the number of internally displaced persons (IDPs) residing in the camps. This lack of data made it difficult to allocate resources to vital WASH activities and, without actionable data, there would be a significant risk of wasting resources through misallocations.

Bringing their experience and access to the water point database, BASEflow volunteered their support to the response effort and, with the help of other development partners and collaborators, leveraged resources to address the twin challenges abovementioned by providing and using data-related products to guide a coordinated emergency response.

Actions taken

The following were the key steps that were taken to address the twin challenges highlighted earlier:

Rehab and Repair of flood-impacted boreholes in Mulanje District

With co-financing from USAID through Management Sciences for Health (MSH) and support from the Scottish Government, BASEflow supported a consortium of partners with data management and supervisory support towards a project called Borehole Repair and Rehab Project. The key actions taken included:

- Using GIS, the mWater database, of over 120,000 water points, was overlaid on flood zone shapefiles.
- Once completed, 3,666 water points were discovered to have either been partly or fully submerged putting them at risk of damage and contamination.
- Findings were shared with the WASH cluster and MSH and Mulanje was chosen as the project district with an estimated 364 boreholes impacted by the floods.
- BASEflow helped build a monitoring console for real-time progress tracking of the rehab and repair works.
- Using mWater to locate the boreholes and capture field data, a rehab team, of private and village-level mechanics with BASEflow staff, undertook the field works through the following steps:
    - *Borehole assessments*: consisted of a series of handpump functionality and water quality tests which were used to identify what kind of repair works were

required.
    - *Borehole repair and rehabilitation works*: involved replacement of broken and worn-out parts to make sure the handpump was brought back to full use. Boreholes that tested positive for bacteriological contamination were shock chlorinated. In parallel, surrounding communities were trained on selected aspects of Community Based Management.
    - *Post-intervention assessments*: involved both functionality and water quality tests to verify whether interventions had been successful. Each repaired/rehabilitated borehole underwent post-intervention assessments at 3 and 6 months intervals.

Verifying the Population and WASH/Non-WASH Needs of IDP Camps

During initial WASH cluster discussions pertaining to coordination planning, it was discovered that there were discrepancies around the quantitative data related to the IDP camps. While IDP camp data in WASH Cluster reports portrayed one picture, ground-truthing during site visits provided a different one e.g. less people at IDP camps than what was in WASH Cluster reports. In other words, the WASH Cluster had unreliable data to inform decisions related to deployment and allocation of scarce resources. In response to this, BASEflow volunteered to lead on gathering quantitative data related to the IDP camps to inform planning of WASH cluster interventions. The key actions included:

- To try and not 'reinvent the wheel', BASEflow engaged Centre for Disease Control (CDC) and UN's International Organization for Migration (IOM) to create standard survey forms using mWater. These survey forms were:
    - *IDP Household Survey*: captured data related to the WASH situation of households in communities/villages situated around IDP camps and would be used to guide concerted focus on preparing surrounding communities in advance of returning IDPs, once camps were decommissioned.
    - *IDP Camp WASH Survey*: captured data related to the population numbers (disaggregated by sex), the number and names of humanitarian agencies (including types of interventions) and detailed WASH, non-WASH and/or non-food item data for the IDP camp.
- BASEflow leveraged and supervised a network of local government extension workers (those involved in the mapping of more than 120,000 water points) from the 3 districts of Balaka, Machinga and Mangochi to conduct the data collection.
- BASEflow also built monitoring consoles that served the dual purpose of tracking progress of the local government enumerators and visualizing key data points for coordination, planning and decision-making by the WASH cluster.

Outcomes

After leveraging the water point database and the versatility of mWater, BASEflow's support towards the WASH cluster's emergency response achieved the overall outcome of "*improved coordination of humanitarian resources through technology-enabled data-driven decision-making*". The specific challenge-level outcomes contributing to this higher-level outcome are as follows:

Rehab and Repair of flood-impacted boreholes in Mulanje District

- *Restored access to safe drinking water*: the rehab and repair project helped increase

the functionality of the handpump-fitted boreholes from 8% at the start to 91% during the last visit at the 6 months interval, post-intervention. Furthermore, in absolute terms, this meant restored access to safe drinking water to 184,521 people who would have otherwise had limited or no access to safe drinking water.
- *Improved performance of the handpump-fitted boreholes:* following repair and rehabilitation of 364 handpumps, the functionality performance of the handpump increased from 8% to 91% by the last post-intervention visit.
- *Improved coordination and reporting of flood response effort:* the use of the mWater platform, and the water point database, improved coordination of the rehabilitation and repair works and provided an exemplar of best practice that can be readily accessed for future interventions of this nature.

Verifying the Population and WASH/Non-WASH Needs of IDP Camps

- *Improved understanding of state of IDP Camp operationalization:* following the assessment of 38 IDP camps by the local government extension workers, there was a better understanding of the demographic situation in each camp where, in total, 13208 people resided as at the time of the assessment. Furthermore, the assessment also proved that that only 20 of these camps were actually operational/active.
- *Improved understanding of the WASH situation in the IDP camps and surrounding communities:* the assessment also captured vital information regarding water access, sanitation and hygiene coverage for all the operational 20 IDP camps and their surrounding communities through 462 households that were surveyed. Further to this, there was also an increased awareness of other non-WASH needs in the IDP camps and surrounding communities e.g. mosquito nets, blankets and other sleeping items etc.

Lessons Learned

Leveraging existing capacities/assets saves time: Our experience demonstrated the value in leveraging existing capacities/assets, created by previous efforts to address new problems, including the water point database, the network of government enumerators, and standard survey forms used by stakeholders such as the CDC and IOM. This saves times that would have been wasted "reinvesting the wheel".

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