A first-of-its-kind method using community-collected data to establish highly detailed elevation datasets was developed.

Applying this methodology with stakeholders in Dar es Salaam resulted in a highly detailed flood model.

These high-resolution models will allow local and national agencies to make targeted interventions to reduce risk.

A user friendly user interface and flood model training is being developed in a phase 2 of this project.
Deltares, a leading independent water research institute, was awarded Challenge Fund financing to fuse globally available data and participatory knowledge from on-the-ground stakeholders to move towards high-resolution risk models in vulnerable but data-poor regions that enable risk-informed decision making.

The project relied heavily on OpenStreetMap (OSM) data collected within the ongoing “Ramani Huria” and “Zuia Mafuriko” projects in Dar es Salaam. These projects were aimed at mapping the most flood prone wards in the city to have a baseline dataset to enable future development efforts to be more flood resilient.

A first set of terrain maps based upon the tool were used to build a two-dimensional flood inundation model of the target wards, and further refined the models during an extensive workshop with key stakeholders. These highly detailed maps will provide crucial information for effective flood risk management, including levees and nature-based risk-reduction strategies.

In phase I, the team developed a method to derive high resolution terrain data by fusing data from OpenStreetMap (OSM) and freely available Shuttle Radar Topography Mission data. The combination leads to a very high-resolution terrain datasets in well-mapped urban areas, allowing urban risk managers to identify critical hazardous flood areas. The project was piloted in Tanzania.

In phase II, the team refined the methodology and the tool was adapted to be more user-friendly. In addition, the team worked closely with on-ground partners by conducting training on flood inundation modelling and critical infrastructure impact assessment.

“The Challenge Fund project has proved critical to raising awareness of how to combat flooding in Dar es Salaam and has innovated in the application of harmonizing crowdsourced data with traditional hydrological modelling techniques.”

- Mark Iliffe, Geospatial Innovation Specialist, the World Bank

This project highlighted the importance of high-resolution flood data, but also revealed a need for easier ways to access and visualize the data and models produced. Based upon positive stakeholder feedback, the Deltares team established a mockup for a simple user interface to be implemented in the second phase of the project. The team is also developing extensive training processes for these new tools, which can also be adapted for other regions.