

# CASCADING EFFECTS OF INFRASTRUCTURE DISRUPTION AND IDENTIFICATION OF VULNERABLE GROUPS

Flooding is one of the biggest problems in the growing city of Dar es Salaam, Tanzania. The main consequences of flooding are the destruction of infrastructure, loss of property, economic disruption, outbreak of disease and the disruption of people's daily lives. Although the direct impacts of flooding on critical infrastructure (CI) receive attention, studies have neglected cascading effects, which may have different impacts on different groups in the communities in question.



For example, women may be more affected by the disruption of water points and need to travel larger distances to fetch water. Workers may be affected by problems with public transport. CI is the backbone of any society and so the resiliency of society depends very much on the resiliency of its CI networks.

In the second phase of the 'Challenge fund' project financed by the Global Facility for Disaster Reduction and Recovery and the UK Department for International Development, we looked at the cascading effects of CI failure or disruption. We also identified the associated vulnerable groups of the communities in the Manzese ward in Dar es Salaam. Deltares and the partners used the Circle-Bao tool for this purpose. This is a participatory tool based on the web version of Circle tool. It can be produced locally and used by people with limited computer skills and in places with no electricity. The tool is inspired by the famous African game 'Bao'.

A two-day course was organised for the local Red Cross volunteers in the Manzese ward by Deltares and partners. During the training, the local volunteers learnt about CI, how to use the Circle-Bao tool and how to facilitate a Circle-Bao workshop. They also shared local knowledge about CI in Manzese and their experiences of the flooding in the ward. This formed valuable input for an understanding of interdependencies between CI networks. Some of the trained Red Cross volunteers then facilitated the Circle-Bao workshop with the representatives from the ward with responsibility for infrastructure.

The project helped the local residents and the representatives of CI networks in the Manzese ward to obtain an overview of the cascading effects of CI failure. Generally, they were unaware of interdependencies between the CI networks. The identification of vulnerable groups in the communities will help humanitarian organisations like the Tanzanian Red Cross Society to prioritise their actions during emergencies. The potential for the upscaling of the tool and the method in other areas of Dar es Salaam has been recognised. A short-course curriculum was organised covering the topic and the Circle-Bao tool for Masters students in Disaster Risk Management at Ardhi University. [🌐](#)

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## Further reading:

<https://www.deltares.nl/en/news/failures-critical-infrastructure-floods-training-red-cross-volunteers-dar-es-salaam/>