



Digital flood evacuation planning in Vietnam

Summary

ISET-International (ISET) worked with the local government and provincial agencies to develop detailed evacuation maps and plans for response scenarios corresponding to the three existing early warning system (EWS) flood alert levels, identifying:

- when the evacuation process will be triggered;
- who will need to be evacuated and to where;
- contact lists;
- plans for supporting vulnerable individuals, such as the elderly, pregnant/nursing women, children, people with critical illnesses/disabilities, and the poor.

The information was integrated into a disaster risk management (DRM) software system, built and administered by the provincial government.

Our approach

ISET applied the Flood Resilience Measurement for Communities, which has evolved into the Climate Resilience Measurement for Communities (CRMC), to develop information about the strengths and weaknesses of communities related to flood resilience. They then discussed with each community and the provincial DRM agency how weaknesses could be addressed and strengths leveraged. Flood evacuation was identified as a particular need. The Binh Dinh DRM agency requested ISET's support in developing and piloting an approach to fill this gap.

Facts and figures



Cost of developing a map (per response scenario):
~14 expert days



Annual update/maintenance cost:
Covered by the provincial DRM budget, ~5 staff days/year



Time to implement:
2–3 months for digitalization



Easy to replicate?
GIS expertise needed for mapping



Vietnam



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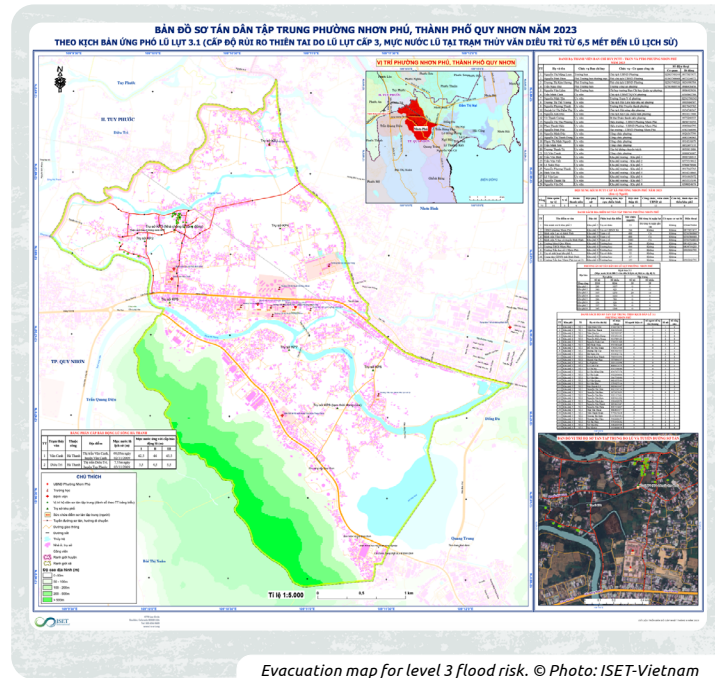
What was the problem?

Though communities in Binh Dinh province receive flood early warnings, evacuation plans, if they exist, are of poor quality or are not communicated to communities. As a result, many people, especially in urban and peri-urban areas, are not aware of existing evacuation plans and do not have a clear plan for how, when, or where to evacuate. In addition, changes in infrastructure, especially in peri-urban areas, are altering flood patterns such that people no longer fully understand the hazard landscape, putting people's health and safety increasingly at risk, especially during extreme or unusual floods (e.g. floods at unusual times of the year, floods resulting from previously unexperienced weather patterns, etc).

What was the solution?

ISET worked with experts from the DRM office and the Climate Change Coordination Office (CCCO) of Binh Dinh province to develop detailed flood evacuation plans and maps for Nhơn Phú ward. The plans were built for three flood evacuation scenarios corresponding to three existing EWS flood alert levels – level 1 (medium), level 2 (high), and level 3 (very high).

The evacuation plan includes a detailed directory of members of the community DRM taskforce in Nhơn Phú ward, the location and capacity of evacuation centres, a list of location and contact information of households to be evacuated, along with other infrastructure and geographical data. The evacuation plan also has detailed information about individuals who need special assistance to evacuate, such as the elderly, children, people with disabilities, and pregnant women. This information will be integrated into the Binh Dinh DRM toolkit, which will be developed by Binh Dinh province in forms of a web portal combined with a mobile app, to manage all DRM work in the province. The plan and maps, together with a handbook on how to use and update them over time, was handed over to the Nhơn Phú ward government.



How does it increase resilience?

Developing and disseminating evacuation plans has helped community members better understand when their households should evacuate, to where, and how. This has promoted awareness of the importance of evacuation and has given them higher confidence in the government's evacuation plan. Also, updated contact information for DRM taskforces helps community members know who to contact for help, if needed. Together, this will contribute to the reduction of flood impacts on the health and safety of the community.

The evacuation plans and maps also promote flood response rapidity by allowing for better co-ordination of actions and resources in emergency flood response situations. With all information updated in the DRM toolkit, DRM authorities will know the capacity of evacuation centres in each area in relation to evacuation needs, so they can improve directions to DRM staff and prepare resources to meet those needs.

Climate Resilience Measurement for Communities (CRMC)

The Climate Resilience Measurement for Communities (CRMC) is a data-driven process, complemented by a web-based tool and mobile app, which helps communities to evaluate and measure how resilient they are to climate hazards. Using the results, they can identify and implement resilience-building interventions and run additional measurements to track improvements.

Find out more: ZCRAAlliance.org/crmc



Low-lying area in Nhơn Phú ward. © Photo: ISET-Vietnam

Other benefits

- The evacuation maps in Binh Dinh province have improved the quality of the disaster preparedness and response plan of Nhơn Phú ward.
- The experience from Nhơn Phú will be applied by the Binh Dinh DRM office for similar mapping exercises across all other wards and communes in the province.
- This experience can be shared with other localities interested in strengthening their EWS and digitalizing their DRM/evacuation planning systems.

Common conditions for success

Q: Is this intervention appropriate for other communities?

A: Yes, the development of evacuation maps can be applied in other communities.

Q: What conditions are needed for the interventions?

A: A GIS specialist for mapping and the technical capacity to develop maps.

Q: Was there anything special about the communities where interventions were effective?

A: Nhơn Phú ward is a fast-urbanizing flood-prone area where a good evacuation plan is urgently needed.

Early Warning Systems (EWS)

EWS are one of the best-proven and effective measures for saving lives and minimizing losses and harm caused by disasters. They help those at risk of floods, heatwaves, wildfires and other climate hazards to take risk-informed, timely, meaningful and impactful early action to keep themselves and their assets safe. The Alliance works across all eight components of an EWS so that they deliver essential services for the most vulnerable women, men, and children, supporting communities to be resilient to climate hazards, enabling them to thrive.



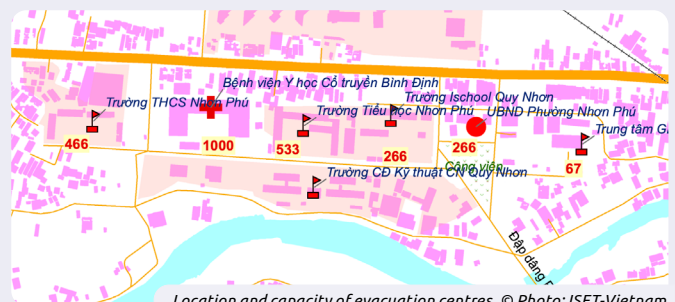
Success story

The evacuation plans and maps (especially the directory of DRM taskforces, evacuation locations, and routes) were communicated to DRM staff, local first responder groups, and local people in Nhơn Phú ward through dissemination meetings at the ward and community levels.

“Thanks to the information provided in the maps, people in Area 3 are more aware of the evacuation locations they need to go to and the safest and quickest routes to get there. This is very important information for a low-lying area such as ours.”



Mr Hay
Community Leader of Area 3, Nhơn Phú ward



Expert view

Binh Dinh province had developed a provincial DRM map, but it still lacked detailed evacuation data at the village and commune levels.



Visiting flood evacuation centre in Area 3, Nhơn Phú ward.
© Photo: ISET-Vietnam

The provincial DRM office had requested local governments to update the information about households needing evacuation, but the data we had received so far was quite fragmentary. The evacuation map of Nhơn Phú ward was the first time this was done in a proper way.



Mr Nguyen Tuong Vy

DRM expert from the DRM office of Binh Dinh province



Flood level in 2020 in Nhơn Phú ward. © Photo: ISET-Vietnam

! Lessons learnt

- The success of the flood evacuation planning and mapping in Nhơn Phú ward as a pilot activity was partly thanks to detailed, household-level data already maintained by communities across Vietnam. This is a national requirement, but to date, the data has been under-utilized.
- Evacuation plans might eventually be developed for tropical storms as well, improving community preparedness so that those at risk know where to go, when, and how before a tropical storm occurs.

Get in touch

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