



Integrated WebGIS platform for disaster risk management in Gia Lai province, Vietnam

Overview

ISET-International (ISET) has collaborated with the Gia Lai Department of Agriculture and Environment (DAE) to develop an integrated disaster risk management (DRM) WebGIS platform for that unifies previously fragmented hydrometeorological and disaster-monitoring data across the province. The system combines real-time rainfall, river water levels, and flood depth data from smart flood towers; historical flood maps and community-based flood depth records; and regularly updated reservoir data into a single, accessible interface. It serves both as a data management system supporting timely decision-making by DRM authorities and an official climate and disaster information resource for the public. Managed by the Provincial DRM agency, the platform enhances transparency, improves coordination and early warning, and strengthens risk-informed disaster management.

The gap

Climate related hazards in the former Bình Định province, especially in downstream regions of the Kon and Ha Thanh Rivers have become increasingly severe and unpredictable due to climate change and land use changes. These escalating events continue to damage homes, livelihoods, and public infrastructure, placing growing pressure on local disaster risk management systems.

As these risks intensified, the limitations of the province's disaster-information system became more evident. Disaster risk management is constrained by fragmented, manual and inconsistent data collection and management across a vast hydrological network, an issue amplified after the merger of Gia Lai and Bình Định into a single, larger province. Without a unified and timely information system,



Facts and figures



Cost of Web GIS development:
US\$4,000 (including installation)



Annual update/maintenance costs: 30 staff days/year (covered by provincial DRM budget)



Time to implement
4 months (Web GIS development)



Easy to replicate?
Yes, the platform can be easily replicated using existing provincial DRM servers, standard WebGIS architecture, and modular data-integration components.

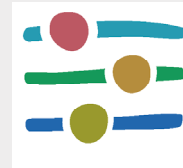
DRM agencies struggle to form a clear operational picture, issue early warnings, or coordinate response actions. Communities also relied on scattered, unofficial information sources, limiting their ability to prepare for extreme events.

Our solution

ISET collaborated with the Climate Change Coordination Office (CCCO) and the Water Resources Division under DAE to design and deploy an integrated WebGIS platform that consolidates all key hydrometeorological and disaster-monitoring data for the former province of Binh Dinh province, now part of the newly merged Gia Lai province. The system brings together rainfall observations, river water levels, smart flood-tower readings, community flood-monitoring data, reservoir operation records, and simulated flood-inundation maps into a single, synchronized interface. Importantly, the platform also integrates project-supported systems and tools, including smart flood-warning towers, the community flood-monitoring network, and the reservoir operation data-management tool, ensuring that all ZRCA-supported solutions are unified within one provincial information system.

The site provides a comprehensive suite of functions:

- **Real time monitoring of rainfall**, river water levels, and flood-depth from smart flood-warning towers, with interactive dashboards and historical look-ups.
- **Community flood-monitoring**, enabling data entry, storage, and comparison cross years.
- **Reservoir information**, enabling data entry, storage, and management and provide time-series inflow, discharge, and hydropower operation data.
- **Flood map visualization**, showing simulated flood extent and depth maps for historical flooding events, and supporting comparisons across events and basins.
- **Automated outputs**: including charts, summaries and downloadable reports.



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: ZCRAlliance.org/crmc



November 18, 2025 flood in Quy Nhơn Bắc ward
© Hoang Loi Facebook

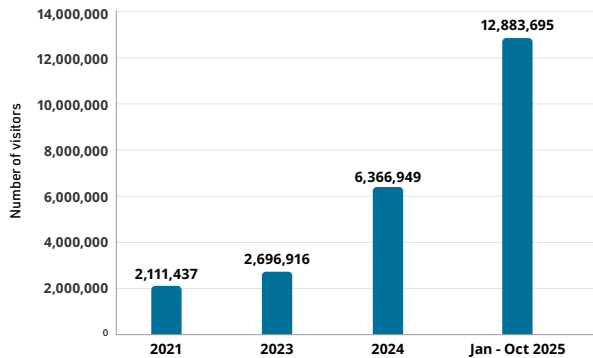
The system is hosted on the province’s existing government server and managed directly by the provincial DRM agency, which covers annual operation and maintenance. The platform’s modular architecture enables future expansion to new basins, stations, and analytical layers, supporting long-term system strengthening and improved decision-making.

How it increases resilience

The WebGIS platform enhances resilience by ensuring that DRM agencies have timely, reliable, and consistent hydrometeorological information to guide both routine monitoring and rapid emergency decision-making. By consolidating multiple datasets that were previously scattered or manually compiled, the system reduces delays, minimizes uncertainty, and allows officers to quickly identify abnormal patterns, compare current conditions with past events, and determine when warnings or field actions are required. Shared access across provincial, communes, and reservoir operators improves coordination and discrepancies during emergencies.

For communities, the WebGIS serves as an official and transparent information channel where residents can check real-time rainfall, river levels, and local flood depths relevant to their own locality. Earlier and clearer information

Figure 1: WebGIS site visitors from 2021 to October 2025



SOLUTIONS IN ACTION

Over the past three years, the provincial DRM WebGIS platform has shown remarkable growth, demonstrating its rising value for both communities and DRM agencies. Site visits increased steadily from 2.1 million in 2021 to 2.7 million in 2023, then surged to 6.3 million in 2024, more than double within a single year.

In 2025, by the end of October, the platform had already registered over 12.8 million visits, twice the total of 2024. Monthly peaks align closely with the rainy season, showing that the WebGIS has become a trusted information channel during flood-prone periods.

After the merger of Binh Định and Gia Lai, the platform was adopted as the unified DRM information system for the new Gia Lai province. Monitoring networks and disaster-related datasets from the former Gia Lai area are now being integrated, creating a more complete provincial hydrometeorological picture and strengthening inter-agency coordination.

This strong and sustained growth demonstrates widespread behavioral adoption and confirms the platform’s role as an essential, province-wide channel for disaster risk information.

Conditions for success

Q: Is this intervention appropriate for other communities?

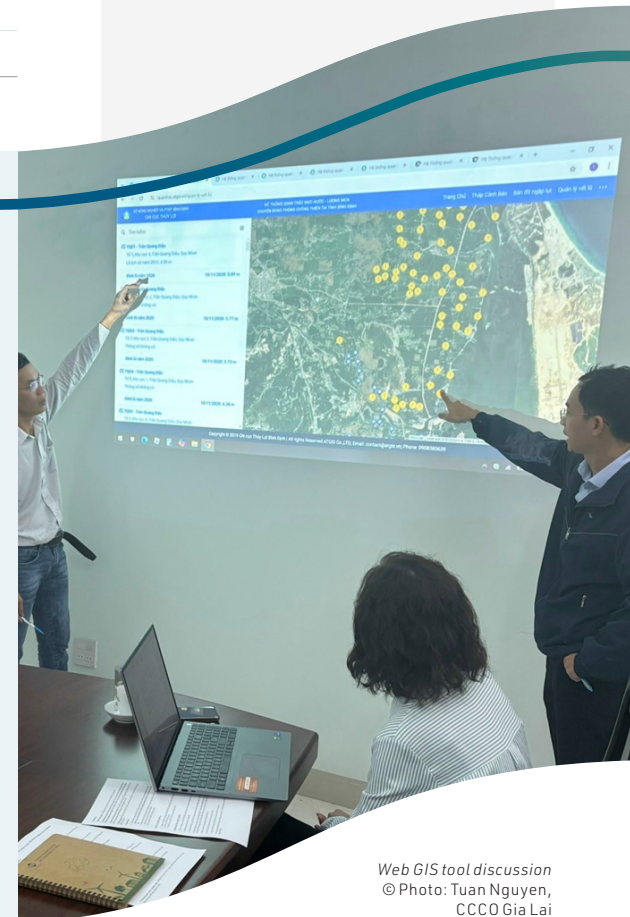
A: Yes, other provinces with multiple reservoirs, widespread flood risk, or fragmented monitoring systems can adapt this model.

Q: What conditions are needed for the interventions?

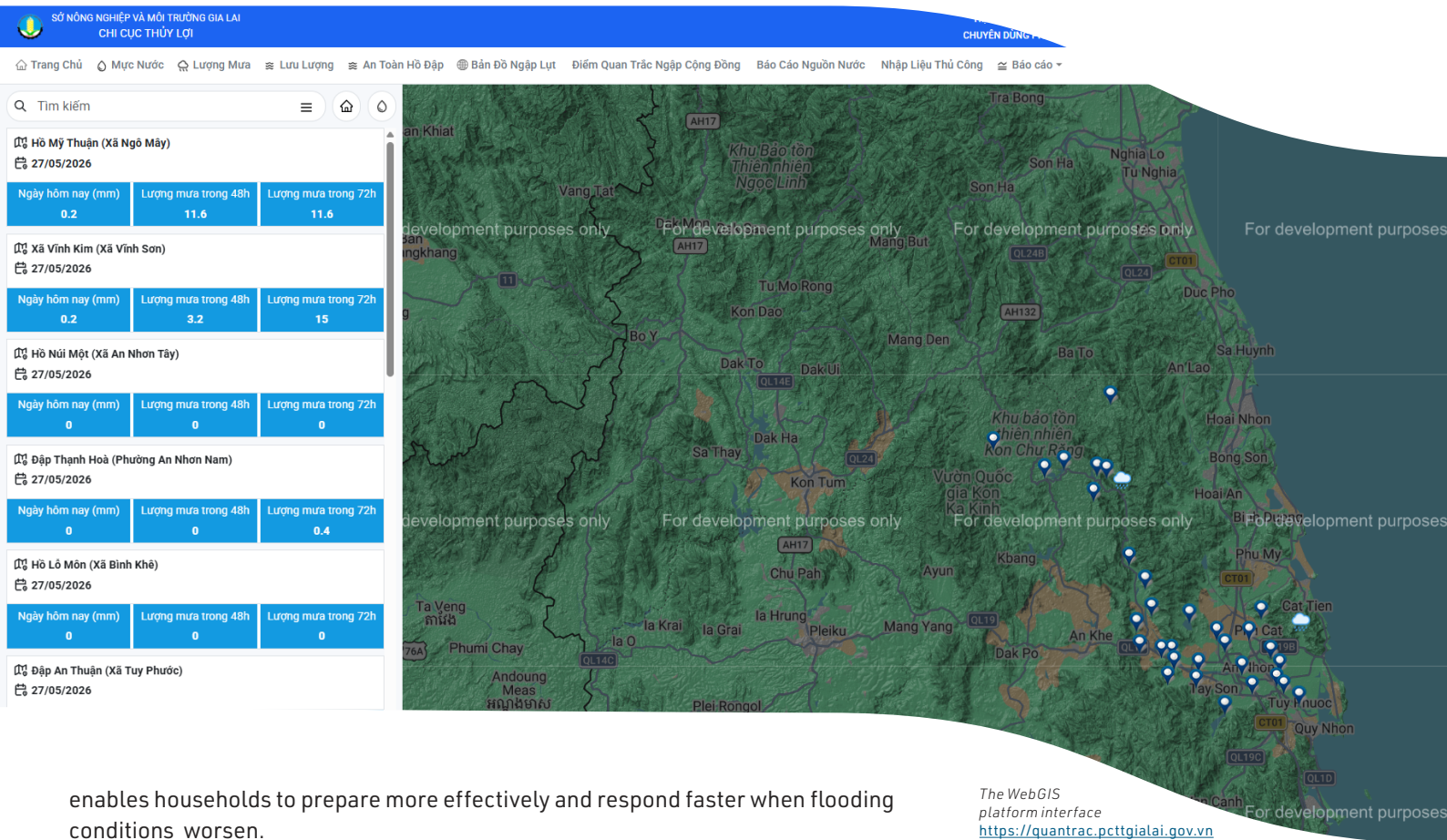
A: Clear provincial leadership, adequate IT infrastructure and human capacity, province-authorized server for hosting and system integration, sustain budget and commitment for annual operation and maintenance.

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

A: Strong commitment and support of local governments, dedicated DRM staff.



Web GIS tool discussion
© Photo: Tuan Nguyen, CCCO Gia Lai



enables households to prepare more effectively and respond faster when flooding conditions worsen.

Over time, the structured digital archive generated by the system strengthens anticipatory planning, supports more accurate flood-scenario analysis, and informs long-term decisions on infrastructure investment, land-use planning, and reservoir operation.

Co-benefits

The WebGIS also streamlines data workflows, reduces staff workload, and enhances transparency by providing a single, authoritative source of hydrometeorological information. Its modular design supports long-term digital transformation in the DRM sector, facilitates inter-agency coordination, and strengthens institutional accountability through traceable, continuously updated data records that also contribute to post-event analysis.

The WebGIS platform interface <https://quantrac.pcttgialai.gov.vn>

Get in touch

For questions, contact:
Toan Vu, Technical Lead, ISET
Vietnam, toanvu@i-s-e-t.org

For more resilience solutions:
i-s-e-t.org/category/solutions

Follow us on LinkedIn 



The Institute for Social and Environmental Transition – International (ISET) is a non-governmental organization committed to building inclusive and transformative resilience in the face of natural resource, environmental, and social challenges, especially related to climate change, natural hazards, and urbanization. Officially operating in Vietnam since 2010, ISET has an intimate understanding of Vietnam’s institutional landscape and its strengths and challenges, and has proven expertise in working effectively across levels to bridge the still significant divide between science, policy, and implementation. ISET is working in Huế City and Gia Lai Province, both coastal areas in central Vietnam and Cần Thơ city in the Mekong Delta.