



Impact Forecast Mapping: Identifying Urban Areas Most Vulnerable to Heat Waves



German Red Cross

Waves

“FBF READY” IN HANOI, VIETNAM

In January 2018, the Vietnam Red Cross Society (VNRC) and German Red Cross (GRC) launched the “FbF Ready” project in Hanoi, Vietnam. The project seeks to identify early actions that can reduce the negative health impacts of heat waves.

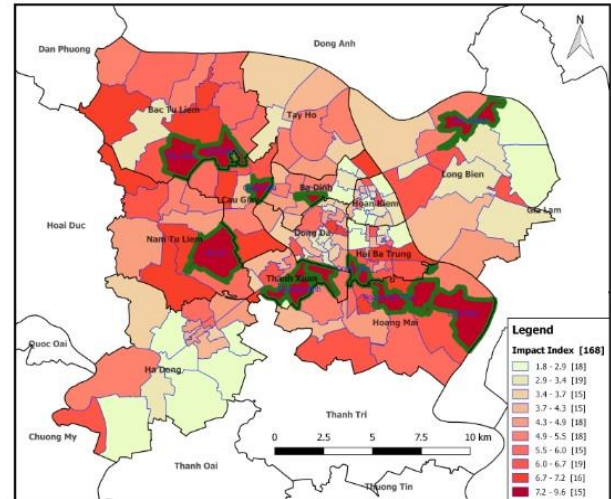
The project is the first to bring FbF into an urban setting, which requires a new approach to identifying who the most vulnerable populations are and where they are living.

IDENTIFYING A METHODOLOGY GAP

Early in the project cycle, “FbF Ready” staff understood that a mapping methodology sensitive to the urban environment was necessary.

More specifically, the high population density of a city and the high variability in housing quality and condition means

HEATWAVE IMPACT FORECAST MAP IN HANOI



The most at-risk areas within Hanoi 12 urban districts and 168 wards (in darker and green boundaries).

that the potential beneficiaries of the project’s actions became quite difficult to identify and localize. In other words, the team needed to answer these questions:

Who are we going to help? Who are the most vulnerable?

Where are the sites of highest heat exposure in the city? Where are the most vulnerable populations located?

To address this methodological constraint, the project’s team worked with

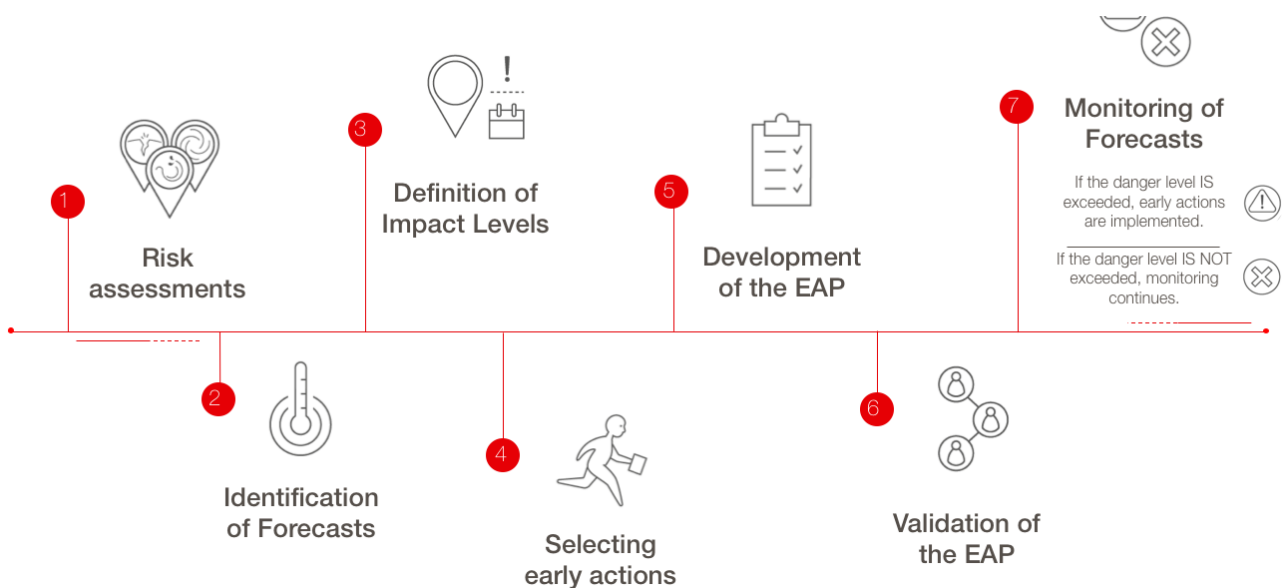
two national experts on remote sensing and GIS mapping to design an easily replicable methodology for supporting the beneficiaries' selection as well as the selection and the targeting of project areas. This **decision-making methodology** is software-based and produces three layers of information (**vulnerability, exposure and hazard**) with which to gauge the sites of greatest impact.

MAPPING THE IMPACT OF HEATWAVES

Using Geographic Information System (GIS) and the GADM (database of Global Administrative Areas), the VNRC and GRC

conducted a city-wide survey and developed three maps representing the **vulnerability, exposure and hazard** across Hanoi's 12 districts and 168 wards. The three layers taken into account were as follows:

- Vulnerability: identifies and quantifies the total population of the most vulnerable groups (children under 5 y.o., elderly and people with disabilities)
- Exposure: identifies and quantifies the total population that live in slum areas and in poor houses with no access to air-conditioning.



Above: The "FbF Ready" project's progress as of March 2019. Before identifying the forecasts and defining the impact levels at which early actions will be triggered, the VNRC and GRC has conducted extensive surveys and assessments to understand the impact of heatwaves on Hanoi's most vulnerable populations.

(1) "Forecast-based Financing: A new era for the humanitarian system," International Federation of Red Cross and Red Crescent Societies, 2018.

- Hazard: shows the “urban heat islands” distribution for the city of Hanoi provided by the Institute for Meteorology, Hydrology and Climate Change (IMHEN).

What is obtained after combining these three layers of information is an Impact Forecast Map or a Targeting Map which helps to identify the most at-risk wards.

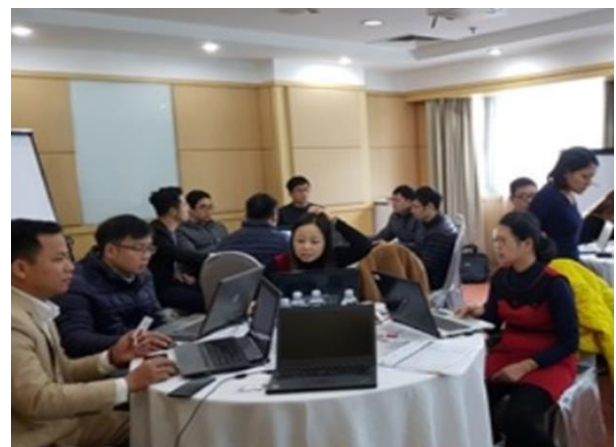
CAPACITY BUILDING

In mid-December, 2018 a workshop brought together GRC, National and City-level VNRC and IMHEN, and intended to (1) train and (2) test the mapping methodology in Hanoi.

The mapping methodology will be replicated in 33 provinces out of the 68 that exist in Vietnam with the possibility to be used for other weather extreme events that affect the country.

Both the methodology and the training will also be converted to an online tutorial/webinar for further replication. This will boost the capacity building of the VNRC and different stakeholders in the country.

Additionally, a pool of 4-5 GRC and VNRC trainers will be able to train other FbF practitioners at national and international level so the methodology can be used to support decision-making in the selection of target populations and areas in FbF projects.



Participants work in groups to learn QGIS mapping techniques during a December, 2018 training.

