

Step 4: Identify key vulnerability indicators

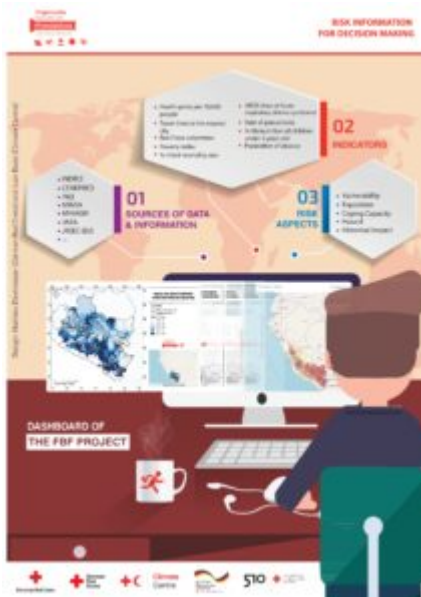
For an impact-based forecast/trigger model to function it is essential to know who and what is most likely to be impacted. Once we know in general who and what is exposed to harm, then we need to know why they are impacted negatively. The vulnerability (and capacity) analysis is the basis to help in the prioritization of geographical areas, communities, households and even individuals who are more likely to be impacted by a hazard.

We need to identify and agree on the indicators of vulnerability – down to the smallest administrative unit possible – to be used in the trigger model. For example, if the morbidity and mortality of children under five due to floods is the priority impact, children under five are the exposed element. We then need to know the underlying causes of the problem and who amongst all the children are the most vulnerable. Vulnerability indicators could be poverty, malnutrition, existing mortality and morbidity, and/or the number of children per household. In some cases, coping capacity (e.g. access to health care) can also be integrated into the trigger model. In some cases, data on certain indicators might not be available or may be outdated or unavailable in sufficient granularity. In such cases, consider the use of proxy indicators (e.g. high levels of poverty can imply that quality of housing is poor).

Key questions:

- How are impacts related to the underlying causes of vulnerability? For example, people with houses made from low-quality materials will be vulnerable to storms or earthquakes. However, more indirect vulnerabilities such as poverty, literacy and access to electricity might play a role in people's ability to prepare for and cope with impact.
- What are the vulnerability indicators that are related to the identified disaster impact and exposed elements?
- Which vulnerability indicators can be used in the trigger model? What is their quality? Are they at a sufficient geographical scale to be used for decision-making? How often are they updated?
- Which vulnerability indicators are redundant (e.g. education levels and literacy), and which indicators provide new information?

Once the vulnerability and exposure indicators are defined, a composite *updatable* vulnerability index can be developed as one layer of the impact-based forecasting trigger model. If you are developing a composite index, be careful about which contributing layers you select and how much weight you assign to each indicator, so as not to over-weigh certain patterns of vulnerability. Remember not all indicators have the same level of quality and granularity; therefore, sometimes using less indicators of better quality for the index is a better option than many of poor quality.



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The number of indicators can be narrowed by concentrating on those most relevant for the specific hazard of interest. For example, building quality will be mapped for cyclones but may not be relevant for droughts. For droughts 'changes over time in school attendance' is a relevant vulnerability indicator, but less so for cyclones. It is important to reach agreement among the key actors on the choice of indicator.