

2.4.1

SERIES 2

Understanding
Vulnerability & Risk



Activity 2.4.1

Mapping Hazard Exposure

One component of vulnerability is exposure—putting people, infrastructure, and assets in areas where hazards occur. In this activity, you will explore the types of climate hazards that currently affect your city, map the areas of the city impacted by each type of hazard, and note the severity of impact in each area. For this activity, you will focus on climate hazards, such as flooding, storm surge and tidal damage, erosion, landslides, forest fires, and drought. Geological hazards such as earthquakes, volcanoes, and tsunamis do not need to be mapped.

IN THIS ACTIVITY YOU WILL:

- ✓ Explore the types of climate hazards that impact your city;
- ✓ Sketch a map of your city and identify areas of the city that are exposed to or repeatedly affected by climate hazards; and
- ✓ Indicate the severity of these climate impacts using a qualitative scale of Low, Medium, High, and Severe.

ACTIVITY 2.4.1: MAPPING HAZARD EXPOSURE

INSTRUCTIONS

For this activity, you will begin by discussing the hazards that impact your city and recording the key points from your discussion in the table provided. The first line has been filled in as an example. Note: you may want to address things like annual flooding, flooding caused by intense individual rainstorms, and catastrophic monsoon-induced flooding as different hazards, particularly if the types of damages, areas affected, or duration of the events is significantly different.

1. Discuss as a group the types of climate hazards that impact your city. Write down the hazards you identify. These could include, but are not limited to: annual floods, major floods, typhoons, drought, forest fires, intense rainfall events, heat waves, cold snaps, early monsoon, late monsoon, landslides, etc.
2. How frequently does each of these hazards occur? Are they annual events? Every decade? Every hundred years?
3. What areas are impacted? Are hazard impacts broadly distributed or generally concentrated in small areas? Are all impacted areas affected equally?
4. What are the impacts of each hazard? Are damages economically large? Can the hazard impacts result in loss of life? Do impacts disrupt city life and the lives of citizens for extended periods of time? Are a high number of people impacted in a given event?
5. How would you prioritize this hazard? Is it of major concern in your city? Is there city planning around responding to the impacts of this type of hazard (e.g. a Disaster Risk Response plan or similar)? Is there an early warning system in place to warn of the potential arrival of this hazard? Rate the priority as Low, Medium, High, or Severe.
6. Finally, note anything else that comes up in your discussions in the Additional Notes column.

Part 1: Complete the matrix below

Hazard	Frequency	Area impacted	Impacts	Hazard priority	Additional notes
Annual flooding	2-3 times per year during rainy season	Rice fields, areas near lagoon, areas along river that are not dike-protected.	Inconvenient to those living in flooded areas, sometimes crop loss, impacts to transportation on smaller roads.	Low	Priority can be medium if flooding coincides with high tides. Severity increases because damage to homes and crops increase, length of inundation increases, impacts to transportation and transportation infrastructure increase.

Part 2: Next, locate the areas impacted by each of the hazards you have discussed on a map of your city.

1. Begin by sketching a map of your city (if city maps are available, and you are comfortable writing and drawing on them, feel free to use them).
2. On your map, outline the areas impacted by the climate hazards you identified above. Start with the hazards you identified as the highest priority. If the map is getting too crowded by the time you have added two or three hazards, but there are other hazards that are still high or severe priority, start a second map.
 - If you can, use a different color for each hazard type.
 - Within each hazard area you have outlined, write down approximately how often that hazard occurs and note the priority level you assigned that hazard.
3. Review your map – which areas of your city are most exposed to climate hazards? Where do the highest priority hazards occur? Do these overlap with the areas of highest impact? Discuss your results briefly.
4. Mark critical infrastructure on your map. Make particular note of facilities that are in areas that have been repeatedly exposed to a particular hazard, whether they were damaged or not.

- Hospitals, schools
- Electricity generating plants
- Waste water treatment plants
- Drinking water treatment plants or community wells
- Airports
- Bus terminals, train stations
- Markets
- Roads, railroads, or other transportation lines
- Ports

Share and discuss your results with the full group. Have you learned or noticed anything about your city's climate exposure that you hadn't been aware of prior to this activity?

Are there specific locations within the city, specific groups of people, or specific city systems that are more susceptible to hazards than others?

Are there climate hazards you did not discuss or map, such as drought-related food shortages resulting from droughts occurring elsewhere in your country or even in another country? Or closure of major transportation routes due to landslides that occur well outside city boundaries but nonetheless impact commerce in the city? Because cities are dependent on goods and services drawn from a much

larger area than the city boundaries, even climate events in far-distant locations can have significant or even devastating impacts on your city. If you have not already, briefly discuss how national, regional, or even global climate events impact your city. Add additional hazards to your table or maps if appropriate.

Save the maps and table you have produced; you will refer back to them in future activities in this Series.