2.6.1

SERIES 2
Understanding
Vulnerability & Risk

CLIMATE RESILIENCE FRAMEWORK
ISET-INTERNATIONAL

Exploring System Vulnerability

Activity 2.6.1

Every city system, function, service or infrastructure is vulnerable to climate hazards. Systems are vulnerable because of their fragilities, which are a function of agent decisions in designing the systems, on institutions governing system operation and maintenance, and on the location and construction of the systems themselves (exposure). In Set 2.5, you explored the vulnerability of one group of people in your city. You can use information from that Set and from Sets 1.2 and 1.5 to help answer some of the questions in this activity.

IN THIS ACTIVITY YOU WILL:

- ✓ Explore the underlying fragilities and capacities that made a particular city system, service or function more susceptible to suffering harm during recent climate hazards (i.e., weak building codes or ecosystem degradation that you identified in the city development activity); and
- ✓ Map where this system is located in your city on the hazard exposure maps you created in Activity 2.4.1.

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ACTIVITY 2.6.1: EXPLORING SYSTEM VULNERABILITY

1. Pick one city service, function or system from the list below. If you want to explore a different system than what is listed here, you can.

    - Drinking water
    - Electricity generation
    - Transportation networks: roads, railroads, etc.
    - Wastewater and storm water
    - Solid waste management
    - Health services
    - Urban Agriculture
    - City food supply
    - Urban planning and land use development
    - City and peri-urban ecosystems
    - Construction

2. Draw on the hazard exposure maps from Activity 2.4.1 where this system is located in your city (or start a new map if you did not do Activity 2.4.1).

3. Answer the following questions about this system. While you are answering each question, decide whether your answer represents a capacity or a fragility. If it is a capacity, mark it with a +. If it is a fragility, mark it with a - .

AGENTS

WHAT SYSTEM: _____	WHAT FUNCTION(S) THIS SYSTEM PROVIDES:	
	[+ / -]	COMMENTS
Is this system formally managed by some city agency, organization, or department?		
Who—government agency, city council, mayor, etc.—makes the laws and policies determining how this system is managed and how it should function?		
Who is officially in charge of taking care of this system?		
Who—community group, NGOs, households, etc.—manages this system for different areas of the city?		
If this system is damaged, how long does it take for repairs to happen? Who makes the repairs?		
Who—community groups, economic sectors, households, etc.—depends on this system for business or domestic needs?		
Who does not have regular access to this system, but could benefit from better access?		

SYSTEMS

WHAT SYSTEM: _____		WHAT FUNCTION(S) THIS SYSTEM PROVIDES:
WHAT SYSTEM:	**[+ / -]**	**COMMENTS**
What areas of the city have good access to this system?		
Which areas of the city are not served by this system?		
Do city residents and businesses have to pay for access to this system? If so, how much?		
Does the revenue collected cover the costs of maintaining this system?		
If this system is disrupted or fails—such as an electricity outage—what other city systems, services or infrastructure are negatively impacted?		
If this system is disrupted or fails, what do city residents and businesses do in order to keep working or meeting household needs? For example, households have back-up generators if city electricity fails; households purchase water from tankers if water pressure is too low.		
What infrastructure increase the hazard exposure of this system? For instance, paved and raised roads can increase flood depths in the surrounding areas and damage other systems.		

INSTITUTIONS

WHAT SYSTEM: _____		WHAT FUNCTION(S) THIS SYSTEM PROVIDES:
WHAT SYSTEM:	**[+ / -]**	**COMMENTS**
What laws and policies govern how this system is formally or informally managed and taken care of?		
Do these laws and policies require different building techniques and materials if the system is located in a hazard-prone area? For instance, no buildings within 100 metres of a river must be elevated 1 metre above the ground.		
Do these laws and policies encourage flexibility and redundancy within the system, so that if it fails in one part of the city, it will not fail in other parts? For example, supporting household rainwater harvesting as supplemental water supply.		
Does the city have disaster risk reduction or emergency management plans? If so, do these plans influence land use planning, building codes, and environmental protection standards?		
What kinds of laws, policies or programs exist to build disaster resilient infrastructure and improve the quality of life for residents and businesses in informal settlements?		
What kinds of laws, policies or cultural practices prevent certain residents or businesses from accessing this system?		