

# 2.5.0

## SERIES 2

Understanding  
Vulnerability & Risk



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# POVERTY AND VULNERABILITY

Vulnerability is often equated with poverty; “vulnerable” populations are identified by per capita or household income. Yet, this is often an oversimplification and may overlook many highly vulnerable groups and households because they have slightly more, or even significantly more, income than the poverty cutoff. This is particularly true in urban environments, where the factors contributing to and maintaining vulnerability can be complex. In this set, you will explore the concept of vulnerability and the factors that contribute to creating and maintaining vulnerability, such as lack of supporting systems, or institutions which limit access to systems or livelihoods or otherwise limit the agency of those who are vulnerable, constraining their ability to act on their own behalf.

### IN THIS SET YOU WILL:

- ✓ Explore the relationship between poverty and vulnerability;
- ✓ Consider how urban vulnerabilities differ from rural vulnerabilities and what this means for entry points for building resilience; and
- ✓ Unpack the underlying vulnerabilities—such as little access to medical care or lack of land tenure—that make a particular group of agents more susceptible to suffering harm during a climate hazard event.

## Vulnerability

Vulnerability is the degree to which someone or something (agents and the systems on which they depend) can be affected by exposure (e.g. short-term climate hazards such as storms or long-term changes such as sea level rise) and their ability to anticipate, prepare for, and/or respond to the impacts of that exposure. Vulnerability depends on a range of physical, social, human, economic, and environmental factors that increase susceptibility to climate change impacts and that affect adaptive capacity.

Vulnerability assessments are about understanding people and systems, to what they are vulnerable, the factors contributing to vulnerability, and their capacity to adapt.

Women and men of different social groups have different vulnerabilities to climate impacts and different adaptive capacities for addressing those impacts. This is in part due to differing roles, opportunities, and access to resources. Lack of access to services, economic poverty, and cultural norms often further exacerbate social and gender differentiated vulnerability. Compounding these factors, socially marginalized groups and poor populations are seldom involved or given voice in decision-making processes related

to short or long-term planning for climate change. As a result, their concerns are less likely to be known by decision-makers or addressed in relevant policies and practice.

The most poor are almost always among the most vulnerable populations in a given area. They lack the resources to prepare for or recover from climate disasters, have limited livelihood options, often lack access to basic services and systems, and their ability to implement adaptive strategies (e.g. growing their own food, building more secure housing, etc.) are often limited by institutional constraints (e.g. lack of land for agriculture, lack of secure tenure to support investment in more secure housing, etc.). However, while all poor may be vulnerable, not all the vulnerable are poor. Those engaged in climate-sensitive economies (for example, agriculture or fishing), or on economies reliant on climate-sensitive inputs (for example, clothing manufacturers reliant on a steady supply of cotton), may be heavily impacted by climate change though they have not traditionally been seen as “vulnerable”. Age may also place certain populations more at risk, such as children and the elderly, who may be more susceptible to health impacts. Even within poor populations, there will be those who are more vulnerable than others. Two households with the same number of people and the same household incomes may have very different vulnerabilities if one household has access to credit and the other does not.

Analyzing how different social groups, including women and men, may be vulnerable to climate impacts and assessing their differing adaptive capacities is critical to develop strategies to reach these groups, reduce their vulnerability, and strengthen their resilience. Those likely to be vulnerable to climate impacts include, but are not limited to:

- Slum, squatter, and migrant populations resident in informal settlements. These settlements are often located in physically vulnerable locations. Economic poverty, limited access to services such as water, energy, health and finance, and insecure tenure exacerbate vulnerabilities. Shelter may be limited or of poor quality and unable to withstand or function well during extreme climate events;
- Those engaged in climate sensitive livelihoods such as agriculture, livestock, aquaculture, and fisheries, which are key livelihoods in urban, peri-urban, and rural areas;
- Industrial and informal sector workers, whose occupations place them at significant risk to natural hazards or poor working conditions;
- Children, the elderly, and the physically handicapped who may lack the mobility, resources, or physical stamina to prepare for or cope during climate hazard events; and

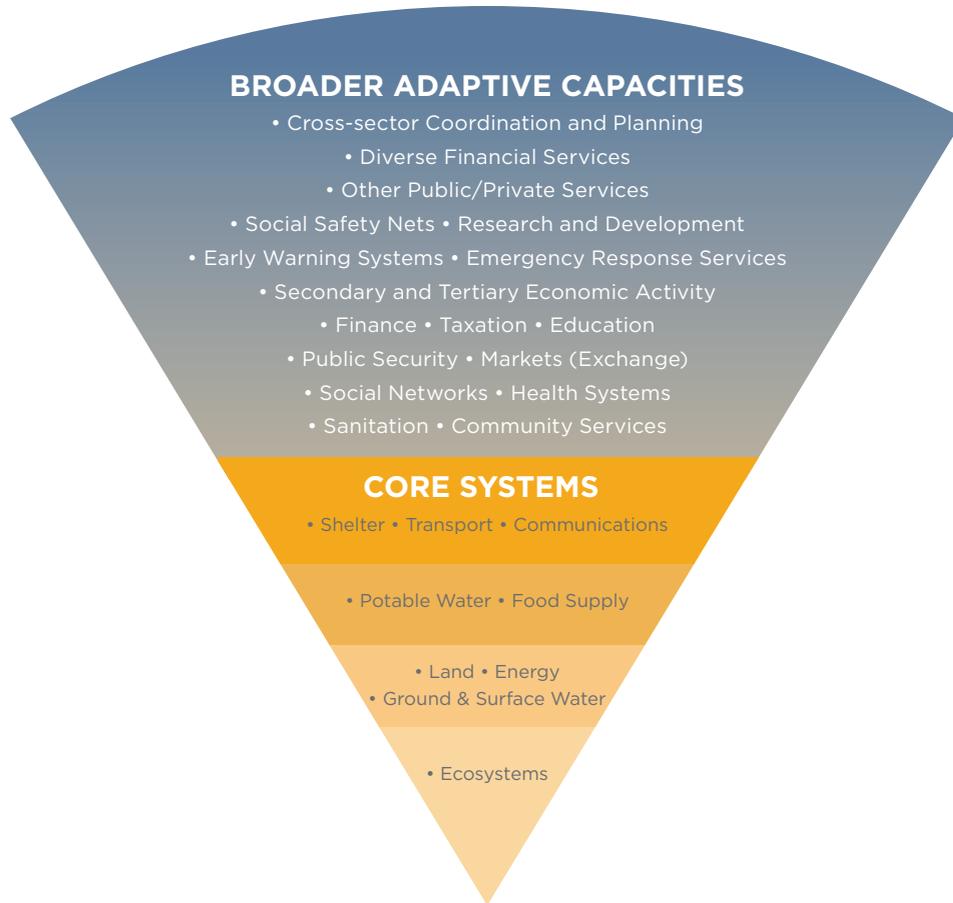
- Women, due to limited economic assets and cultural barriers around access to knowledge, education, or financial services that would otherwise support them to adapt.

## Vulnerability in Urban Contexts

A critical element of vulnerability in urban environments is access to core systems. If core systems are fragile, and fail during climate hazard events, or if institutions limit access to those systems, the people dependent on those systems will be highly vulnerable. Figure 2.5.1 illustrates core and higher systems. Only when core systems are in place can higher systems begin to be developed and/or used. Consequently, a key element of assessing vulnerability is understanding how vulnerable groups access core systems, the types of factors that constrain or limit that access, and whether the core systems themselves are fragile to climate exposure (system fragility is addressed in Set 2.6).

Moving beyond poverty in identifying vulnerability, particularly in an urban environment, can be complicated. Vulnerability may depend on places people live (e.g. exposed floodplains), the strength of their houses, or the functioning of communication and transportation systems at times of

**FIGURE 2.5.1: Systems graphic, illustrating core and broader adaptive capacity systems**



floods. It may depend on social dimensions such as age and gender, low caste or ethnic groups, levels of family and social networks, access to health and other services, or political stability. It may also depend on the level of disaster preparedness. Levels of education, literacy, and even attitudes of helplessness may also affect vulnerability. Low incomes or loss of financial assets may inhibit people's opportunity to recover. Similarly, economies lacking a diverse productive base may be more vulnerable. Environmental factors such as obstruction of natural drainage systems, unstable slopes due to deforestation, limited fish stocks, and limited availability of water affect the ability of social and ecological systems to respond to climate changes. These factors contributing to vulnerability are inherently connected. For example, changes in environmental factors, such as lack of water availability or reduced water quality during a drought can directly affect the food security and health of populations, rendering them even more vulnerable. Simultaneously, built infrastructure such as water treatment or cell phone towers could be impacted by low flows and associated reduction in hydroelectric power. Rolling blackouts and reduced reliability of the communications network would place additional stress on vulnerable groups.

Identifying core vulnerabilities among populations, particularly in urban environments, requires engagement with the populations themselves. Tools such as Vulnerability

and Capacity Assessments, household surveys, household histories and narratives, key informant or focus group interviews and other similar techniques are required here to gain a solid "bottom-up" understanding of the issues. As you conduct your bottom-up analysis, you will want to note, in particular, existing resilience capacities and strategies exhibited by your target groups. Table 2.5.1 provides an example of what capacities and vulnerabilities might look like in practice.

**TABLE 2.5.1: QUALITATIVE VULNERABILITY AND CAPACITY MATRIX FOR WOMAN-HEADED BUSINESSES AT A CITY MARKET.**

Who or What	FLOOD HAZARD (TO WHAT)			Exposure (Why)
	Capacities/ Vulnerabilities (Why)			
	Agents	Access to Systems	Institutions	
Women-headed Businesses at the City Market (Agents)	<p>Capacities:</p> <ul style="list-style-type: none"> <li>Formation of a women micro-finance support group</li> <li>Informal support group of women-owned small business</li> </ul> <p>Vulnerabilities:</p> <ul style="list-style-type: none"> <li>No connections to city government</li> <li>No representation on the formal business and economic development board</li> </ul>	<p>Capacities:</p> <ul style="list-style-type: none"> <li>Good roads and bus system to allow women to move goods to market</li> <li>Electricity and piped water at the market for small manufacturing.</li> </ul> <p>Vulnerabilities:</p> <ul style="list-style-type: none"> <li>Semi-permanent stalls are easily damaged during floods.</li> <li>No formal insurance to recover losses from floods.</li> <li>No solid waste pickup at market. Waste clogs the paths and increases flood depths.</li> <li>Low incomes and little economic diversity</li> </ul>	<p>Capacities:</p> <ul style="list-style-type: none"> <li>New laws to help women start businesses</li> </ul> <p>Vulnerabilities:</p> <ul style="list-style-type: none"> <li>Strong cultural discrimination against women doing business</li> </ul>	<ul style="list-style-type: none"> <li>The women-owned businesses at the market are confined to the low-lying area of the market. Consequently, their stalls flood first during heavy rainstorms.</li> </ul>

## Building Resilience Among Vulnerable Groups

Within the framework, building resilience of agents means building the capacities of social agents to access and maintain urban systems and to develop adaptive responses. Key capacities that contribute to agent resilience and adaptation include the following:

- Responsiveness:** capacity to organize and re-organize in response to opportunity; ability to establish function, structure, and basic order in a

timely manner in response to a disaster event. For example, household emergency preparedness.

- Resourcefulness:** capacity to identify and anticipate problems, establish priorities, and mobilize resources for action. This includes the capacity to visualize and plan, which may require collaboration. It also includes the ability to access financial and other resources, including those of other agents and systems in order to take action.

- **Capacity to learn:** ability to learn from past experiences in ways that avoid repeated failures and improve performance, as well as to learn new skills.

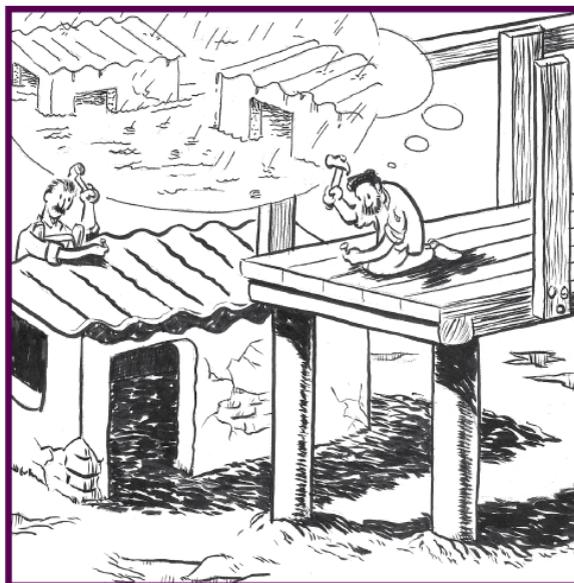
Often interventions to reduce vulnerability to disasters focus on reducing sensitivity to climate hazards, such as building higher dikes along flood prone rivers or sea walls as coastal defense mechanisms, rather than strengthening resilience and adaptive capacity of those being impacted. However, current approaches to disaster management and infrastructure engineering may be less appropriate when climate becomes more variable. The issues may be not simply engineering standards, but the whole approach to engineering (e.g. safe fail designs instead of fail-safe); this is discussed further in Set 2.6. Supporting autonomous adaptation by systematically building the resilience of vulnerable groups, rather than very costly high standard infrastructure that cannot be feasibly protected from extreme events, is likely to prove increasingly cost-effective.

Activities 2.5.1 and 2.5.2 will lead you through an initial exploration of vulnerability and resilience. As you engage in these activities, keep in mind the definition of vulnerability:

Who might suffer harm, **because of what** and **why**.

As you explore vulnerability, look beyond just who is vulnerable. Deeply explore the **because of what** and **why** elements of vulnerability. If they are vulnerable “because”

they have to rebuild their housing every year and it keeps them in poverty, then explore **why** they have to rebuild their housing. What keeps them in poor housing? What keeps them located where they are? What prevents them from being responsive? What resources would they need to better respond? What have they learned from past events and what keeps them from adapting more effectively to future events? This deeper understanding will build the foundation on which resilience actions can be identified, prioritized, and implemented.



 **AGENTS**  
Capacity to Learn

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