

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

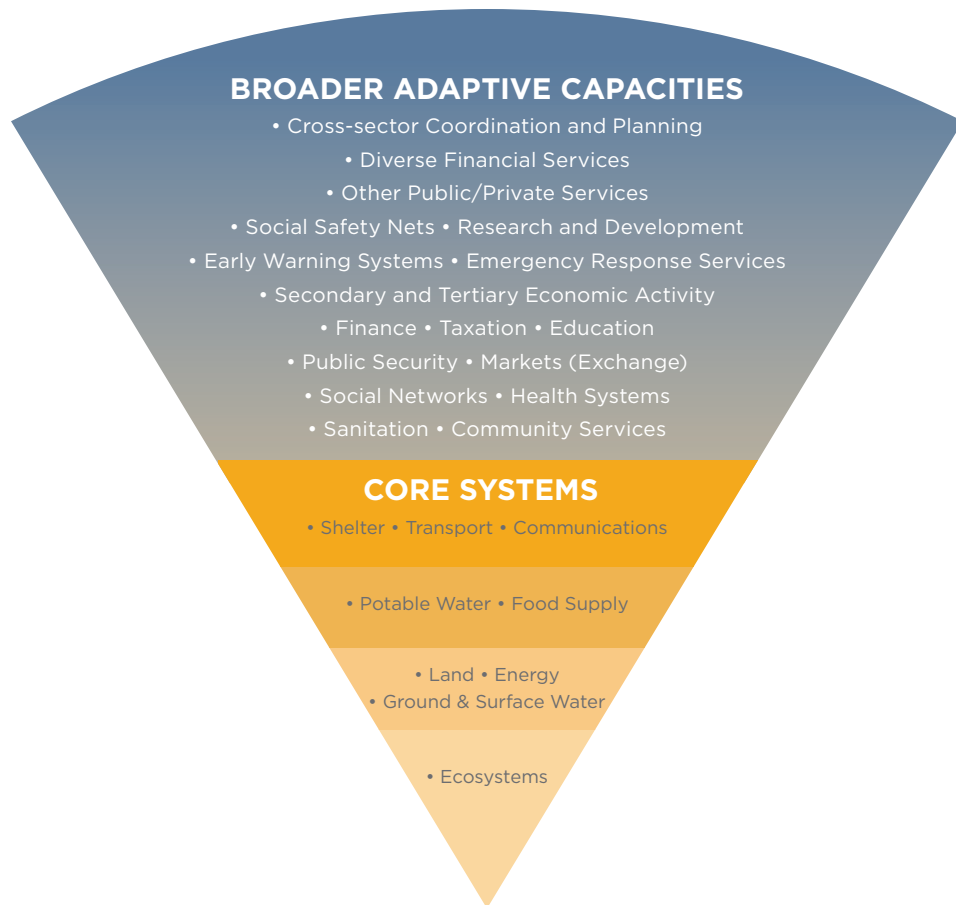
- Women, due to limited economic assets and cultural barriers around access to knowledge, education, or financial services that would otherwise support them to adapt.

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"> • Formation of a women micro-finance support group • Informal support group of women-owned small business <p>Vulnerabilities:</p> <ul style="list-style-type: none"> • No connections to city government • No representation on the formal business and economic development board 	<p>Capacities:</p> <ul style="list-style-type: none"> • Good roads and bus system to allow women to move goods to market • Electricity and piped water at the market for small manufacturing. <p>Vulnerabilities:</p> <ul style="list-style-type: none"> • Semi-permanent stalls are easily damaged during floods. • No formal insurance to recover losses from floods. • No solid waste pickup at market. Waste clogs the paths and increases flood depths. • Low incomes and little economic diversity 	<p>Capacities:</p> <ul style="list-style-type: none"> • New laws to help women start businesses <p>Vulnerabilities:</p> <ul style="list-style-type: none"> • Strong cultural discrimination against women doing business 	<ul style="list-style-type: none"> • 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.

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.

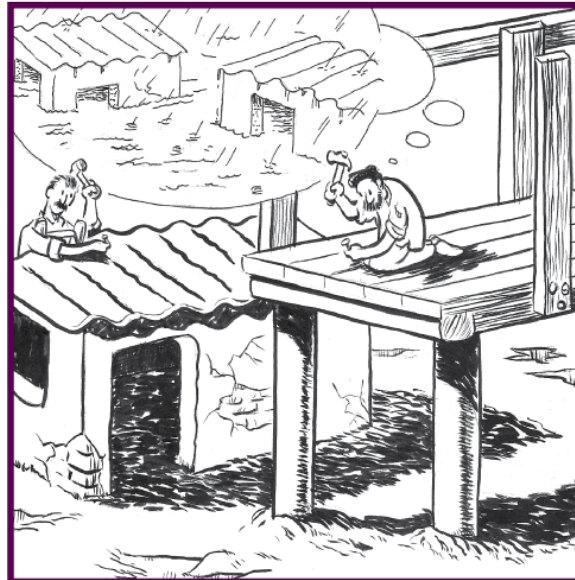
Often interventions to reduce vulnerability to disasters focus on reducing sensitivity to climate hazards, such as building higher dikes along flood prone rivers or sea walls as coastal defense mechanisms, rather than strengthening resilience and adaptive capacity of those being impacted. However, current 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.



2.5.1

SERIES 2

Understanding
Vulnerability & Risk



Responding to Crises

Activity 2.5.1

Different people have different strategies and resources for responding to a crisis. What are yours? In this activity, we will explore what you and the other members of this training would do to respond during a crisis.

IN THIS ACTIVITY YOU WILL:

- ✓ Explore the types of strategies and resources you and your colleagues use to respond to crisis situations.

ACTIVITY 2.5.1: RESPONDING TO CRISES

INSTRUCTIONS

Consider what types of events would be a shock or crisis for your family. This could include natural disasters (droughts, floods), epidemics, inflation, loss of land due to planning, damages to your home or the home of an extended family member, death or major illness of a family member, loss of job, etc. Choose one shock or crisis that could realistically happen to you or your extended family. If you or your extended family have recently experienced a shock or crisis, you are welcome to use that experience for this exercise if you would like to.

Now, find one person to work with. Work as a pair to answer the questions:

- How do you respond if you experience a shock or crisis? What resources would you call on?
- Are there strategies you do employ, or could employ, to avoid this type of crisis in the future?

For example, if you suffered a health crisis, do you have access to medical care? Would you use savings to go to the doctor? Would family members help out, either financially or

by looking after children or providing food? What kind of daily support might you need and where would you go to get it? What types of activities do you do now that you might have to give up, at least temporarily?

If your crisis is the primary wage earner in the family losing their job, would that wage earner move to a new city for work, or ask influential friends to help them obtain a new job? If the primary wage earner moved to another city, how much of the family would move with them? No one? Just the immediate family? The entire extended family? If some of the family did not move, how would the daily routine of the family be impacted? Would they need to rely on extended family and friends for additional support?

Spend some time to explore your crisis, what it would mean for your life, and all the resources you can tap into to respond to that crisis. Consider city or national systems, such as health care, job boards, or access to loans that could help you respond. Consider personal resources, such as education, connections through family or professional or social groups, or financial savings that you might take advantage of.

Consider the network of family and friends you might rely on and what sort of support they would or could provide.

Take turns with your partner discussing and questioning one another regarding your selected crisis and the resources and strategies you would use to address it. Then, reconvene in the full group and briefly report back the results of your discussions.

Discuss in the full group how this exercise illustrates a step of the analysis required in a vulnerability assessment: looking at the needs that different crises pose and identifying the resources needed to meet all those needs.

Keep this exercise in mind as you move to the second activity in this set. In activity 2.5.2, you will explore vulnerability. As you do this, consider the resources the people in this training group have access to. What types of resources could poor or vulnerable groups access if faced by a similar crisis? If you don't know, where could you look, or what type of study could you undertake, that could provide answers to these questions?

2.5.2

SERIES 2

Understanding Vulnerability & Risk



Activity 2.5.2

Exploring Vulnerability

Every person living and working in your city or the city periphery, including you, is exposed to climate hazards. Different groups of people suffer different levels of harm during climate hazards, economic crises, or other difficult times because they have different strengths (capacities, including access to systems and supporting institutions), weaknesses (vulnerability, including lack of access to systems and constraining institutions), and degree of exposure to the particular disruptive event. In this activity, you will select a particular vulnerable group in your city and explore that group's capacities and vulnerabilities, including: the laws, policies, and customs that limit or help this group of people; the types of resources they have available; and their access to city services, functions, and ecosystems.

IN THIS ACTIVITY YOU WILL:

- ✓ Discuss whether poverty and vulnerability are different ideas in your context;
- ✓ Explore “what is poverty” and “what is vulnerability;” and
- ✓ Identify existing information about or representation of poverty and vulnerability in your city.

ACTIVITY 2.5.2 : EXPLORING VULNERABILITY

INSTRUCTIONS

PART 1: POVERTY VS. VULNERABILITY

Are poverty and vulnerability the same or different? Start by discussing whether poverty and vulnerability convey different information in the context in which you are working. What does “poverty” mean? What does “vulnerability” mean? If you are working in a language other than English, when you translate these words, do they both translate to the same word in your language? If you cannot distinguish between these, then do this exercise just for the one poverty/vulnerability concept you have.

Discuss as a group, ‘what is poverty?’ Some questions you might want to consider are:

- Is there an official ‘poverty line’ in your city, a level of income below which a person or family is considered to be “poor”?
- Is poverty solely dependent on income?
- If someone in your city and someone in the countryside have the same income, are they equally poor?
- Is there a measure of poverty that is not tied to income?

Next, explore ‘vulnerability’. Again, questions you might want to consider are:

- Who are the vulnerable people in your city?
- Where do they live?
- What do they do for work?
- What resources do they have that they can use or rely on during disasters or crises?
- What sort of events are “crises” for these people?
- What happens to them during economic downturns or climate disasters?

PART 2: WHO IS VULNERABLE?

Often, city residents have an image of “those people”—the slum dwellers, the migrant workers, the female headed-households, the boat-people—as the vulnerable people in a community. However, there are often other groups, those that are not quite as desperately poor or vulnerable, who are overlooked. In this section, we want to identify those

vulnerable but not quite as desperate groups. These are the groups that can be *unexpectedly* at risk from sudden shocks or crises. For example, barbers can be particularly impacted by economic downturn, because people choose to skip haircuts or cut their own hair.

Some of the questions you might want to explore as you consider this idea are:

- If you have an official “poverty line”, who are the people who lie just above the poverty line? Are they really less vulnerable than those below the poverty line?
- What groups are particularly dependent on weather or climate? This could include those involved in farming, aquaculture and fishing, but also small-scale tourism, the elderly, handicapped or children who might be disproportionately impacted by extreme weather events, migrant workers who depend on climate related employment, etc.
- Are there other groups of people that are not generally considered vulnerable that nonetheless could become vulnerable if conditions shift only slightly?

PART 3: EXISTING INFORMATION

This third section is designed to deepen the discussion around vulnerability by beginning a dialogue around poverty and vulnerability issues and seeing where it goes. If the first question or two take you off in an interesting and useful direction, there is no need to return to the rest of the questions.

- What kinds of information about poverty are there in the city?
- Is there statistical information regarding the distribution of poor people?
- Are there services or safety nets for people living below the poverty line? If so, are the same safety nets or services available for the near-poor?
- Can people be poor because they cannot access social networks?
- Are migrants and people who are not registered considered members or residents of the city? What services and systems do they have access to? Are there laws, policies; or social expectations that limit their access to services that other community members have?
- Is your city an expensive place to live?

- How do people with very little money manage to live in your city? What are their adaptation strategies to compensate for being poor?

PART IV: MAPPING VULNERABLE GROUPS

In Activities 2.3.3 and 2.4.1 you mapped City Development Trends and Hazard Exposure. As part of these exercises, you considered vulnerable groups and areas of the city. If you have access to those maps, work with the first set of questions below. If you don't, work with the second set of questions. Once you have finished either the first or second set of questions (Maps or No Maps), complete the third set of questions (Climate Change).

Divide into small groups of 4–6 people.

Maps: Review your maps from Activities 2.3.3 and 2.4.1:

- Are the vulnerable groups and areas you discussed in this activity represented on those maps? If not, add them, or start a new Poverty and Vulnerability map.
- Do the maps from Activity 2.4.3 indicate high hazard areas that you have not considered in your discussions in this activity?

- If you combine the information from your previous mapping activities with what you discussed in this activity, do you find new areas, groups, or classes of vulnerable peoples that you haven't yet discussed?
- Are there things you have discussed—vulnerable groups or geographic areas, fragile systems, or other information—that are core information about your city's vulnerability that are not represented on your maps? Add them to one of your maps.

No Maps: If you do not have maps from Activities 2.3.3 and/ or 2.4.1:

- Draw a map of your city.
- On the map, identify vulnerable areas or groups.
- Add areas that are heavily impacted by climate hazards. Ideally, sketch in different climate hazards (typhoons, annual flooding, intense rainfall flooding, drought, windstorms, landslides, erosion, etc.) in different colors.
- Add other information that helps explain vulnerability in your city. This might include: sources of water or food; major transportation routes; service coverage such as areas with piped water, electricity, solid waste disposal, sewers; areas with rapid urbanization; etc.

- Is there anything else from your discussions in this activity that should be added to your map? If so, add it now.

Climate Change: On your maps, identify areas, systems, or groups that would be more vulnerable as a result of climate change. For example (this list is not comprehensive—this is just the type of question you might want to consider):

- Are there secondary areas that might flood or be subject to high erosion or landslides if flooding got worse?
- Are there areas that would be impacted by longer or more frequent droughts?
- Are there specific areas/systems/people that would be impacted by heat waves?
- Are there areas that are heavily dependent on tourism that might be impacted by climate-related tourism reductions?

Each small group should share their maps with the full group, with subsequent groups noting just information not included on previous maps.