Flood Resilience Alliance

Glossary

The definitions provided below relate to how these terms are used in the Flood Resilience Measurement for Communities (FRMC). Definitions have been developed by Zurich Flood Resilience Alliance partners from various sources, including UNISDR Terminology.

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2nd source data: Data that has been already collected and is readily available. This may include: information from prior projects or other organizations, census data, national or international data sets incl. government data, online or offline.

4Rs: Each source of resilience is assigned to one of 4Rs, or properties of a resilient system. This "systems analysis" approach takes into account the quality of life, interactions, and interconnections at the community level. The 4Rs are: robustness, redundancy, resourcefulness, and rapidity.

5Cs: Each source of resilience is assigned to one of five capitals (5Cs). The 5Cs that characterize communities are complementary forms of capital that sustain and can help to improve inhabitants' wellbeing. The 5Cs provide a holistic picture of a community's resilience. The multiple capital approach has been popularized by the well-known and utilized Sustainable Livelihoods Framework (DFID). By exploring flood resilience in this way, we are explicitly drawing out the links between flood resilience and development more broadly. The 5Cs are physical, financial, human, social and natural.

Affected: People who are affected, either directly or indirectly, by a hazardous event. Directly affected are those who have suffered injury, illness or other health effects; who were evacuated, displaced, relocated or have suffered direct damage to their livelihoods, economic, physical, social, cultural and environmental assets. Indirectly affected are people who have suffered consequences, other than or in addition to direct effects, over time, due to disruption or changes in economy, critical infrastructure, basic services, commerce or work, or social, health and psychological consequences.

Assets: Buildings, contents, productive assets (incl. equipment, machinery, and vehicles), land and infrastructure.

Baseline: The first application of the FRMC in a community. See also 'T-line study'.

Basin: A river or drainage basin is the area of land delineated by the highest points, in which all the rain falling drains downslope to the same major outlet (a major river, lake, or the sea), the basin is crossed by many streams and rivers that flow downhill into one another, and eventually into their shared outlet. The basin can be thought of as acting like a funnel, collecting all the rain that falls and channeling it down through the land and water bodies, into one outlet. Sometimes the terms river basin or catchment are used interchangeably with watershed.

Capacity: The ability to do a specific thing, which requires having the appropriate knowledge, skills, and resources.

Capital: See '5Cs'.

Cascading failures: When failures in a system lead to a series of failures in the same or other systems. For example, failures in an electricity system can lead to failures across a range of systems that rely on electricity to function, including but not limited to water treatment, communications, transportation, and so on.

Child/Children: People under 15 years of age are considered children in many areas of the tool, for example household surveys cannot be administered to people under 15. People between 15 and 21 can be considered children depending on context: in some communities people under 18 are considered children, but in other communities it

may be people under 16. Therefore, this can be determined on a case-by-case basis if not otherwise explicitly stated.

Coastal floods: Coastal flooding is the inundation of land areas along the coast by seawater. Common causes of coastal flooding are high tide, tsunamis and storm surge.

Coastal zone: The interface between the land and the sea, delineated as the part of the land affected by its proximity to the sea, and the part of the sea affected by its proximity to the land.

Community level context: Within the sphere of influence of the community, aspects that the community has direct control over, for example first aid knowledge.

Community: A “community” could be defined geographically (perhaps in rural contexts) or by administrative boundaries (which may work in more urban situations). However, no single community will “feel” like another and there may be cultural aspects to consider, too. As a result we have concluded that when it comes to ground reality, a community largely defines itself.

Context: Each source is assigned to one of two contexts. This distinction may assist in designing interventions, because it will highlight at which level action or advocacy needs to be targeted. The two contexts are community level, and enabling environment.

Contingency planning: A management process that analyses disaster risks and establishes arrangements in advance to enable timely, effective and appropriate responses.

Coping: The ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or flood disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during disasters or adverse conditions.

Corrective risk reduction: The actions taken to reduce risk to already at-risk assets, such as building levees to better protect existing assets or upgrading the construction of a house so it better withstands flooding, etc.

Critical infrastructure: The physical structures, facilities, networks and other assets which provide services that are essential to the social and economic functioning of a community or society.

Direct impact: The impacts through a direct interaction between a shock or stress and a physical, economic, social, or political component. In the case of flooding, this includes people injured or killed and homes and infrastructure destroyed due to floodwaters.

Disaster risk management (DRM) cycle: The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of a disaster occurring. Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards. The cyclical nature of the DRM cycle means that the stages of the cycle blend into one another. We define five stages of the DRM cycle preparedness, response, recovery, prospective risk reduction, and corrective risk reduction.

Disaster risk reduction (DRR): The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness for adverse events.

Disaster risk: The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, and vulnerability.

Disaster: See 'Flood disaster'.

Early warning system: A system that provides people with advance warning of a potentially hazardous event occurring, giving people time to protect themselves, important assets, and important services.

Empirical validation: By collecting quantitative data on the usefulness of each source, as well as comparing pre-event resilience grades to outcomes, our researchers hope to generate evidence that certain sources of resilience are critical across multiple contexts.

Enabling environment context: Outside the direct sphere of influence of the community, aspects that the community does not have direct control over, for example 'integrated flood management planning'.

Evacuation plan: The arrangements established in advance to enable the moving of people and assets temporarily to safer places before, during or after the occurrence of a hazardous event. Evacuation plans may include plans for return of evacuees and options to shelter in place.

Evacuation: Moving people and assets temporarily to safer places before, during or after the occurrence of a hazardous event in order to protect them.

Exposure: The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas. Exposure refers to humans and their assets (see 'Assets') being located in harm's way i.e. the flood zone.

Financial capital: Level, variability, and diversity of income sources and access to other financial resources that contribute to wealth.

Flash floods: Flash floods are caused by extreme rainfall events or the sudden release of water over a short period of time. They occur within minutes to hours after the heavy rain event, and produce raging torrents of water that move with great speed. While the majority of flash floods are triggered by torrential rain falling within a short amount of time (like during intense storms), they can also occur even if no rain has fallen via sudden release of water from a levee and dam breaks or by a sudden release of a debris or ice dam upstream.

Flood disaster: A serious disruption of the functioning of the community involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community to cope using its own resources.

Flood resilience: We have also concluded that "resilience" is an outcome that ensures that a community can continue to thrive and develop in the face of flood risk. In other words, if a flood-prone community has resilience, its development will not be derailed due to flooding. More specifically, we follow the definition set out in an Alliance scientific paper, which defines Disaster Resilience as: The ability of a system, community or society to pursue its social, ecological and economic development and growth objectives, while managing its disaster risk over time in a mutually reinforcing way.

Flood: An overflow of a large amount of water beyond its normal limits, especially over what is normally dry land. Four types of floods are: flash floods, river floods, coastal floods, and surface floods.

Focus group discussion: A number of pre-invited or self-selecting respondents (ideally no more than 20) participating in a structured conversation. The discussion is moderated by the local field worker. More than one focus group can be run for each question. Focus groups can be groups that formally exist and meet regularly anyway, or can be informal and convened specifically for this data collection process.

Grade: Grading happens at the source level, which means every source is awarded a grade between A-D. Source-specific guidance is given as to what each grade might look like, however these follow the generic scheme of:

- A: Best practice
- B: Good standard, no immediate need for improvement
- C: Deficiencies, room for visible improvement
- D: Significantly below good standard, potential for imminent loss

Each source has a definition or justification statement to help the analyst understand what they are grading.

Hazard: A substance, object or situation that can give rise to injury or damage. Hazard is the potential for threat to life or property. In order to create (flood) risk, a (natural, flood) hazard, e.g., from rivers, the sea or from surface water runoff after intense storms needs to be present first. Flood hazard can be expressed as the probability of occurrence at a given location and can be modeled or mapped using flood maps. Hazards can be natural or non-natural. Natural hazards are caused by weather, climate and geophysical drivers; non-natural hazards are caused by social, political, economic and technological failures.

Household survey: A structured discussion between the local field team and individual households, usually held in the interviewee's home.

Household: The members of the household share the same living accommodation and pool some, or all, of their income and wealth and consume certain types of goods and services collectively, mainly housing/shelter and food. A household may be located in a housing unit (house, flat, etc.) or in a set of collective living quarters such as a boarding house, a hotel or a camp. The household may also be homeless. A one-person household makes provision for his or her own food or other essentials for living without combining with any other person. A multi-person household is a group of two or more persons living together who make common provision for food or other essentials for living.

Human capital: Knowledge, education, skills, health of the people in the community.

Indirect impact: An impact due to an indirect, or secondary, interaction between a shock or stress and a physical, economic, social or political component, or an impact resulting

from a complex pathway of impacts. In the aftermath of disaster, indirect impacts could include business losses arising from customers spending less money as they recover from the disaster, or indirect physical consequences from a flood due to water contamination (not effects that the flood waters caused directly).

Institutions: The rules, norms, beliefs and conventions that shape or guide human relations and interactions, access to and control over resources, goods and services, assets, information and influence. Legal norms are the formal rules and regulations created by legislative and administrative bodies. Cultural norms are informal rules, or social and cultural expectations, that govern human behavior.

Key informant interview: In-depth interviews with people who have specialist knowledge about the community.

Land-use planning: Formal management of land development by mandated authorities. Ideally, land-use planning should ensure that land use is efficient, ethical, and minimizes exposure to hazards.

Livelihoods: A means of making a living. It encompasses people's capabilities, income and activities required to secure the necessities of life via income or subsistence.

Marginalized: Marginalization, also called social exclusion, refers to individuals or groups being relegated to the fringes of society due to a lack of access to rights, resources, and opportunities. Marginalization can occur for cultural or social reasons (such as gender, ethnicity, age, religion, sexual orientation), economic reasons (such as people living in poverty or who are homeless), or because of physical disadvantage (such as those living with a disability, the elderly, people with mental illness or drug addiction).

Minority: Any group of people who, because of their characteristics, for example physical or cultural characteristics, are singled out from the others in the society in which they live for differential and unequal treatment, and who therefore regard themselves as objects of collective discrimination. Note that being a numerical minority is not a characteristic of being a minority group; sometimes larger groups can be considered minority groups due to their lack of power. It is often the lack of power that is the predominant characteristic of a minority, or subordinate group.

Natural capital: The natural resource base, including land productivity and actions to sustain it, as well as water and other resources that sustain livelihoods and wellbeing.

Natural environment: The natural environment is comprised of the living and non-living components that occur naturally (are not made by humans), including natural features such as rivers, ecosystems, and the ecosystem services they provide.

Negative coping strategies: Sometimes known as erosive coping strategies or mechanisms, negative coping strategies are ones that erode the long-term well-being of a household, such as unsustainable environmental exploitation, taking children out of school, or selling productive assets.

Percentage: A percentage is a number or ratio expressed as a fraction of 100, often denoted using the percent sign %. Percentages are often used to express a proportionate part of a total. For example, if 50% of households in the community work in agriculture, that means that 50 out of every 100 households work in agriculture; if there are 200

households in the community, then 100 of them work in agriculture. The percent value is computed by multiplying the numeric value of the ratio by 100. For example, to find 30 households as a percentage of a total 200 households, first compute the ratio 30/200 = 0.15, and then multiply by 100 to obtain 15%.

Physical assets: A physical asset is an item that has a material existence, and could potentially be bought or sold. Physical assets are also known as tangible assets. For households, physical assets usually refer to a home (if not rented) and its contents, vehicles such as motorcycles or cars. For businesses, physical assets usually refer to properties, equipment, and inventory/stock, see also productive assets.

Physical capital: Things produced by economic activity from other capital, such as infrastructure, equipment, improvements in crops, livestock, etc.

Post-event study: A post-event study is a measurement taken after a flood occurs in a project community, similar to an impact assessment. The post-event study is setup and implemented with the same process as a baseline or t-line study, however it has different indicators to measure related to the actual impacts of the flood.

Preemptive: Action taken before a flood occurs in order to reduce the impacts of floods that might occur. Preemptive actions are taken in normal times, not in the immediate lead-up to the flood.

Preparedness: The precautionary actions taken prior to hazard events. At the household level, this could include understanding your risk and knowing what resources you have and preparatory actions you can take to avoid or reduce loss (such as getting papers and equipment raised off the ground when you receive a flood warning). At the community level, this could include establishing evacuation routes. At the district or national levels, this could include humanitarian agencies prepositioning emergency relief supplies.

Productive assets: Tangible physical assets (see physical assets) that are used to generate income. Examples include a moto-taxi, livestock/animals, farming or business equipment.

Prospective risk reduction: The actions taken to avoid the build-up of new or increased risks, for example building regulations and land use planning avoiding the new construction of houses in hazardous places.

Rapidity: The ability to contain losses and recover in a timely manner, for example access to quick finance for recovery.

Recovery: The actions taken after a disaster (either in the short- or long-term) to help people cope with disaster impacts, reconstruct damaged physical systems (e.g., homes, roads, damaged flood protection structures) and restore services.

Redundancy: Functional diversity, for example having many evacuation routes.

Remittances: A remittance is a transfer of money by a person working outside the community, to a person living inside the community. Money may be transferred electronically or via other means.

Resilience: see ‘Flood resilience’.

Resourcefulness: Ability to mobilize when threatened, for example a community group who can quickly turn a community center into a flood shelter.

Response: The actions taken during and immediately after a disaster to contain or mitigate disaster impacts, including evacuation, search and rescue, first aid and emergency relief distribution.

Risk: See 'Disaster risk'.

River floods: River flooding occurs when water levels in rivers, lakes, and streams rise and overflow onto the surrounding banks, shores, and neighboring land. The water level rise could be due to excessive rain or snowmelt.

Robustness: The ability to withstand a shock, for example housing and bridges built to withstand flood waters.

Social capital: Social relationships and networks, bonds aiding cooperative action, links facilitating exchange of and access to ideas and resources.

Source of resilience: The FRMC contains 45 'sources of resilience' – or 'sources' for short. Each source is assigned to one of the 5Cs, 4Rs, themes, graded by a trained assessor. The sources are graded in baseline and t-line studies.

Surface floods: Surface floods occur gradually and hence people have time to go indoors or leave the area. The layer of water is low to the ground (rarely more than 1 meter) and causes no immediate threat to lives. However depending on the flooded area it may cause significant economic damage. In urban areas, surface flooding occurs when there is a lack of drainage, meaning that water that would otherwise soak into the soil cannot travel through paved surfaces, and so it is redirected into sewage and storm drain systems. Flooding occurs when the amount of water flowing into drainage systems overwhelms the systems. In rural areas, surface flooding (sometimes called pluvial flooding or ponding) occurs in relatively flat areas. Rain water is normally stored in the ground, canals or lakes, or is drained away or pumped out. Flooding occurs when more water enters the water system than can be stored or can leave the system. In this case, rain is the source of the flood: not water coming from a river, but water on its way to the river. Puddles and ponds develop and canals are filled and spill over; gradually a layer of water covers the land.

Sustainable: Utilization of assets or resources at a rate that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Theme: Each source is assigned one of 7 themes. Questions in surveys are organized by these themes because they are more practical to some practitioners. The 7 themes are assets, livelihoods, natural environment, life and health, lifelines, governance, and social norms.

T-line study: Following the baseline, subsequent applications of the FRMC in the same community.

Tributary: A tributary is a stream or river that flows into a larger stream or river or into a lake, a tributary does not flow directly into a sea or ocean.

Underlying disaster risk drivers: Processes or conditions, often development-related, that influence the level of disaster risk by increasing levels of exposure and vulnerability or reducing capacity.

Vulnerability (of assets): Also known as physical vulnerability, as distinct from social or economic vulnerability. The conditions which increase the susceptibility of the asset to impacts from the flood hazard (see 'Hazard'). Vulnerability of physical assets is distinct from the location of the physical asset (see 'Exposure'). For example, two houses located next to each other on a flood plain have the same exposure, but different vulnerability because one is raised on stilts and the other is not.

Vulnerable people/groups/population: Vulnerable groups can be defined by their diminished capacity to anticipate, cope with, resist and recover from the impact of a natural or man-made hazard. The concept is relative and dynamic. Vulnerability is most often associated with poverty, but it can also arise when people are isolated, insecure and defenseless in the face of risk, shock or stress. Examples of potentially vulnerable groups include: displaced populations who leave their habitual residence in collectives, usually due to a sudden impact disaster or conflict, as a coping mechanism and with the intent to return; migrants who leave or flee their habitual residence to go to new places; specific groups within the local population, such as marginalized (see 'Marginalized'), excluded or destitute people; young children, pregnant and nursing women, unaccompanied children, widows, elderly people without family support, disabled persons. In a disaster, women in general may be affected differently from men because of their social status, family responsibilities or reproductive role, but they are not necessarily vulnerable. They are also resourceful and resilient in a crisis and play a crucial role in recovery. Gender analysis can help to identify those women or girls who may be vulnerable and in what way.

Watershed: See Basin.

The Zurich Flood Resilience Alliance is a multi-sectoral partnership focusing on finding practical ways to help communities in developed and developing countries strengthen their resilience to flood risk. Find out more: www.zurich.com/flood-resilience