

# Strengthening resilience against shocks and stressors in low- and middle-income countries: an evidence gap map

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This upcoming EGM is supported by the Bureau for Resilience and Food Security at USAID.

## 1 Criteria for including or excluding studies

The inclusion/exclusion criteria used to define studies in this map draw on the PICOS framework (Methley et al. 2014), defining the scope in terms of the Populations, Interventions, Comparators, Outcomes, and Study designs of interest.

### 1.1.1 Population

We will include interventions that service any beneficiary residing in L&MICs when the intervention was delivered. We will use the World Bank income status classification for defining L&MICs<sup>1</sup> and studies will be classified according to the income status of the countries where they were implemented in the year the intervention began. We will include any study published 2000 onwards.

Some studies (i.e. systematic reviews) evaluate interventions implemented in more than one country. Multi-country studies will be included if they include at least one effect size for a population living in a L&MIC. Studies that include HICs and L&MICs will be included if the results are specified for at least one L&MIC, or if an average effect is identified and data from L&MICs comprises at least 50% of the study sample. Studies that compare an intervention group's effects from L&MICs to a comparison group in HICs will be excluded. Interventions that seek to enhance the performance of specific niche populations, such as athletes, the military, astronauts, or actors/models, will be excluded. However, interventions targeting specific vulnerable populations (e.g. women, persons with disabilities, etc.) will be included. We will also exclude studies where the population of interest is migrants or refugees moving from L&MICs to high-income countries, or vice versa, as this approach was needed to feasibly implement the search strategy.

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<sup>1</sup> <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

Additionally, we are interested in populations that may be affected or potentially are already being affected by shocks or stressors, primarily covariate shocks that affect communities or societies (including but not limited to climate change and environment related events, conflicts/wars, economic crisis, migration, famine, etc.). As a result, these shocks or stressors may be *anticipated* ones, in addition to those that are occurring or have already occurred. The shocks may include certain characteristics as delineated by Béné and colleagues (2015): those with an *ex-ante component*, such as initial resilience capacities, well-being, and vulnerability; a *disturbance component*, i.e. the shocks and stressors discussed above; and an *ex-post component*, including the well-being outcome, and the new levels of resilience capacity and vulnerability. Resilience capacities may increase or decrease according to the effectiveness of an intervention.

### 1.1.2 Interventions

The scope of the project, together with the list of interventions, are inclusive of RFS's programmatic approaches. The project's independent Advisory Group was also consulted to ensure that the following intervention list is representative of the most prominent activities being implemented towards resilience capacity in L&MICs. The result is 40 interventions that fall within seven distinct domains listed in Table 2. The framework was built by reviewing the literature and a long consultation with experts at the USAID RFS center, as well as with the Advisory Group members, plus other experts in the field. The framework aims to be a comprehensive matrix of interventions to build resilience in L&MICs. For a study to be included, it should evaluate at least one of the interventions listed below:

Table 1 Included Intervention Domains and Categories

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
<p><b>Disaster risk financing</b></p>	<p>Risk transfer instruments and other financial instruments</p>	<p>Disaster risk includes risk transfer schemes or other financial instruments, policies and regulations governing markets or public financing, and dissemination mechanisms. Intervention can be implemented at local, provincial/subnational, national, or intra-country/regional levels.</p>	<p><i>Risk transfer instruments</i>                      Agricultural, index-based livestock or weather-based insurance (regional, country)                      Property catastrophe risk insurance, flood insurance                      Parametric risk transfer instruments, regional co-financing, and risk pooling schemes  <i>Loans</i>                      Contingent credit, borrowing, concessional financing  <i>Revenue generation/fiscal policies</i>                      Co-financing incentives for in-country stakeholders, financing mechanisms to facilitate quick reimbursement or provide low-interest financing to businesses or individuals                      Public financing, taxation, or budgetary allocations for relief or infrastructure maintenance, rehabilitation, and restoration (e.g., <a href="#">Mexico's Fund for Natural Disasters Fonden</a>)  <i>Other</i>                      Trade policies</p>
	<p>Risk management policies</p>	<p>Institutional, national, subnational policies and programs that formalize roles, responsibilities, and regulations pertaining to risk management. This may also include interventions that regulate financial actors, markets, or sectors affecting risk responses.</p>	<p>Environmental or national risk management policies                      Regulations for financial institutions, including risk accounting in credit portfolios                      Creation of private insurance markets</p>
<p><b>Early warning systems</b></p>	<p>Data collection and analysis on adverse events</p>	<p>Activities conducted to collect information, identify, assess, analyze, or facilitate monitoring of risk factors and/or affected geographic areas or populations. (May be relevant as a multi-component intervention)</p>	<p>Hazard/disaster data collection or updating databases                      Weather/disaster/famine prediction, seasonal forecasting, or modeling                      Risk assessments, including susceptibility to exposed elements to injury/damage</p>

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
	Infrastructure construction, reconstruction, or maintenance	Infrastructure for natural disasters, shocks, and disease detection, monitoring, dissemination, or action	Installing, activating, rehabilitating, modernizing, or enhancing weather, agrometeorological, or hydrometeorological stations, observatories, or centers Systems-level early warning systems
	Disaster prevention or response policies	Institutional, national, subnational policies and programs that formalize roles, responsibilities, and regulations pertaining to non-financial disaster risk management, recovery, and response.	Evacuation planning Laws, policies, legislation to promote preventive practice or establish post-disaster response mechanisms Policies institutionalizing early warning systems (e.g. Famine Early Warning System (FEWS-NET))
	Communication and advocacy on risk assessment	An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses, and others to take timely action to reduce disaster risks in advance of hazardous events.	Climate bulletins or alerts delivered through mobile, radio, email, or traditional information campaigns, may be dedicated to sub-populations, industries, markets (e.g. fisheries)
<b>Social protection and safety net programming</b>	Data collection and analysis for at-risk populations	Activities conducted to collect information, identify, assess, analyze, or facilitate identification of vulnerable and at-risk populations and/or needs. (May be relevant as a multi-component intervention)	Poverty head counts or vulnerability assessments (e.g. IADB's Prevalent Vulnerability Index) Data collection for targeting or design of interventions
	Cash transfers	Money payments to assist with meeting recipient needs. Can be targeted to eligible populations or universal, conditioned on meeting requirements (cash is contingent on children being enrolled in school, receiving health services, vaccination, etc.) or unconditional.	Unconditional cash transfers Conditional cash transfers Cash for work programs Direct provision of credit Emergency cash transfers
	In-kind social assistance	Direct provision of goods or services, or subsidies to increase access.	Social security Provision of non-food items Commodity vouchers

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
			Agriculture recovery and restoration programs
	Food and nutrition assistance	Direct provision of food or nutrition focused goods or services, or subsidies to increase access.	Nutritional supplementation Food stamps Food assistance School feeding programs
	Employment assistance	Interventions providing cash or in-kind support for employment or during unemployment.	Public works and employment guarantee schemes Unemployment assistance
	Local coordination mechanisms in support of service provision	Activities/mechanisms that bring uncoordinated and disparate actors together to collaborate on provision of services for high risk or vulnerable populations.	Referral systems to service providers (often for children, marginalized, or vulnerable populations requiring services) Mobilization of public and/or private actors
	Communication and advocacy on service provision	Communication, awareness-raising, dissemination, or public campaigns to increase knowledge of, access to, or uptake of services.	Social and behavioral campaigns for nutrition uptake, including improving household decision-making on food purchases
<b>Environmental and Natural resource management</b>	Public natural resource management	Government-driven efforts to sustainably manage natural resources (including species), accounting present and future needs. May pertain to resolving common pool resource issues, or to mitigate/avert environmentally driven climate risks.	<p><i>Water:</i> Watershed management Irrigation water management Soil and water conservation</p> <p><i>Forestry, fishing, and agriculture:</i> Altering agricultural practices (crop rotating, lowering planting densities, altering harvest dates) Conservation of national parks, community-managed lands, game reserves, rangelands, wetlands, agricultural lands Mixed use or designated land for restoration Biodiversity, species preservation</p> <p><i>Air:</i> Emissions/pollution control</p>

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
	Community-based natural resource management	Interventions aimed at strengthening the community-level management of natural resources for instance, through participatory management of forests/rangeland, or an irrigation system. This might include the involvement of local associations, and some conflict resolution practices.	<p><i>Water:</i> Water user/community associations</p> <p><i>Forestry, fishing, and agriculture:</i> Community forestry, forestry management committees Community-based coastal, freshwater, marine fisheries management</p>
	Environmental Infrastructure construction, maintenance, or reconstruction	Infrastructure for natural disasters, shocks, and disease detection, monitoring, dissemination, or action.	<p><i>Flood management:</i> Dams, levees, seawalls, tidal barriers, detached breakwaters, canal lining, stilted homes, river barriers, improved drainage, and sewage</p> <p><i>Energy:</i> Hydroelectricity</p> <p><i>Erosion/land:</i> Changes to land topography (grass waterways, roughening land surfaces, windbreaks)</p> <p><i>Water purification/supply</i> Desalination</p>
	Technological solutions (non-infrastructure)	Interventions promoting the use of materials and technology in manufacturing processes that mitigate damage during disasters or are easily repaired after damage from disasters.	<p><i>Crop failure safeguards</i> Improved seeds (flood, salt, temperature tolerant) Fertilizers Natural pesticides Climate smart agriculture (CSA)</p> <p><i>Water purification/supply</i> Water harvesting or recycling Drip irrigation</p>
	Communication and advocacy on environmental management	Communication, awareness-raising, dissemination, or public campaigns to increase knowledge of or support for cooperation or collaboration.	<p>Mass media campaigns Natural resource conservation education Social mobilization</p>
	Institutional planning and regulations	Introducing and enforcing appropriate land-use or instituting rural/urban planning	<p>Water use and fee policies Pollution regulations Integrated natural resource management plans</p>

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
		regulations which curtail reconstruction in high-risk areas.	<p><i>Flood retreat strategies:</i> such as establishing set-back zones, relocating threatened buildings, phased out development in exposed areas, upland buffers, rolling easements</p> <p>Building code regulations and policies to increase resilience of physical assets, earthquake-resistant building designs, or raised-floor elevation in flood-prone areas</p>
<b>Financial inclusion and livelihoods</b>	Savings, community-based and micro-lending groups	Support to create groups where participants contribute and loan out their own money, eliminating the need for traditional financial institutions and sharing the risk among participants that borrowers may be unable to repay the loans.	Self-help groups (SHGs); rotating/accumulated savings and credit associations
	Microcredit to help households and businesses to face shocks/stressors	Provide access to short- and medium-term capital for fixed assets or other loans to microentrepreneurs at a reduced or zero rate to access credit without predatory programming. Recovery loans are given just after a disaster happened to help households and companies to recover quicker.	Microcredit for vulnerable and marginalized groups (I.e. women, Indigenous people, or ethnic minorities)
	Microinsurance; contingent credit; portfolio-level insurance against disasters	Microinsurance is the provision of insurance services to low-income people, who typically do not have access to insurance or adequate social security services.	Contingent credits which guarantee finance to a borrower in advance of a disaster. Portfolio-level insurance for financial intermediaries
	Financial education and business training	Educate and inform individuals so that they can make appropriate decisions in managing their money, assets, and liabilities.	Training on saving, borrowing, and investing Extension services (agent-based insurance knowledge)
	Access to mobile payment services	Facilitate access to mobile payment services by providing the infrastructure at no or low cost, train potential users, or eliminating other barriers to the use of the m-money services. The aim is to boost expansion and rapid adoption of m-money	Provision of the m-mobile money infrastructure at no or low cost, train potential users.

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
		services and create an enabling environment for m-money.	
	Regulatory changes for financial inclusion	Policy reforms that promote access to financial services for small businesses and informal workers.	Reducing barriers to opening bank accounts
	In-kind assistance	A specified transfer of an asset (non-agricultural) to a household or individual based on certain parameters.	Livestock transfer, machinery transfer
	Livelihood diversification support	Goods or services (training, course, capacity building or technical skills development) that allow individuals, households, or communities to diversify risks from primary sources of income generation to secondary or new industries. May also include shifting from one form of agricultural production to another (e.g., from high-risk crops to drought-tolerant or lower risk crops, from farming to livestock).	Provision of drought-tolerant or resilient seeds, livestock, or in-kind assistance relating to entrepreneurship Financial support to establish a new business Creating off-farm work opportunities in the formal and informal sectors Technical and vocational education training (TVET) specifically designed to create off-farm activities
	Value chain and market linkage activities	Interventions that aim to help a target population – whether producers, processors, or retailers - to derive more income from a livelihood activity, for example by supporting them to add value to a product, or by helping them to access markets where there is greater demand for their product, improving quality and productivity along the value chain in the process.	Training and technical assistance to support a factory switching to selling chocolate instead of raw cacao
	Market Infrastructure reconstruction	Reconstruction of markets infrastructures and channels to connect markets (i.e. roads) during a post-disaster recovery	Roads or markets Agricultural storage facilities
Business continuity and disaster recovery systems	Interventions to enable large businesses as well as small and medium enterprises to quickly resume operations after a crisis. This might include trainings and the provision of a specific crisis	An integrated and sustainable capacity building initiative of national water utility associations and companies in a particular area (see: Danube Learning Partnership)	



Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
		management curriculum in post-disaster context to technical and management staff.	
<b>Social cohesion &amp; conflict resolution during shock/stressors</b>	Intergroup dialogues	These interventions create safe spaces for different groups (i.e. ethnic, religious, displaced and host communities, etc.) to have social interactions and strengthen ties, by also engaging community leaders. They might just be focused on dialogues, or they might involve activities that allow people to collaborate between them.	Dialogue-focused meetings, sports, art, creative activities.
	Communication and advocacy for peace and cooperation	These interventions aim at conveying peace messages including tolerance, non-violence, cooperation, reconciliation, collective action in problem solving and dispute resolution. This could occur through training and workshops, and using the media (i.e. TV, newspaper, social media).	Workshops on peace education might also take the form of participatory theatre; peace messaging campaigns; radio/TV dramas.
	Psychosocial interventions	Interventions that reduce and address adverse psychosocial stress, post-traumatic stress disorder, and anxiety disorders arising from shocks/stressors, may include aspirations, confidence, agency, and empowered decision-making interventions. Does not include general mental health interventions.	Mental health and psychosocial support (MHPSS)
	Preventative protection measures	These interventions comprise non-police or security force-based efforts to reduce incidences of violence, especially sexual and gender-based violence (SGBV). They include making the physical environment less conducive to such acts and minimizing the exposure of vulnerable groups to risky situations.	Crime prevention through environmental design intervention, installing lighting in public spaces, removing obstacles so there is better line of sight and reclaiming spaces for positive community activities
	Improvement of conflict resolution mechanisms	Local mechanisms for resolving conflict between two (or more) parties about the stewardship, ownership and use of land and property	Simplified court processes; improved access to lawyers and legal information

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
<b>Inclusive and accountable institutions to face shocks/stressors</b>	Civil society feedback monitoring mechanisms	Information to the performance of public institutions is disclosed to the public who could monitor how public and private institutions are applying pre- and post-disaster policies. For instance, the provision of a platform for meetings between citizens and relevant stakeholders (government, company), for discussing citizens' rights, to develop citizen action plan, and setting up grievance redress mechanisms to follow up with stakeholders.	Scorecards, social audits Disclosure of information related to government' activities Face-to-face meetings Reinforce local dispute resolution mechanisms and simplify court processes
	Capacity building of civil society	Support citizens or civil society organizations by providing training or consultants that have skills and expertise needed by the organization to meet its goals. It might include support to manage the economic/ bureaucratic tasks of an organization or help to set up a campaign.	Support to build a campaign, to access funds to organize activities, trainings on specific skills needed to make the organization functional.
	Participatory approaches to decision-making	Bottom-up approaches that allow the communities to take decisions on the development process and resources management in a pre- or post- disaster settings, including Indigenous people, women, and other marginalized groups.	Community-driven reconstruction Community-driven development projects Participatory budget initiatives Community-delivered services An example is the Citizen's Charter Afghanistan Project, which used Community Development Councils (CDC).
	Capacity building of public decision-makers	Training, technical assistance, and support activities to strengthen the institutional capacity to prepare or plan for or respond to shock and stressors.  They can include building specific skills, knowledge, behaviors, delivery of duty and implementation of activities of public officials, such as newly elected or appointed public officials, local leaders, and legislators. This applies to all the categories domains in the map.	Design the mandate and TORs for new and strengthened government agencies; support to write policies and response plans to shocks/stressors; activities to make information accessible to bureaucrats or elected officials to ensure better-informed decisions  Building capacity along ministries in government to improve overall service delivery, for strengthening social protection schemes  Capacity building of national public and private sector actors in understanding risk management and policies

Intervention Domains	Interventions	Intervention Definitions	Intervention Examples
	Public and public-private coordination mechanisms	Efforts to collaborate, coordinate, share information, strategies, and policies to address shocks, build connections across the system or regionally.	<p>Inter-ministerial or multi-sectoral coordination mechanisms, conferences, conventions</p> <p>National task forces, strategy committees</p> <p>Conferences, conventions to mobilize governments to prepare for environment, climate, regional disaster early detection and coordination (e.g., Climate Risk and Early warning Systems, CREWS initiative)</p>

Human capacity development interventions such as health and primary or higher education are not included in order to ensure the feasibility of the project. This includes the provision of healthcare, vaccinations, preventative care, and other interventions. However, we include mental-health related interventions, defined in the framework as psychosocial interventions. We are also including interventions that are operating in the face of a health-related covariate shock, such as an outbreak or pandemic that affects communities or countries on a wide scale.

### 1.1.3 Comparators

Impact evaluation studies are defined by the existence of a counterfactual to examine what would have happened in the absence of the intervention. Therefore, we only include studies where the identification strategy incorporates a comparison group by the researcher's selection or through econometric estimation, e.g., business as usual, alternative resilience treatment(s), no treatment, or an early-versus-late comparison (where those that took part in earlier years are compared to those that took part in later years), etc. Studies that did not justify and identify a comparison group were excluded.

### 1.1.4 Outcomes

All outcomes for this map reflect two concepts: the idea that target groups are better able to resist and recover from shocks and stresses of a crisis and engage in more sustainable livelihood strategies to contribute to long-term development goals. According to the literature, indicators related to resilience should measure changes with adaptive and transformative responses, such as the adoption of more diversified income generation sources (Béné et al. 2020). Our framework is based on the premise that ultimate outcomes (general wellbeing, food security or nutrition status of a household) following an adverse event do not merely result from the direct impact of that initial shock (e.g., destruction of assets, losses of livestock, physical injuries), but instead are the result of that shock's impact combined with the responses employed by individuals/households or communities to counteract that shock (Béné et al. 2016).

Thus, we adapted outcome groups from USAID's resilience framework, incorporating the three resilience capacities and the RFS strategic approaches which can be applied at four ecological levels: individual household, community, and regional/national. For a study to be included, at least one of the 29 outcomes listed in Table 3 should be measured in the evaluation.

1. **Absorptive:** Strengthen people's ability to manage shocks and stresses to pursue resilient livelihoods, including disaster risk management, psychological, financial, and social/linking social capital outcomes
2. **Adaptive:** Build sustainable inclusive livelihoods that enable all people, regardless of identity, to reduce and manage risk, including psychological, financial, livelihoods and social/linking social capital outcomes
3. **Transformative:** Build healthy resilient systems and institutions that enable people and communities to reduce and manage risk, including disaster risk management, livelihoods, social/linking social capital, and governance outcomes

Due to the intersectional nature of the capacity framework, adaptive and absorptive outcomes overlap, primarily at the individual and household level. These outcomes feed into each other; transformative change cannot occur without change at the household or individual levels. As such, a variety of different components, ranging from psychological at the individual level to social capital in all four levels, are required to create resilient individuals, households, communities, or institutions.

To narrow down the large scope of the project, we exclude outcomes that focus on health, particularly in idiosyncratic shocks, such as relating to household illness. Additional outcomes relating to water, sanitation, hygiene (WASH) will also not be included due to pre-existing work that RFS has and will conduct on these topics, including an EGM examining the relationship between intermediate WASH outcomes and resilience.

Table 2 Outcome Ecological Levels, Groups and Definitions

Outcome Group	Definition	Outcome	Definition
<b>Psychological (Absorptive and Adaptive)</b>	Psychosocial capacities are factors that can indicate the degree to which people feel empowered or have the agency to deal with risk.	Risk Aversion	Measure of changes in behaviors and decisions that demonstrate intentional aversion to economic or other risks, (For example: reduced risk tolerance, and increased motivation and confidence)
		Aspirations	Measure of changes in hopes, desires, ambitions, and wishes to attain or accomplish a particular goal
		Confidence to Adapt	Measure of changes in the belief in one's ability to change or adapt to new situations
		Self-Efficacy	Measure of changes in the belief in one's ability to succeed in a specific situation or complete a task
		Use of Coping Strategies	Measure of changes in how households engage in behaviors to meet their immediate needs in times of crisis.
<b>Financial (Absorptive and Adaptive)</b>	Financial inputs and skills buildings to equip households with better financial skills and assets against shocks and stressors.	Income, Savings, and Asset Ownership	Measure of changes in participants' income (from wage labor, agriculture, investments, or other sources), and savings and asset ownership.
		Credit access and use	Measure of changes in a participant's ability to apply for, receive and manage assets/credit (and have support for the above)
<b>Livelihoods (Adaptive)</b>	Providing skills and information, as well as sensitization for groups to change or adapt their livelihoods and income in response to change	Input Markets	Measure of changes of the existence of, or innovations surrounding input market systems. An example is the formation of groups of small businesses, associations or coops selling agricultural inputs.
		Labor Productivity	Measure of changes in productivity and participation in jobs and entrepreneurial projects which results from the application of new skills.
		Market Information	Measure of changes in access and use of information for understanding of markets including prices, changes in demand, and other economic trends.
		Financial Literacy	Measure of changes in a participant's level of knowledge in financing and financial management options for themselves and/or their business, including suitable products and

Outcome Group	Definition	Outcome	Definition
			services and the legal and regulatory framework, including their rights and recourse.
		Business Skills	Measure of changes in a participant's skills and access to begin, join, or support these businesses (and have a meaningful role) through skills, education, sensitization, etc.
		Diversified Income Sources	Measure of changes in whether participants earn income from new, additional sources including investments, agricultural yields, entrepreneurship, etc.
<b>Livelihoods (Transformative)</b>	Creating infrastructure for sustainable markets that are more resilient to shocks.	Structural Market System Resilience	Measure of changes in market connectivity, diversity, power dynamics, and rule of law. A type of structural transformation is, for example, when an economy's share of growth and labor shifts away from agriculture and towards manufacturing and services.
		Behavioral Market System Resilience	Measure of changes in market cooperation, competition, evidence-based decision making, and business strategy. An example of behavioral domains is the number of joint partnerships or initiatives that may arise between producers and business owners.
<b>Disaster Risk Management (Absorptive)</b>	This would be disaster risk mitigation on a regional level where local/regional governments communicate and create structures to observe, predict and respond to disasters.	Emergency Response Structures	Changes in available structures that support disaster planning, mitigation, and local capacity building activities to reduce the impact of recurrent disasters.
		Early Warning Information	Measure of changes in access to information about anticipated shocks and stressors, including climate / weather information, market information, etc.
		Local Conflict Management Structures	Measure of changes in the presence and capacity of local institutions for mediation and conflict resolution through formal or informal processes.
<b>Disaster Risk Management (Transformative)</b>	This would entail disaster risk investment with institutions and governments buying into schemes and policies to result in better prepared societies.	Long-term Green Infrastructure	Measure of changes in availability or prevalence of sustainable, long-term infrastructure that can enhance community resiliency to disasters and climate change because of increased water retention and groundwater recharge, flood mitigation, erosion control, shoreline stabilization, combatting urban heat island effect, improving water quality, conserving energy for buildings.
<b>Social (Absorptive)/Bon</b>	Bonding social capital is seen in the bonds between community members. It	Local Group Participation	Measure of changes in participation in and leadership of local associations, groups, clubs, coops, etc.

Outcome Group	Definition	Outcome	Definition
<b>Binding Social Capital</b>	involves principles and norms such as trust, reciprocity, and cooperation, and is often drawn on in the disaster context	Local Borrowing	Measure of changes in and access to and participation in local and community level loans, saving groups, microinsurance and so on.
<b>Social (Adaptive)/Bonding social capital</b>	Bridging social capital connects members of one community or group to other communities/groups. It often crosses ethnic/racial lines, geographic boundaries, and language groups, and can facilitate links to external resources and broader social and economic identities.	Producer Organization Participation	Measure of changes in participation in agricultural organizations, associations, or cooperatives (for example, Rural Producer Organizations)
<b>Social (Transformative) / Linking Social Capital</b>	Linking social capital is seen in trusted social networks between individuals and groups interacting across explicit, institutionalized, and formal boundaries in society. Linked networks can provide resources and information that are otherwise unavailable. This type of social capital is often conceived of as a vertical link between a network and some form of authority or power	Equitable Household Decisions	Measure of changes in participation in household decision making by women, elderly people, and other marginalized individuals.
		Gender Equity and Inclusion	Measure of changes in the level of equity for women, girls, and sexual and gender minorities, including participation in community organizations, decision-making processes, labor markets, etc.
		Social Equity and Inclusion	Measure of changes in the level of participation by marginalized groups in their communities in all aspects; this includes minority and youth participation as well as measures of steps that civil society are taking to be more inclusive. [women and sexual and gender minorities are captured in the above]
<b>Governance (Transformative)</b>	Governance is comprised of various norms and practices related to public affairs and the management of public resources. Access to functional formal and informal governance structures has been shown to play an important role in resilience	Local Budget Allocations	Measure of changes in how local (community and state-level) institutions plan and budget for anticipated shocks in advance.
		Institutional Accountability	Measure of changes in how public officials and institutions act in the representation or interest of their stakeholder(s).
		Civil society organizational resilience and sustainability	Measures changes in financial sustainability and organizational resilience; includes measures of internal governance, administration, and management practiced; human resources; financial/program management; and access to resources. Includes measures of CSO's abilities to maintain physical and digital security and resist other types of attacks, often within restrictive political environments.



Outcome Group	Definition	Outcome	Definition
		Management of Natural Resources	Measure of changes in the sustainable utilization of major natural resources, such as land, water, air, minerals, forests, fisheries, and wild flora and fauna. Managing natural resources for sustainable human use: including working forests and plantations, rangelands and agricultural lands, fisheries, marine and coastal resources, lakes, and rivers.

### 1.1.5 Study design

We will include studies that look at the impact of an intervention aimed at increasing resilience capacities in L&MICs. Specifically, we will include studies that adopt methods estimating the effects that can be attributed to an intervention, as compared to what would have happened in the absence of the intervention. We define the specific criteria required for inclusion below, drawing on commonly accepted standards for impact evaluations (Gertler et al. 2016) and systematic reviews (Waddington et al., 2012).

We included both impact evaluations and systematic reviews:

- **Impact evaluation:** An impact evaluation is a study that uses rigorous methods to provide a quantitative estimate of the impact of an intervention. This is accomplished by constructing a counterfactual, which provides evidence about what would have happened in the absence of the intervention. In an impact evaluation, the outcomes of those who receive the intervention are compared with those of a comparison group (the counterfactual) that does not receive the intervention. The comparison group may be a specific population in the study area that does not receive the treatment (as in a randomized controlled trial (RCT)) or may be constructed by researchers (as in propensity score matching (PSM) or interrupted time series (ITS)). For an impact evaluation to be valid, there must be a sound statistical basis for claiming that the comparison group represents what would have happened to the treatment group had they not received the intervention.
- **Systematic review:** A systematic review is a synthesis of the research evidence on a particular topic, such as the effectiveness of water supply and sanitation, obtained through an exhaustive systematic literature search for all relevant studies using widely accepted scientific strategies to minimize error associated with appraising the design and results of studies (Waddington et al. 2012). A systematic review uses methods of internal and external quality assurance that make it similar to a primary study (e.g., double-coding of data, calculation of effect sizes from data reported, synthesis of finding).

#### **Effectiveness studies:**

Studies have been excluded if they do not evaluate the effectiveness of an intervention delivered in a real-world setting (i.e., experiments conducted in tightly controlled settings, like those of a laboratory will be excluded). Screening questions used to help determine whether

a study qualifies as an effectiveness study will include (answering yes signals the study may have been conducted in a lab setting and therefore leads to its exclusion):

- Is the study primarily designed to determine to what extent a specific technique, technology, treatment, procedure or service works under ideal condition rather than attempt to answer a question relevant to the roll-out of a large program?
- Is the intervention being carried out by the researchers themselves (e.g., by applying fertilizer in test plots to measure effects on plant growth), or by the people who would carry it out at scale (e.g., farmers applying fertilizer to their crops)?
- Does the study evaluate an intervention that is, or could easily be implemented as, a social policy or program, or is it “basic science” research on biophysical mechanisms?

**Study designs included:**

We will only include studies that implement at least one of the following study designs widely used to evaluate intervention effectiveness (Aloe et al. 2017; Reeves et al. 2017):

A) Prospective studies that allocate participants to treatment and control groups using random assignment or quasi-experimental methods:

1. Randomised controlled trials (RCTs), with assignment at individual, household, community, or other cluster level, and quasi-RCTs using prospective methods of assignment (such as alternation).
2. Natural experiments with clearly defined intervention and comparison groups, which exploit natural randomness in implementation assignment by decision makers (e.g., public lottery) or random errors in implementation.

B) Quasi-experimental designs where treatment arms are created without random assignment:

1. Regression discontinuity designs (RDD) or fuzzy-RDD
2. Instrumental variables (IV)
3. Endogenous treatment-effects models, endogenous switching regression, and other methods synonymous to the Heckman two step model.
4. Difference-in-differences (DID), two-way fixed-effects (TWFE), and two-way Mundlak regressions (TWM):
  - a) DiD models will include an interaction term between a time and intervention variable in a regression model. They may also regress an intervention variable on a outcome variable measuring the changes in outcomes over time or

present a t-test comparing changes in outcomes over time between the intervention and control group.

- b) TWFE regressions must include time fixed-effects and unit fixed-effects at the level of the intervention (or lower). For example, if the intervention varies at a village level, it must include either village fixed-effects or fixed-effects of a smaller unit, such as households.
5. Interrupted time series (ITS) models, with or without a contemporaneous comparison group. The ITS regression model must adjust for autocorrelation, or it can use autoregressive integrated moving-average (ARIMA) models. An ITS model should include pre-intervention outcome data for a minimum of three time periods.
6. Weighting and matching approaches which control for observable confounding, including non-parametric approaches (e.g., statistical matching, covariate matching, coarsened-exact matching, propensity score matching) and parametric approaches (e.g., propensity-weighted multiple regression analysis).
7. The synthetic control method

Note that natural experiments where the assignment to intervention and control groups was not part of a planned experiment could use different includable designs (e.g., RCT, RDD, ITS). These cases will be categorized as RCT, RDD, ITS, etc.

D) Systematic effectiveness reviews will be included if they describe the search, data collection and synthesis methods according to the 3ie database of systematic reviews protocols (Snijlsteit et al., 2016). Any evidence reviews, such as literature reviews, that do not adopt these methods will be excluded. We will exclude systematic reviews that are not effectiveness reviews (i.e., those which do not aim to synthesize the evidence of the effects of a relevant intervention on priority outcomes of interest), such as systematic reviews of driving factors of nutrition sensitive methods. If reviews include multiple research methods, we will include these if at least 50 per cent of studies include at least one impact evaluation design specified above. Where reviews include a mixture of evidence from both high-income and L&MICs the criteria to follow are described in section 4.1.1. Population.

**Additional studies excluded:**

We exclude:

- Before-after studies without a comparison group (naïve estimate designs) or cross-sectional studies that do not attempt to control for selection bias or confounding;
- We exclude impact studies that do not use quasi-experimental methods to address confounding and/or omitted variable bias (e.g., a study assessing the impact of foreign aid on economic growth, that uses a linear regression with various control variables)

### 1.1.6 Other criteria

We will also apply the following criteria when selecting studies for inclusion.

- **Language:** Even though the search terms are in English only, studies published in any language are potentially eligible for inclusion. Our team includes reviewers who can read papers in Spanish, Portuguese, French, Korean, Chinese, and Italian. In case we find papers in other languages, we may be unable to include those studies if we cannot identify other screeners with sufficient fluency in those languages.
- **Publication date:** We include studies published from 2000 onwards. As mentioned in [section 3.1.1.](#), the concept of resilience in the field of international development and humanitarian work has been introduced and developed primarily since 2005. Thus, we expect most of the relevant studies to be published after the year 2000.
- **Status of studies:** We include ongoing and completed impact evaluations and systematic reviews, both peer-reviewed studies and “grey” literature. For on-going studies, we will include prospective study records, protocols and trial registrations. Providing an indication of the prevalence and characteristics of on-going evaluation evidence is expected to enrich the analysis of current evidence gaps and support decision making in relation to evidence generation.