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URBAN RESILIENCE MEASUREMENT

An Approach Guide and Training Curriculum

Acknowledgements

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For more information on Mercy Corps' resilience approach, visit:
www.mercycorps.org/resilience

DISCLAIMER

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1. All graphics in the document were designed by Mercy Corps' resilience initiative. Please use appropriate citation.

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INTRODUCTION

This curriculum was developed for the Asian Resilience Monitoring and Evaluation Experiential Learning Event, designed for USAID missions and implementing partners across Asia, and supported with a grant from TOPS. The learning event is targeted at select USAID staff and implementing partners from Bangladesh, Cambodia, Indonesia, Nepal and the Philippines.

The Asian Resilience Monitoring & Evaluation Experiential Learning Event is designed to be delivered in two complementary modules. Module 2 focuses on urban resilience within South and Southeast Asia and Module 1 covers resilience in rural contexts where food and livelihood security are of primary concern. TANGO International was the lead content developer and facilitator for Module 1, while Mercy Corps lead the development and facilitation of Module 2.

This curriculum accompanies the second module of the event, focused on urban resilience measurement. It is designed for wider use across USAID missions and by implementing partners working on urban resilience.

The objective of the learning event is to ensure that key stakeholders receive training on advanced resilience measurement practices in rural and urban environments, by providing a hands-on learning opportunity to assess resilience capacities, develop resilience indices and indicators, and apply these through a program monitoring and evaluation framework. As part of building a foundation for strong measurement, the event also focuses on the design of resilience programs.

BACKGROUND ^{2,3}

Despite South and Southeast Asia's rapid economic growth, the region continues to face deep poverty and social and economic inequality. According to recent statistics, a staggering one-third of Asia's population lives below the World Bank extreme poverty line, defining consumption at less than \$1.51 a day.⁴ This includes nearly 30% of the population in rapidly growing economies such as Indonesia and the Philippines, and nearly 60% of the population in Bangladesh. Compounding problems of extreme poverty is Asia's susceptibility to natural disasters. Earthquakes, tsunamis, floods, and other catastrophic natural and man-made disasters plague the region, directly impacting millions of people.⁵

Asia is also the fastest urbanizing region in the world, with urban populations increasing 1.5% annually. By 2050, the United Nations predicts 64% of Asia's population will live in urban settings. Urbanization itself can signal economic growth, and offer critical opportunities to improve household well-being, including through better access to education, health care and employment. In Asia, however, urbanization is also characterized as a stressor as public institutions lack the capacity to adequately provide for the surge of migrants from rural areas, and the growing demand for improved infrastructure, public services, and economic opportunities. Making matters worse is the fact that cities are expanding in some of the most economically attractive but ecologically vulnerable terrain. This includes along coastal areas and flood plains, where the natural environment is compromised by urban infrastructure growth, leaving a concentrated population more vulnerable to extreme weather events and the effects of climate change.

The complex dynamics and drivers of urbanization have left many Asian cities with a resilience deficit, characterized by the inability of urban citizens and systems to mitigate, adapt to, and transform in the face of

2. USAID Regional Development Mission for Asia (RDMA). 2015. Asia Regional Country Profile.

3. USAID. 2016. Asia Regional.

4. The Economist. August 30, 2014. Poverty in Asia

5. UN News Centre. 2014. Asia-Pacific report: World's most disaster prone region experiences three-fold rise in deaths.

shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. The effects of global climate change, market instabilities, environmental health hazards and ecosystem degradation are all common and growing problems in Asian cities, fueled or exacerbated by the pace and scale of city development. In the majority of Asia's cities, the enabling sociopolitical environment required to mitigate the negative impacts of these shocks and stresses is missing or ineffectual.

Migrants, the poor, and those just emerging out of poverty are often the most vulnerable to these factors, as they are continuously faced with the reality that repeated crisis could erode their limited resources. Urban citizens are commonly faced with food price volatility, growing inequality, uncertain production, displacement, declining and variable incomes, divestment of assets, and indebtedness. Infectious diseases among other debilitating health challenges are also a growing problem.

It is within this context that there is now widespread recognition among national governments, regional institutions, the donor community, and humanitarian and development partners that more must be done to enhance the resilience of chronically vulnerable populations in urban areas.

USAID defines resilience as:



The ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth⁶

The United States Government (USG) has committed to leveraging both humanitarian and development resources to support these regional and national efforts. The USG is also committed to broader coordination with governments, regional bodies, the international donor community and other development and humanitarian partners to achieve impact.

6. USAID. 2012. Building Resilience to Recurrent Crisis: USAID Policy and Program Guidance.

GOALS AND OBJECTIVES

The purpose of this training is to ensure that program managers and monitoring and evaluation teams are prepared to design, monitor and evaluate resilience-building efforts within their respective portfolios.

To achieve this overall goal, USAID has identified the following three supportive objectives:

1. Advance resilience capacity assessment and measurement concepts in rural (Module 1) and urban (Module 2) settings by linking household and community resilience to broader system resilience (in and between both urban and rural settings), and share these approaches with resilience practitioners;
2. Build implementing partner capacity to measure resilience by helping them understand the latest resilience measurement approaches;
3. Build staff capacity to construct appropriate scopes of work and provide technical guidance to implementing partners for M&E products that help build an evidence base on what works for building resilience.

By the end of Module 2, participants will be able to:

1. Understand how to analyze urban contexts using a systems approach and the resilience framework for improved resilience program design.
2. Apply key frameworks and approaches to resilience measurement to program theories of change, and design a corresponding monitoring and evaluation plan for urban resilience.

KEY CONCEPTS

- › Definitions of resilience, analytical resilience frameworks, and how these relate to the context of rapid urbanization in Asia
- › Systems approaches to urban resilience analysis, program design, and theories of change as a foundation for urban resilience measurement
- › Resilience measurement frameworks, their components – including resilience capacities, shocks and stressors, responses, and well-being outcomes – and how these apply to monitoring urban resilience and evaluating program results

The overall training approach uses a mix of plenary presentations, interactive exercises, small group break out session, and hands-on case study exercises. It also includes field work, in this case the urban municipality of Batangas within the province of Bulacan, where USAID funds the SURGE program. Secondary and primary data in the city of Batangas will serve as the basis for designing an urban resilience theory of change, and a corresponding resilience monitoring and evaluation plan.

TRAINING AGENDA

Module 2, Urban Resilience Measurement, will follow the agenda outlined below:*

Day 1

- › Participants learn resilience concepts, analytical frameworks, and measurement principles and how to apply a resilience lens within an urban context.

Day 2

- › Participants learn how to breakdown resilience measurement into components, including capacities, systems, shocks and stresses, and well-being outcomes, and apply these to a monitoring and evaluation framework.
- › Participants are introduced to strategic resilience assessments for urban program design, and prepare for conducting field work.
- › Participants become familiar with approaches and how to use secondary data as part of the assessment process.

Day 3

- › Participants travel to the Municipality of Batangas, Bulacan Province, to interview communities, businesses and government officials and learn about systemic constraints, shocks and stresses, and how these affect urban resilience.
- › Participants capture links between systemic constraints, and shocks and stresses in urban areas, and household and community resilience.

Day 4

- › Participants synthesize and analyze data from the field using the strategic resilience assessment framework
- › Participants develop a systems map to better understand the urban resilience context, and use this to identify resilience capacities and an urban resilience theory of change.

Day 5

- › Participants review the resilience measurement framework, and are introduced to more specific methods for resilience measurement, both following shocks and in absence of shocks.
- › Participants use resilience measurement methods and frameworks to develop a monitoring and evaluation plan for their urban theory of change.

* See Annex I for a Draft Agenda.

CURRICULUM

WELCOME AND INTRODUCTIONS:

Conduct pair interviews around the following questions:

- › Name, Position, Organization
- › Why are you interested in this event?
- › How do you understand resilience within the programs that you work?
- › What are your expectations for this event?

Report back in plenary.

SESSION 1: CONCEPTUALIZING URBAN RESILIENCE

Session 1.1: Conceptualizing Resilience – A Framework (1.25 hours)

Session Objectives:

- › Learn how different participants understand and work with resilience in their own program
- › Review common definitions and frameworks for resilience

Session Format:

A. Drawing and Discussion

Draw an image of an urban context that demonstrates its resilience. Share and describe your image to the group.

B. Introducing Resilience: A Case Study from Water and Sanitation Programs in Jakarta

Watch the video case study of an urban water and sanitation crisis in Jakarta. Consider how a program could be designed to address these issues raised. Reflect on the effectiveness of the program design presented and whether or not it contributed to resilience.

C. Resilience 101: The basics

There are various definitions of resilience, but nearly all of them are comparable. Consider the following three resilience definitions:

1. The ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. (USAID)
2. Urban resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds chronic stresses and acute shocks they experience (Rockefeller)
3. The capacity that ensures adverse stressors and shocks do not have long lasting adverse development consequences (Resilience Measurement – Technical Working Group)

Reflect on how these definitions are similar or different. Most resilience definitions can be broken down into the following basic components of resilience:

- a. For Whom?: Vulnerable populations
- b. Of What?: Systems that these populations live in and rely on
- c. To What?: Shocks and stresses the context and the people experience

- d. Through What?: Capacities to prevent or address shocks and stressors
- e. Well-Being Outcomes: How the four components of resilience above relate to well-being outcomes for target populations

Consider the concept of well-being outcomes, their relationship with capacities, and reinforcing causal effects between capacities and outcomes.

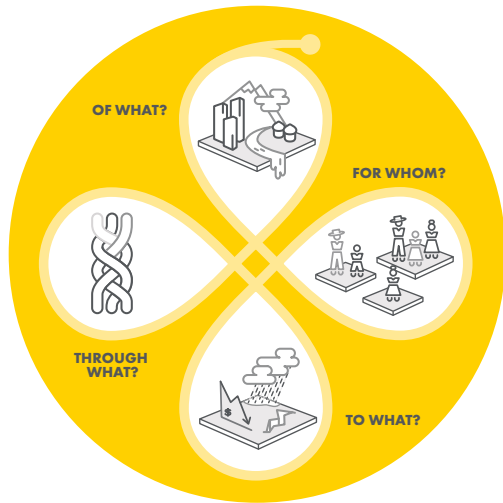


FIGURE 1: FOUR FRAMING QUESTIONS OF RESILIENCE (MERCY CORPS)



FIGURE 2: EXAMPLE OF A CAUSAL LOOP SHOWING THE REINFORCING EFFECTS OF RESILIENCE CAPACITIES AND WELL-BEING OUTCOMES

These key components of resilience are connected in an analytical resilience framework. The resilience framework illustrates that we start by identifying vulnerable, marginalized populations in a given context, or the population on whom we want to have the ultimate impact through our programming. We then move to analyze the systems in which those individuals, households and communities are embedded, and the constraints and development challenges within those systems that affect them.

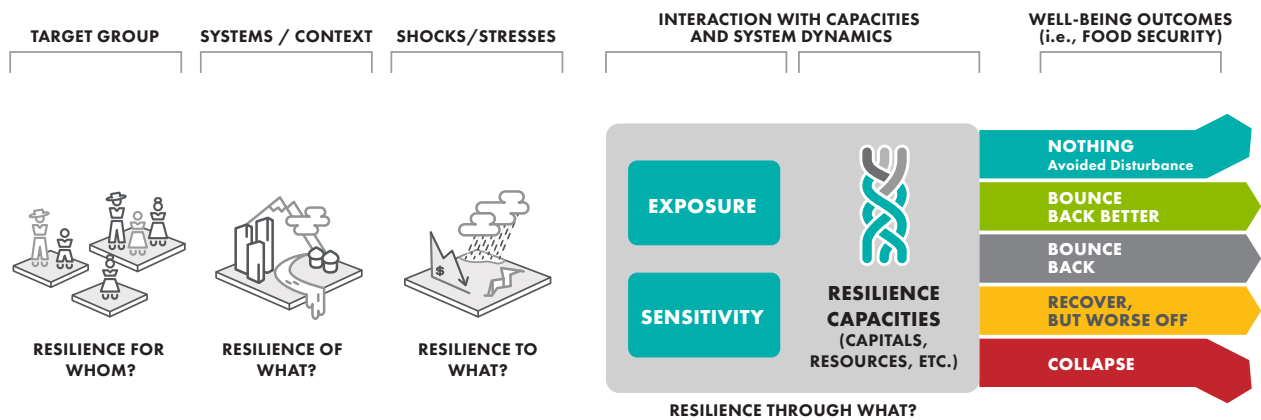


FIGURE 4 MERCY CORPS' RESILIENCE FRAMEWORK

Next, we analyze shocks and stresses that impact the systems and concerned populations. Finally, we examine the capacities that are embedded or lacking within the context to help populations address shocks and stresses. Resilience capacities determine the frequency and severity with which a population or system is exposed to a particular shock (exposure), or how badly they can be affected (sensitivity). When shocks and stresses are filtered through resilience capacities, they are indexed to particular well-being outcomes. If resilience capacities are limited, a household's well-being might collapse. For example, household members may have to migrate, or be forced into harmful or illegal sources of income. If resilience capacities are strong, households may over time do even better after the shock, as they learn and adapt to their changing context.

INTERPLAY OF SHOCKS AND STRESSES AND RESILIENCE CAPACITIES

Imagine two urban households who have the same income sources, the same amount of savings, and live in the same flood plain. Over time, one household invested in an elevated floor where the whole family sleeps and stores critical assets, while the other has only one floor and does not have any protective reinforcement. This simple housing design can be considered a resilience capacity, or a vulnerability. When hit by a flood, which household is more likely to maintain or improve its well-being after the flood? Which household is more likely to be worse off?

Strengthening resilience requires an integrated approach and a long-term commitment to improving resilience capacities. Importantly, resilience should not be considered an outcome or program goal but instead a determinant of, or pathway to higher-level well-being outcomes, such as secure, safe and productive income sources, nutritional status, and increased rates of individual investment. These outcomes in turn affect future vulnerability to risk. Thus improved well-being outcomes may also be tied to future resilience.

Session 1.2: Applying Resilience to Urban Spaces (3.25 hours)

Session Objectives:

- › Apply resilience framework to urban areas
- › Analyze vulnerable populations, systemic constraints and the effects of shocks and stresses through urban case studies
- › Use case studies to identify resilience capacities that could address systemic constraints and mitigate shocks and stresses

Session Format:

The session focuses on breaking down the four components of resilience further, and analyzing them in two different urban case studies: 1) Chennai, India and 2) Semarang, Indonesia

A. Resilience Framework and Well-Being Outcomes

Well-being outcomes, as identified in the resilience framework, can be better understood as the opposite of core development challenges which a high-level program goal may seek to address. Often core development challenges include high poverty and income inequality rates, food insecurity, endemic health challenges and high mortality rates. Well-being outcomes could thus include reduced poverty and inequality, health, food security, and reduced mortality.



Identifying the highest-level well-being outcomes is often challenging, as high-level well-being outcomes are often reinforcing. Is the program’s highest level goal to ensure that secure and productive employment opportunities are secured and maintained in urban environments? Or is that only a means to achieving greater income stability, equality and growth? Or is income only a means to ensure vulnerable populations can access the necessary health care and food required to improve nutrition in urban contexts? Dietary diversity, in turn, supports healthy and able populations that are more employable. So what should be the end goal? This question is difficult to answer, but something important to reflect on in designing a program’s intermediate outcomes and end goals. It is also important to understand where various outcomes positively reinforce each other in a cyclical loop.

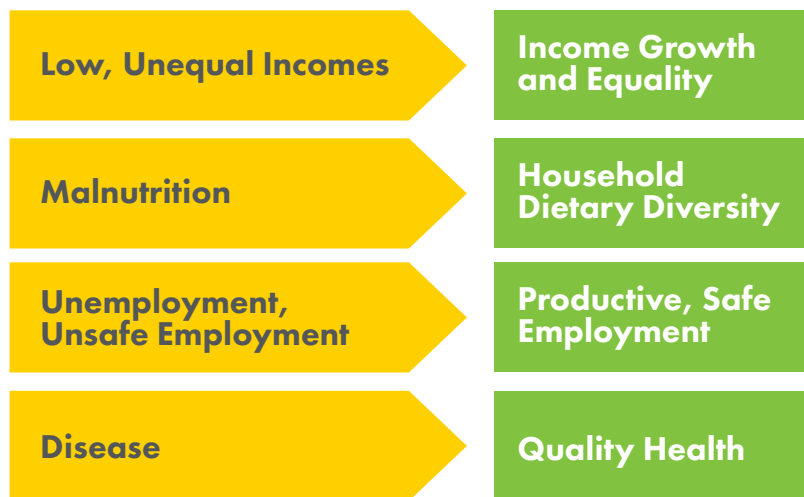


FIGURE 5: EXAMPLES OF CORE DEVELOPMENT CHALLENGES REFRAMED AS WELL-BEING OUTCOMES

Plenary Discussion: What are the highest-level well-being outcomes we want to achieve in urban areas?

B. Answering For Whom?

It is important to analyze and understand the population group or sub-groups, on which a program seeks to have its ultimate impact. Is it urban migrants? An emerging middle class? Women in informal urban settlements? Adolescent women and girls who are more likely to get trafficked?

Answering for whom links back to the core development challenge a program is trying to solve. If the goal is productive and safe employment, the program design must answer which population segments should ultimately benefit from this? Since resilience is about helping vulnerable populations achieve, sustain, and improve well-being outcomes, it is also important to understand that different segments of the population will experience different shocks and stresses, or may be impacted by the same shocks and stresses differently. It is therefore critical to unpack the differential vulnerability among population segments that a program is targeting.

Importantly, the impact population may not be the population a program works with directly, as there may be a number of external factors that affect this population’s well-being. For example, a program may choose to work

with the Department of Water to introduce improved storm water management and infrastructure into expanding slum areas, to reduce the risk of flooding and disease outbreak among urban migrants. The decision to work with a city government entity, however, is ultimately driven by the target population the program wants to help, which in this case are urban migrants unserved informal settlements.

C. Answering Of What?

The of what questions refers to a) the target geographic area of a program, and b) the systems within which target populations live in and rely on. Urban contexts can be broken down into the major systems required to make a city function. Mercy Corps often breaks down urban systems into its socioeconomic, governance/enforcement and regulatory, infrastructure, ecological and climatic components, and analyzes what are the core problems within each system that are inhibiting the core well-being outcome. We further map how they are related, as pictured below: Other approaches to breaking down urban systems have included understanding the role of energy, health, water and sanitation, under the wider system of public services, looking at infrastructure, housing and land and natural resources, and finally analyzing the overall governance contexts. The specific breakdown is not as critical as capturing all of the key elements that compose a city system, and understanding how they are linked and connected.

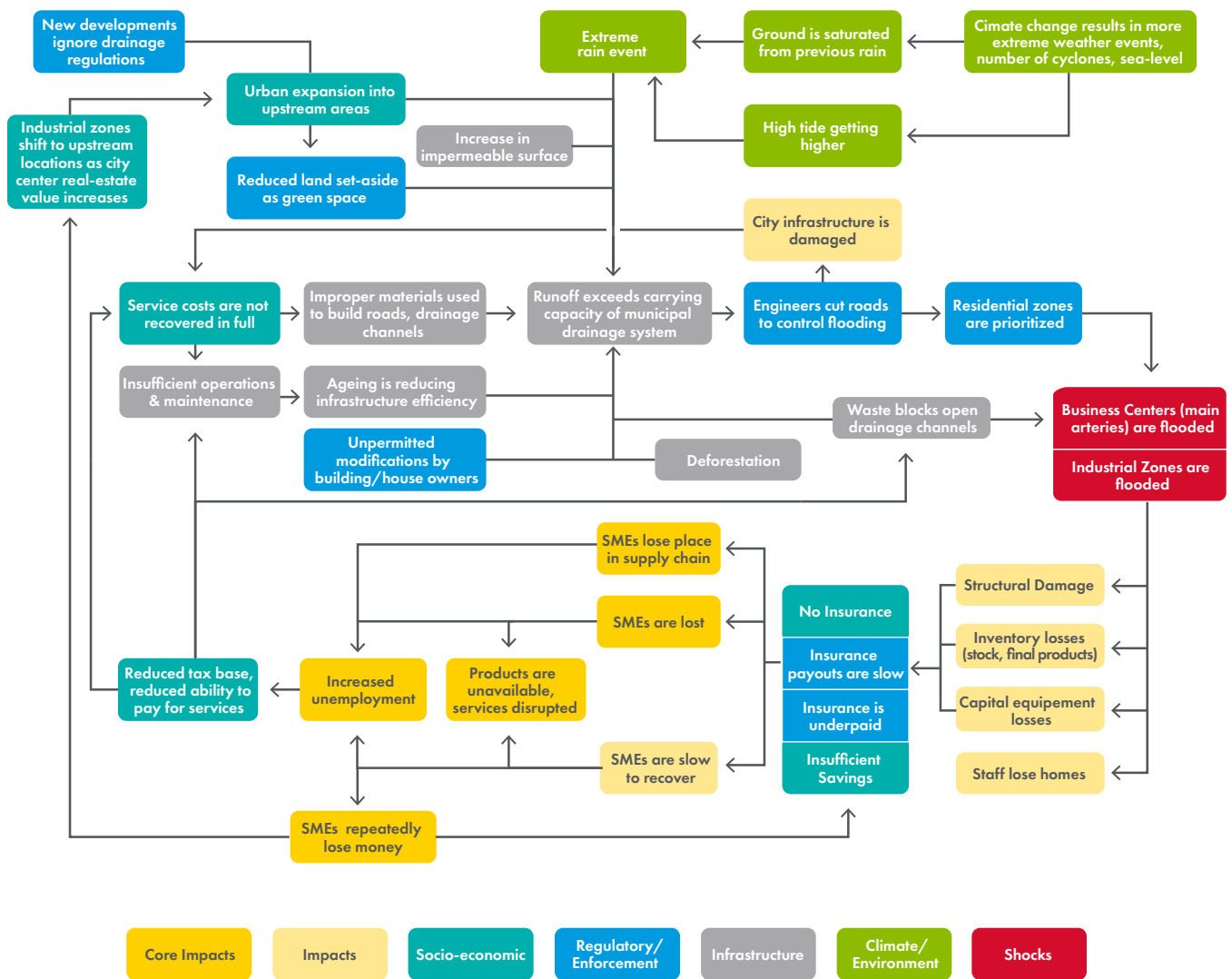


FIGURE 6: SYSTEMS MAP SHOWING RELATIONSHIPS AMONG PROBLEMS THAT ULTIMATELY UNDERMINE CORE DEVELOPMENT OUTCOMES IN CHENNAI, INDIA

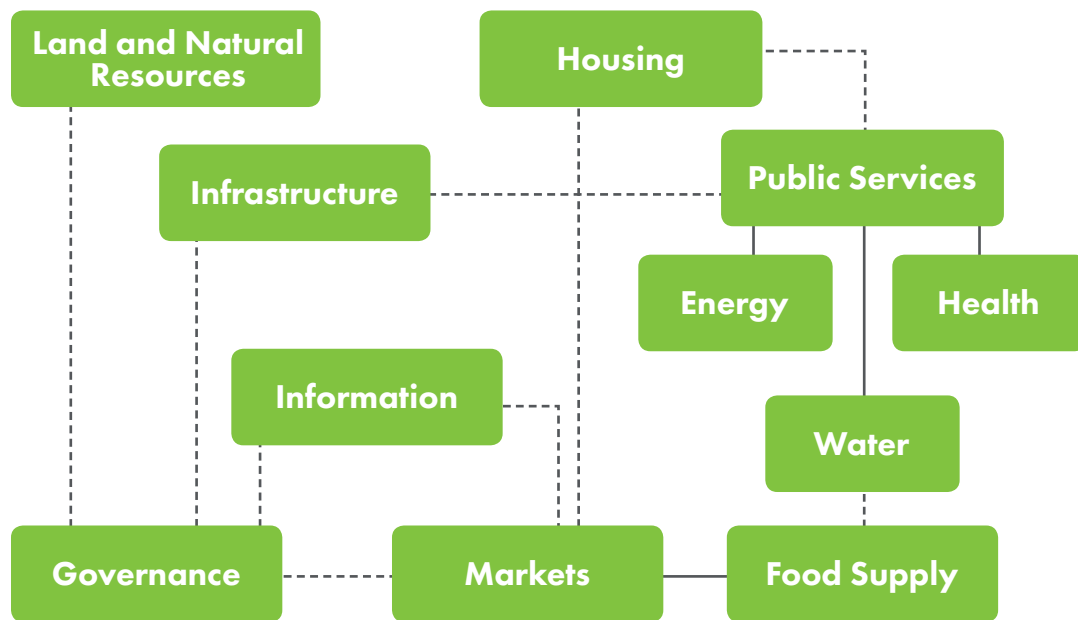


FIGURE 7: AGGREGATION SHOWING HIGHER-LEVEL URBAN SYSTEMS, SHOWING THEIR LINKAGES

Importantly, as part of analyzing “of what?”, it is important to consider the influencing stakeholders, who have an affect on the various elements of the system and how it functions. Influencing stakeholders can be individuals, or formal and informal institutions that wield control over resources and how decisions are made. Their decisions and actions typically have a downstream effect on how an urban system functions to support vulnerable and poor populations.

D. Answering To What?

A resilience analysis also requires understanding the key shocks and stresses that affect a particular context. It is useful, here to consider the difference between a shock and a stress:

- › **Shock:** sudden onset, unexpected, high impact events (i.e. flood, cyclone, violence, currency shock)
- › **Stress:** slow onset pressures that introduce an element of change or unpredictability (land degradation, high rates of migration)

Shocks can be covariate (i.e., shocks that are widely experienced) as well as idiosyncratic shocks (i.e., individualized shocks). Stresses can include slower-onset disturbances that introduce unpredictability and change in a system, and can negatively affect development over time. Shocks and stresses may include climatic events due to climate change, natural climate shifts (e.g., El Niño events), other natural disasters that affect human populations, political conflicts, economic crises, and health outbreaks. At times it may be difficult to distinguish between the stresses and shocks. For example, a drought would be considered a shock while environmental changes during times of drought are considered stressors.

In urban contexts, shocks and stresses are often associated with disasters and climate change, and therefore urban resilience is often closely linked with the field of disaster risk reduction and climate change adaptation. But cities can experience shocks emanating from different systems, that in turn have effects on multiple other systems. These can include urban violence, political unrest, market price shock, currency shocks, food supply shortages, or food price shocks, environmental pollution, rapid rates of migration, and disease. These shocks and stresses are also often interrelated, and often connected to shocks and stresses outside the city itself. For example, a poorly performing planting season due to unusual rain patterns in rural areas may leads to a rice shortage and rice price hikes. Farmers who have a modest harvest may not be able to purchase supplemental rice, and thus migrate to urban areas in search of work, putting demographic pressures on cities to provide services. Purchasing power in

cities would also be affected, potentially causing tension and frustration among urban citizens. The inability for cities governments to respond to the situation may cause urban violence or political unrest that has the potential to further impact food supply shortages and prices.

These shock and stress dynamics can ultimately be incorporated into the map of urban systems dynamics. However, it is important to identify and analyze shocks and stresses separately as well, to ensure they are not overlooked in what is often a development focused analysis. To build resilience, it is critical to note which shocks and stresses can undermine the development gains a particular program is trying to address.

E. Group Exercise: Case Study (35 minutes group work; 45 minutes presentation and discussion)

Divide into four groups of 6 or 7 each. Each group receives one of the two case studies. (Annex 1 or 2)

Discuss in each group:

- › **For Whom?:** who are the vulnerable groups in this context? Among them, who might we want to have the ultimate impact on given the city context?
- › **Of What?:** What are the systemic challenges across the city that are inhibiting well-being for the target population? Consider the following categories:
 - Social/Public Service (health, water, sanitation, low income housing)
 - Economic (income, financial service, market access, private sector)
 - Infrastructure
 - Regulatory/Enforcement
 - Climate Environment
- › **To What?:** What are the shocks and stresses that the city is facing?

Discuss: How might the shocks and stresses be contributing to the systemic constraints? How might systemic constraints be contributing to shocks and stresses

Each group presents their case study followed by reflection and discussion.

F. Answering Through What?

Strengthening resilience requires an integrated approach and a long-term commitment to improving resilience capacities. A resilience capacity is the ability of people or systems to achieve improved well-being outcomes in the face of shocks and stresses.

Resilience capacities are commonly classified as absorptive, adaptive or transformative, as per the definitions included below:

- › **Absorptive Capacity:** Ability to minimize sensitivity to existing shocks and stresses in the short-term
- › **Adaptive Capacity:** Ability to proactively modify conditions and practices in anticipation of or as a reaction to shocks and stresses, to reduce sensitivity and exposure over the medium-term.
- › **Transformative Capacity:** Creates the conditions to facilitate systemic change and create a positive environment in which people are willing and able to invest and innovate while managing risk. This category is focused on formal and informal governance systems and institutions at all scales.

It is useful to consider how these capacities work together. Transformative capacities describe the supportive enabling environment within which households can access the appropriate resources, and apply resilience strategies, in order to be able to absorb and adapt. While traditionally transformative capacities have been perceived as long-term and aspirational, they can also be understood as the foundation for resilience, as they describe the conditions that need to be in place for any resilience measures to be sustained. A supportive enabling environment a) supports equitable and improved access to resources, through good governance, and b) supplies the knowledge and attitudes required to use these resources in a way that supports resilience.

In urban contexts, it is also useful to understand resilience capacities at a systems, community, household and individual

Prevent & Respond to Shocks & Stresses

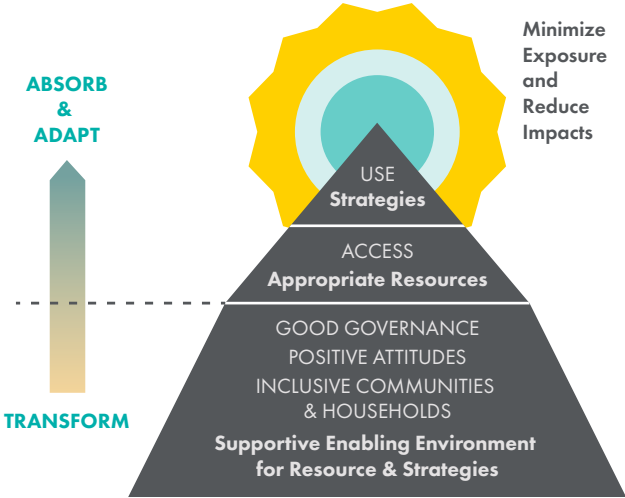


FIGURE 8: RELATIONSHIP BETWEEN TRANSFORMATIVE, ADAPTIVE AND ABSORPTIVE CAPACITIES FOR RESILIENCE

level. Individuals and households within urban areas must access absorptive, adaptive and transformative capacities to adjust to change. At the same time these groups are embedded within urban neighborhoods or communities, that are further reliant on wider urban systems (described in of what above). When designing urban resilience programs, it is useful to consider at which level resilience capacities can be most effective, and where interventions should target building absorptive, adaptive and transformative capacities, and why.

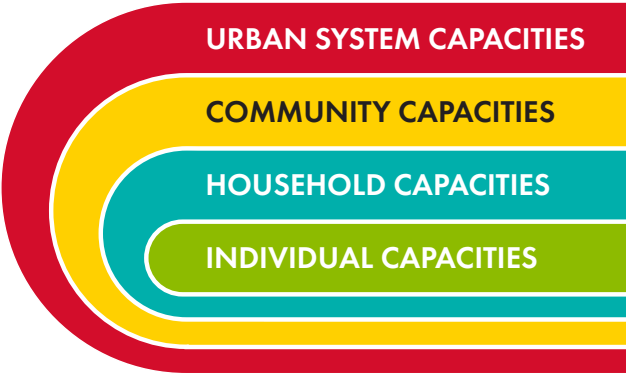


FIGURE 9: NESTED CAPACITIES FOR URBAN RESILIENCE

G. Case Study: Group Exercise (30 minutes group work; 45 minutes presentation and reflection)

Refocus attention to the case study (Annex 1 and 2). In each group, answer through what by addressing the following questions:

- › What capacities are the cities currently working on in order to address systemic constraints and mitigate shocks and stresses? What else could be done?
- › Identify whether the capacity is absorptive, adaptive, or transformative.
- › Identify whether the capacity is at a household or systems level.

Work in groups for 35 minutes, allotting sufficient time for debrief.

End of Session 1

SESSION 2: CONCEPTUALIZING URBAN RESILIENCE MEASUREMENT

Session 2.1: Resilience Measurement Framework and Capacities (1.5 hours)

Session Objectives:

- › Introduce the basic framework for resilience measurement
- › Identify difference between development monitoring and evaluation⁷ and resilience measurement
- › Use case studies to develop identify resilience indicators for a resilience M&E plan

Session Format:

A. The Resilience Measurement Framework

The resilience measurement framework, developed through the support of the Resilience Measurement Technical Working Group, captures how resilience capacities contribute to well-being outcomes in the face of shocks and stresses.



FIGURE 10 RESILIENCE MEASUREMENT FRAMEWORK OF RESILIENCE MEASUREMENT TECHNICAL WORKING GROUP

Causal framework: The Causal Framework for Resilience Measurement further breaks down the components of capacities, shocks, and well-being outcomes. Figure 11 shows an organizational scheme in which the task of developing resilience measures can be conceptualized and implemented. The components include the:

- › Ex ante component – generates data to describe the initial state at time one (t_1), before the occurrence of a shock;
- › Disturbance component - generates data to describe the intensity and effects of various types of shocks and stressors; and
- › Ex post component - generates data to describe the end state at time one (t_2). There are important considerations for the timing of ex post data collection, such as administering the survey at more than one point in time to ensure that observed patterns of adaptation and transformation are not short-lived.

7. FSIN, 2014. Technical Series No. 2. A Common Analytical Model for Resilience Measurement.

EXAMPLE: HOW TO APPLY THE RESILIENCE MEASUREMENT FRAMEWORK:

Imagine that a particular resilience program is designed around the hypothesis that improved access to savings services and insurance for marginalized urban populations could help them better prepare for and respond to inevitable coastal floods and windstorms, and therefore allow them to maintain their access to food supply and employment after a shock. At the same time, the program is designed to link citizens to government bodies to help them advocate for their needs, and to build greater accountability among city officials to ensure more inclusive and resilient development. In order to test whether the highlighted resilience capacities make a difference, the program would have to monitor for coastal floods and wind storms among the target population, and test whether those who had better a) access to savings and insurance, and b) political linkages and advocacy capacity, were better able to maintain their food supply or employment after that particular event hit.

Mercy Corps applied this framework in the Philippines, when typhoon Haiyan inflicted massive damage on the coastal city of Tacloban. Although targeted at rural affected populations, the research tested whether financial inclusion and social capital helped households use less distressful coping strategies, and preserve their assets after a shock.⁸

As this framework demonstrates, the multiple scales which must be taken into consideration when assessing resilience include: household, community, region, national, and systems. This organizational scheme enables the user to conceptualize and implement resilience programming by incorporating the collection of data on multiple levels. In this way, the indicators needed should be drawn from one or more of the levels depending on the nature of the intervention as well as the program theory of change. A key point is to understand which level has the greatest ability to influence access to and application of a particular resilience capacity, and where a program can actually intervene.⁹

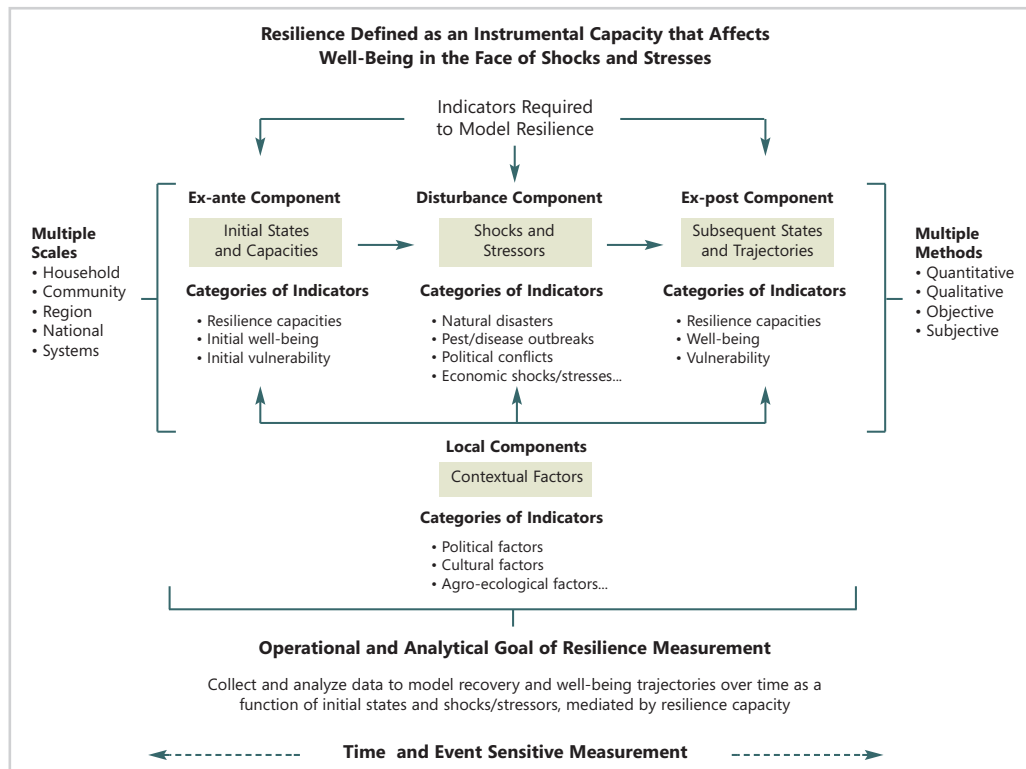


FIGURE 11: CAUSAL FRAMEWORK: SOURCE: FSIN, 2014. TECHNICAL SERIES NO. 2. AS CITED IN BÉNÉ, C., T. FRANKENBERGER AND S. NELSON. 2015.

8. Hudner, Dan and Jon Kurtz (2015). Does Financial Inclusion Build Disaster Resilience? Washington D.C.: Mercy Corps

9. FSIN, 2014. Technical Series No. 2. A Common Analytical Model for Resilience Measurement.

Key principles of resilience measurement include improving our understanding of shock dynamics and of the multidimensional and multi-level capacities of resilience, which are indexed to well-being outcomes.¹⁰ As explained by the Resilience Measurement – Technical Working Group, “an optimal combination of resilience capacities can only be identified by measuring shocks.” These principles include:

- › Resilience is a capacity that is exercised both in preparation for and in response to a disturbance or shock;
- › Resilience capacity draws on a wide array of resources including human, social, economic, physical, programmatic (e.g., safety nets), and ecological;
- › Resilience capacity should be indexed to a given well-being outcome; and
- › Resilience capacity is often observed at a given level (e.g., household, community) but is understood as a multi-level construct.

B. *Key Principles of Measuring Resilience*

When considering when and how to apply the resilience measurement framework, it is useful to keep in mind core principles of resilience measurement :

- › Measure Resilience as a means, rather than an end goal: resilience itself is an intermediate outcome that can help achieve more secure and improved well-being outcomes. It is not the end in itself.
- › Development impact measures are not synonymous with resilience. Simply achieving well-being outcomes does not indicate greater resilience on its own (Bene et al, 2015). Achieving improved employment or income equality in a particular shock prone urban environment does not automatically mean we have built resilience. The question we must ask is: do these outcomes still stand following the effects of a shock or a stress? Or, have these outcomes reduced the very exposure to a shock or a stress? Without this understanding, we don't know if the very development outcomes we seek to achieve will be undermined by the next major shock.
- › Focus on shock and stress dynamics: Resilience can only be fully understood in the context of a shock or stress, based on how well a household, community, or city has coped, adapted, or recovered. Resilience is a capacity that is exercised to prevent, prepare for and respond to disturbances. Collecting data on shocks and stressors, including their type, duration, magnitude, and people's exposure to them, is therefore an essential element of resilience measurement (Constas et al, 2015).
- › Measure at multiple levels and scales. Resilience capacity can be observed at multiple levels, from individuals, households, and communities, to larger systems, such as urban infrastructure, communication, market, and financial systems. As such it is critical to analyze key sources of resilience at different scales, and the interactions between them (Constas, et. Al. 2014)
- › The timing and frequency of measurement must be sensitive to resilience dynamics: Accurately measuring resilience required understanding conditions before, during, and after a shock or stress. Indicators for these moments can be organized under the components of 1) ex-ante, pre-shock – i.e. initial states of well-being and capacities, ii) disturbance component that represents shocks and stressors, and iii) ex-post, post-shock, component that represents subsequent well-being and resilience capacities (Costas et al. 2014b)

10. Frankenberger, Tim, Jon Kurtz and Brad Sagara (2015) Mercy Corps' Approach To Measuring Resilience. Resilience Discussion Paper No. 2: Mercy Corps

C. Group Exercise: Breaking Down Common Urban Resilience Measurement Frameworks (20 minutes)

Review the ARUP resilience measurement framework often used to produce indices of urban resilience. Looking at the framework identify:

- › Which of the characteristics correspond to higher level well-being outcomes?
- › Which characteristics represent resilience capacities at either the household or urban system level that could help mitigate shocks and stresses?

Organize your information into the framework below:



FIGURE 12 ARUP RESILIENCE FRAMEWORK FOR ROCKEFELLER'S 101 RESILIENT CITIES

GROUP WORK TEMPLATE

Resilience Capacities

Well-Being Outcomes

Session 2.2: Resilience Measurement Deconstructed: Capacities, Indices and M&E (2 hours)

Session Objectives:

- › Gain deeper understanding of resilience capacities and indices at household and systems level
- › Understand the connection between resilience measurement and M&E

Session Format:

A. *Resilience Measurement: Measuring Capacities*

A critical starting point for measuring resilience is identifying what resilience capacities are important in a particular context, and getting a baseline on the status of resilience capacities to understand what is present and what is lacking. The critical resilience capacities can be identified through a strategic resilience assessment process (session 3).

Consider the example of an urban migrant population, living in an informal settlement along the river in a city that is vulnerable to both flooding and typhoons. Critical resilience capacities may include:

- › Early warning information
- › Evacuation routes
- › Household budget management
- › Predictable and safe employment
- › Disaster infrastructure

It is also useful to consider and make sure that resilience capacities are not only thought of as preparedness and response strategies, but also capture the adaptive and transformative capacities that can impact the resilience of this population. For example, while early warning information and evaluation routes might help the population better prepare for and be less affected by existing shocks, improved household budget management, and more predictable and safe employment could help them manage incomes in a way that allows them to build better houses, or ensure their income streams aren't as sensitive to these potential events. Access to disaster infrastructure, on the other hand, could be transformative, as it may help eliminate the exposure of flood risk altogether.

B. *Resilience Measurement: Indices*

It is often useful to group resilience capacities into indices. This is the case a program design is built on the hypothesis that a group of capacities will have an aggregate affect on well-being outcomes, or wishes to measure how a group of capacities holistically represents the performance of a system.

Resilience indices have often been created around absorptive, adaptive, and transformative capacities to ensure resilience programs are working at each level, and to separately understand the effects of a) preparedness/response, b) medium-term adaptive measures, and c) underlying changes in the enabling environment for resilience.

GROUP WORK TEMPLATE

Absorptive		Adaptive		Transformative	
Core Indicator	Indicator	Core Indicator	Indicator	Core Indicator	Indicator
Social Capital	Strength of urban neighborhood support networks for preparedness and response	Social Capital	Collective measures for building and maintain green infrastructure	Land use Planning and Zoning	Vulnerable land areas under protection; hectares of protected mangroves
Social Safety Nets	Presence of community lending system	Waste Management	HH who report appropriate waste disposal practices	Land use Planning and Zoning	HHs living in alternative /"safe" housing
Emergency food and water stocks	HHs who report storing excess food and water for emergencies	Water and Sanitation	Regular city drainage maintenance enforced	Infrastructure	Hectares of land safeguarded through green infrastructure initiatives

In urban contexts, it is useful to think about indices that help measure the overall resilience capacity of a system, or the contribution of a system to resilience. An index can be developed that measures the performance of a water and sanitation system, an energy system, or governance planning capabilities. Wherever system performance contributes to improved well-being in the face of shocks and stresses, the components of this system can be considered resilience capacities.

EXAMPLE: APPLYING RESILIENCE IN INDONESIA

The Rockefeller-funded ACCCRN program implemented in Indonesia, identified five core systems, which it wanted to ensure contribute to the overall resilience of a city. This included the institutional, social, human, financial and economic. Within each of these systems, ACCCRN further identified sub-systems that needed to be resilient, in order for the city to achieve to inclusive, urban resilience. For each of these sub-systems, ACCCRN identified a group of proxy-indicators, or measures of resilience capacities that together described the resilience of that particular system. For example, under the Human System in urban areas, ACCCRN wanted to aggregate a measure for the food and agriculture system, and identified proxy indicators for that system to include productivity and sufficiency, accessibility and distribution, and quality and utilization. Each of these measures can be understood as resilience capacities within that system, that taken together, measure the overall resilience capacities linked to the food and agriculture sub-system.

System	Sub-System	Proxy Indicator
Institutional	Structure and function	Knowledge and information
		Roles and responsibility
		Collaboration and partnership
	Planning and policy	Inclusivity
		Assessment
		Policy
	Emergency response	Emergency plan
		Early warning system
		Drill practice
Social	Demographics	Dependency ratio
		Marginal society
		Migration pattern
	Culture	Local tradition
		Religion and belief
	Social capital	Local organization
Human	Health	Community participation
		Profile or health rate
		Access and equity
	Education	Services
		Formal education
		Knowledge management
	Food and agriculture	Productivity and sufficiency
		Accessibility and distribution
		Quality and utilization (nutrition)
Economics	Profile	Local market
		Business and enterprises
		Economic structure and profile
	Financing Mechanism	Risk management
		Budgeting
	Livelihood	Diversity
Physical	Basic Services	Opportunity
		Practice and policy
		Location and accesbilty
	Critical Services	Reliability and livability
		Equity and equality
		Shelter
	Protective Services	Evacuation route
		Emergency medical support
		Equality
Ecological	Stock and species	Standards
		Maintanance
		Biodiversity
	Environment	Connectivity
		Adaptability
		Quality
	Landscape	Potential sources
		Quality
		Management
	Services	

FIGURE 13 EXAMPLE OF AN URBAN SYSTEMS INDEX FROM THE ASIAN CITIES CLIMATE CHANGE RESILIENCE NETWORK, RESILIENCE REVIEW

C. Resilience Measurement: Measuring Responses

Another critical aspect of resilience measurement includes responses. The resilience measurement community has acknowledged that it is not enough to understand what capacities are present pre-shock, but it is also critical to understand how these capacities are used or applied post-shock. These resilience strategies or responses, further determine well-being outcomes.

Responses at a household level can include drawing on savings and assets, accessing insurance, migrating, linking to neighbors and neighborhood networks for support, or collective action for clean-up and reconstruction. At a city systems level, response may include activating emergency response teams, mobilizing private sector capacity for response (i.e. to restore communication), or allowing small businesses to access capital for re-start-up.

The extended resilience measurement model that includes responses, is provided below

ROLE OF RESPONSE STRATEGIES IN RESILIENCE:

Imagine two households have access to formal credit prior to a large flood, and both run a small neighborhood tailoring operation in the city. Both households decide to draw on credit to help them cope with the shock. One household uses the credit to send a family member to work temporarily in the construction sector, to buy back assets for their tailoring business lost in the floods. Another household uses the credit primarily for household consumption needs, and to purchase a cell phone that was lost in the flood. Which households' response is more likely to help them recover in the medium-term?

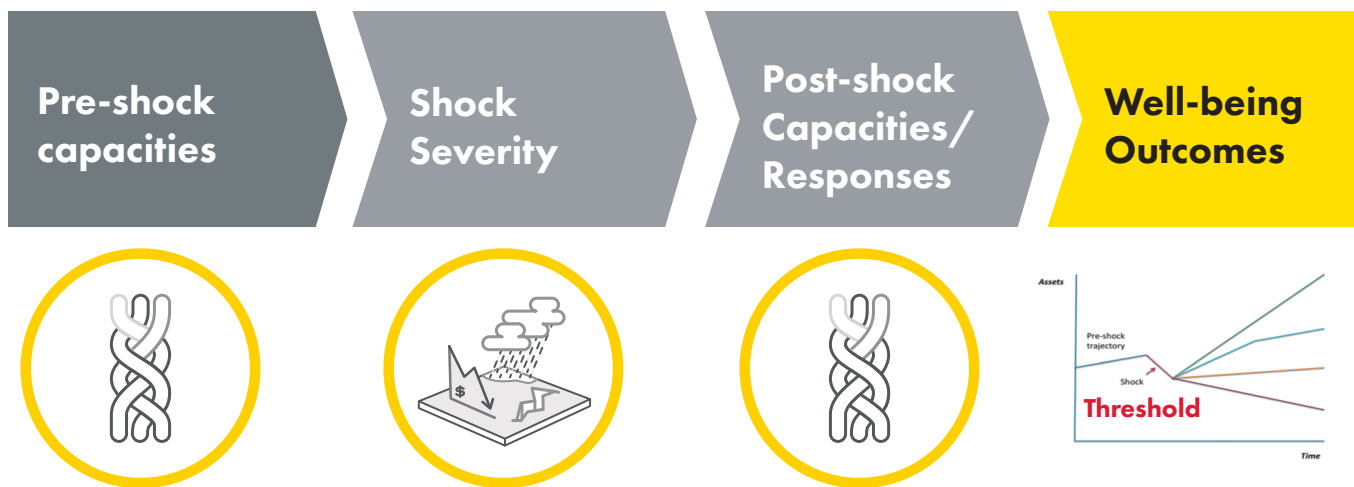


FIGURE 10 RESILIENCE MEASUREMENT FRAMEWORK OF RESILIENCE MEASUREMENT TECHNICAL WORKING GROUP

D. Resilience Measurement: Links to Monitoring and Evaluation

Finally, it is useful to consider how resilience measurement links to a common monitoring and evaluation framework.

- › The overall impact in a results framework and a monitoring and evaluation plan maps to well-being outcomes in the resilience framework. This is the highest-level development goal in a program.
- › A program outcome maps to either responses to shocks and stresses, or can also map to a reduction in shocks and stresses.
- › Improved responses to shocks and stresses, or shocks reduced, are the result of resilience capacities. Resilience capacities map to intermediate outcomes. Often there are multiple levels of resilience capacities, and it is useful to introduce sub-intermediate outcomes as well.
- › Activities and interventions contribute to building the intermediate outcome, in this case the resilience capacities.

Continue in the same groups that worked together on the case studies:



FIGURE 14 TYPICAL RESULTS FRAMEWORK LOGIC



FIGURE 15: RESILIENCE -FOCUSED RESULTS FRAMEWORK

- › Referring to answers from the previous group exercise, select two well-being outcomes, shocks and stresses, and resilience capacities. Organize them into the following table. Identify one indicator for each measure.
- › Reflect on responses. Identify the appropriate application of your resilience capacities as responses. Include one response measure for each capacity. Identify indicators.
- › Present your results back to the wide group and discuss.

	Measure	Indicator
Well-Being Outcome	Asset security...	
Response		
Shock/Stress		
Resilience Capacity		

End of Session 2

SESSION 3: URBAN RESILIENCE PROGRAM DESIGN

Session 3.1: Introduction to Strategic Resilience Assessments¹¹ (1 hour)

Session Objectives:

- › Review approaches to vulnerability assessments to inform urban programming
- › Introduce the STRESS methodology for urban resilience program strategy and measurement

Session Format:

A. Reflections on Vulnerability Assessments

A number of vulnerability and capacity assessments have been used to understand urban contexts, and where to focus efforts for building urban resilience. Reflect on processes that you have been a part of and share:

- › Have you been involved in vulnerability and capacity assessments for urban program design?
- › Who was involved in these assessments?
- › What were the methods used?
- › What type of information did the data gathering focus on? Scientific? Political economy? Community?
- › What worked well and what didn't

Case Study: Vulnerability Assessments in Bandar Lampung and Semarang, Indonesia. A case study will be presented on the application of vulnerability and capacity assessment for the Rockefeller-funded Asian Cities Climate Change Resilience Network program, implemented in Semarang and Bandar Lampung Indonesia, to inform urban resilience strategy and planning with city government.

B. Strategic Resilience Assessments (STRESS)

A strategic resilience assessment is a methodology or process for applying a resilience lens when designing a development strategy. By helping teams develop a measurable theory of change—one that clearly articulates how programs build resilience in support of humanitarian and development goals—the STRESS process informs country-level strategy development and/or complex program design.

The STRESS process provides a framework for assessing the dynamic social, political, ecological, and economic systems within which communities are embedded. The STRESS process is aimed at identifying vulnerabilities; better understanding shocks and stresses; analyzing feedback loops that are often unseen or under-appreciated in a traditional sector analysis; and examining the capacities of individuals, households, and communities to absorb, adapt, and transform in the face of these risks.

STRESS Objectives. The STRESS process is designed to achieve four core objectives:

- › Identify systemic constraints, and shocks and stresses that impact key development outcomes in a particular context
- › Define the impacts of shocks and stresses on different population sub-groups or geographies

11. For more information on STRESS, see Mercy Corps' Strategic Resilience Assessment Guidelines.

- › Understand the capacity for households and communities to manage shocks and stresses.
- › Develop a resilience-focused resilience theory of change



The process is structured around four phases as described below

Scope: Review team and expert knowledge through participatory workshops

Inform: Conduct secondary literature review; complement with qualitative field methods

Analyze: develop risk profiles and evaluate resilience capacities

Strategize: develop a resilience-focused, measurable theory of change

While the STRESS process shares similarities with many other assessments, it has a number of defining features

that make it unique and distinct from other assessment processes, and particularly useful for analyzing complex interconnected systems. These unique features are:



C. STRESS: Urban Systems Focus

A STRESS process can be a particularly useful methodology for analyzing the complexity of urban systems. In order to apply STRESS to urban areas it is useful to identify and breakdown the core development challenge or problem in an urban area, and the various systems that would impact that problem. One useful framing is provided below:



FIGURE 16 FRAMEWORK FOR BREAKING DOWN CORE DEVELOPMENT CHALLENGES AND SYSTEMIC CONSTRAINTS IN AN URBAN CONTEXT

The STRESS process helps identify the immediate drivers of the core development problem within each system, as well as any downstream impacts within that system. A systems mapping methodology helps to map the problems in a cause and effect logic to create a causal problem map, as reflected below. Shocks and stresses are identified as part of the problem mapping and woven into a systems map. The causal problem map provides facilitates identification of resilience capacities, as well as program entry points that can have the widest downstream effects. This map shows the relationship between resilience capacities, their effects on shocks and stresses and core development outcomes. This map of capacities and their effects forms the basis of a resilience theory of change.

BATANGAS OVERVIEW:

Batangas Province is located in the Calabarzon region in the western island of Luzon. Its capital, Batangas City, is located on the coast where more than 73 percent of the land is on slopes. The area is considered an important site for the practice of the Tagalog language as a key cultural and historical center.

With a 2.24 percent annual growth rate (2000-2010), Batangas Province is expected to double in population in 31 years (as of 2013). The most recent population data indicates that of the 2,377,395 residents, more than 32 percent live in urban areas. From 2000 to 2010, urban areas have grown at a faster pace than rural areas in Batangas.

Coastal areas are particularly vulnerable to climate change impacts due to their exposure to sudden shocks and to prolonged stresses. A paper done on the impacts of climate change hazards on coastal communities found that the hazards in the Batangas area include sea level rise and coastal erosion. This area is also particularly affected by typhoons, storm surges, flooding, and sea encroachment inland. Environmental pressures include sand quarrying, illegal charcoal making using mangroves and other species, illegal fishing using blasting and cyanide, and use of fine mesh nets in fishing.

Overarching Question	Specific Question	Answers	Outstanding Questions
For Whom?	Who are the ultimate urban populations the program is trying to reach? Are there distinct groups or sub-groups within these populations that are differently affected development challenges and shocks and stresses?		
Of What?	What are the core development challenges affecting this population? What are the systemic constraints that contribute to the core problems? Who influences these dynamics?		
To What?	What are the shocks and stressors affecting the systems and our target population? What is their impact on systems? On people?		
Through What?	How is the program currently addressing the systemic constraints, and shocks and stresses? Is this appropriate? Sufficient?		

B. Case Study: Evaluating the Program Design (3 hours)

Exercise 1: (1 hour): Imagine USAID has hired you as an evaluation team to help review the design of their urban resilience program. In order to complete your assignment, you will apply the STRESS process to a case study of an urban resilience program, and determine if the program has taken a systems approach, answered all critical resilience questions with respect to resilience-building, identified the appropriate resilience capacities and developed a justifiable theory of change.¹³

- › Divide into teams of 3
- › Read case study (10 minutes)
- › Work with your team to answer the following questions

Debrief (1 hour)

Describe your answers in 5 to 10 minutes. Listen carefully to what your colleagues found? Discuss for 30 minutes to come up with or modify your master list.

Capture areas that you want to validate, know more about, or where you have major knowledge gaps.

Exercise 2: Consolidating Knowledge Gaps, Areas for Validation and Field Questionnaires (45 minutes)

Each is assigned to investigate a particular area of the city, and its corresponding government, community and business representatives. The breakdown is provided below.

CITY CENTER: City Officials Corporations	INDUSTRIAL SUBURBAN ZONE citizens, business, local government	COMMERCIAL/AGRICULTURAL SUBURBAN ZONE: citizens, business, local government
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Based on your group:

- › Consolidate your knowledge gaps and areas for validation
- › Divide the list of stakeholders to interview among your group, based on pairs of two or three.

In your interview pairs:

- › Review the provided field questionnaire
- › Modify to reflect your areas of validation and knowledge gaps

C. Review field logistics

- › Review core principles of participatory field methods and good interviews
- › Review roles for data collection: 1) facilitator, 2) note taker, and 3) translator (if needed)

End of Session 3

¹³. The urban resilience program case study should be developed on the same city as the previous exercise. In the first training, this was Batangas, Philippines.

SESSION 4: GATHERING DATA FOR URBAN RESILIENCE PROGRAM DESIGN

Session 4 focuses on collecting field data based on questionnaires and preparation conducted the day before. The following is a sample schedule for field data collection:

Time	Activity	Travel Arrangements
7:00 – 9:00am	Departure for Batangas and arrival at field site	Small vans take teams to Batangas
9:00 – 12:00pm	Key Information Interviews with Government and Private sector	Small teams of 2 or 3 each conduct interviews
12:00 – 1:00pm	Lunch on site	
1:00 – 3:30pm	Focus Groups and Key Informant Interviews with community leaders and groups	Small teams of 2 or 3 each conduct interviews
3:30 – 6:00pm	Departure for and arrival in Manila	Small vans will bring teams back to hotel

End of Session 4

SESSION 5: ANALYSIS AND STRATEGY FOR URBAN RESILIENCE PROGRAM DESIGN

Session 5.1: Synthesizing and analyzing data from the field: a systems approach (4 hours)

Session Objectives:

- › Synthesize learning and observations from field visit using the resilience framework
- › Develop a systems map for urban resilience

Session Format:

A. Debriefing Systems Constraints and Shocks and Stresses

Exercise 1 (30 minutes): Review data from the field, and add to the case study analysis from Day 2, Session 3.2. Add, edit or complement information to your answers to systemic constraints and shocks and stresses, specifically focusing on the response from the stakeholders with whom you spoke to. Compile the information from your field and case study analysis into the following template.

TEMPLATE FOR GROUP WORK:

Overarching Question	Specific Question	Answers
Of What?	What are the core development challenges affecting this population? What are the systemic constraints that contribute to the core problems? Who influences these dynamics?	
To What?	What are the shocks and stressors affecting the systems and our target population? What is their impact on systems? On people?	

IMPORTANT! When framing answers to the questions and problems, work on making your answers as specific as possible. Refer to the examples and guidance for do's and don'ts of problem formulation below.

Do's and Don'ts in formulation of problems

Don'ts:	Do's:
No big balloons or big vague concepts, e.g. no infrastructure	but Be precise, e.g. there is no paved road from Chittoor to Mahabubnagar
No absent solutions (danger: you block alternatives), e.g. we have a lack of money and thus children don't go to school	but Instead, the problem is: school fees are not affordable
No non-existing problems, e.g. no existence of NGOs (in former dictatorial countries possibly a problem in the past)	but The problem now is that there is no knowledge on how to run an NGO
No formulation of interpretations, e.g. the government is lazy	but The government does not issue licenses
And further: explain abbreviations and jargon	

FIGURE 19 DO'S AND DON'TS GUIDANCE FROM MDF PROBLEM TREE ANALYSIS

Exercise 2 (1 hour): Organize all constraints and shocks and stresses onto cards according to which system they emanate from or belong to. Use the color guide provided below.

	= Core Development Challenge
	= Socioeconomic
	= Regulatory/Enforcement/Political
	= Climate/Environment
	= Infrastructure

Debrief with the group.

ENSURE YOU CAPTURE ALL OF YOUR COLLEAGUES ANSWERS THAT ARE NOT REFLECTED IN YOUR OWN ANALYSIS.

EXAMPLES FOR REFORMULATING GENERAL PROBLEMS INTO MORE SPECIFIC PROBLEMS:

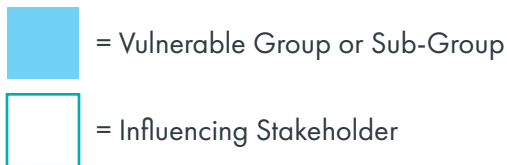
- *i.e. weak governance = weak budgetary management process, three agencies responsible for Disaster Risk Reduction, Department of Water does not work with city disaster management agency*
- *i.e. poor infrastructure = drainage canals built prior to city expansion plans, infrastructure development only focused on business district,*
- *i.e. climate change = increased severity and frequency of extreme rainfall events, heightened flood risk,*
- *i.e. water shortage = declining sub-surface water, land subsidence, limited water service infrastructure, outdated water pipelines, no running water in settlements*

B. Debriefing Vulnerable Groups and Influencing Stakeholders

Exercise 3 (45 minutes): Review data from the field, building on the case study analysis from Day 2, Session 3.2. Add, edit or complement information to your answers to for whom. Discuss:

- › Who are the groups most vulnerable to the systems constraints and shocks and stresses outlined? What makes them vulnerable?
- › Who are the influencing stakeholders, or those that have the most authority over the systems constraints and shocks and stresses identified. BE SPECIFIC. (i.e. political elites = x company is government-owned)

Capture your answers on a card:



Debrief with the group.

ENSURE YOU CAPTURE ALL OF YOUR COLLEAGUES ANSWERS THAT ARE NOT REFLECTED IN YOUR OWN ANALYSIS. GROUP ACCORDING TO THE CATEGORIES PROVIDED ABOVE.

Exercise 4 (1.5 hours): Focus on the systemic constraints and shocks and stresses and develop a systems map, that shows the flow of problems, and contributing shocks and stresses, from one to another. Follow these steps:

1. Begin with core development challenges, identify any linkages between them
2. Identify any immediate drivers or effects resulting from these challenges; map the connection between them
3. Brainstorm other systemic constraints, and add them in and make connections using a casual logic; identify any reinforcing causal loops as you go along, not just linear linkages
4. Review and rearrange your map. Add or refine shocks and stresses and systemic constraints to fill in missing links.
5. Debrief your map within your own teams and discuss:
 - a. Which problems seem to be the key drivers?
 - b. Which problems have the most connections coming in or out of them, and therefore affect a large portion of the system?
 - c. Which areas seem to be critical entry points for intervention?

Session 5.2: From Problems to Solutions: Resilience Capacities and an Urban Theory of Change (3 hours)

Session Objectives:

- › Identify resilience capacities to mitigate shocks and stresses in the context of Batangas
- › Develop a Results Framework, or theory of change, for urban resilience

Session Format:





A. Group Work: Identifying well-being outcomes and resilience capacities

Exercise 1 (45 minutes): Refer to the resilience capacities from the case study analysis in day 2, session 3.2, as well as information from the field. Complete your analysis of resilience capacities that will the systemic constraints and shocks and stresses on your problem map.

TEMPLATE FOR GROUP WORK:

Overarching Question	Specific Question	Answers
Well-being Outcome	What is the highest-level well-being outcome we want to see in the city, given the major development challenge?	
Through What?	How is the program currently addressing the systemic constraints, and shocks and stresses? Is this appropriate? Sufficient?	

Exercise 2 (15 minutes): Then take the list of well-being outcomes and resilience capacities, and transpose it on colored cards based on which system they belong to.

	= Core Well- being Outcomes		= Climate/Environment
	= Socioeconomic		= Infrastructure
	= Regulatory/Enforcement/Political		

Exercise 3: (1.5 hour) As a group, match the capacities on your systems map to the problems they can address. Develop a systems map focused on the cause and effect between resilience capacities, reduced effects of shocks and stresses, and well-being outcomes.

Debrief and Share your Map with the Group.

In the results framework the impact should reflect the highest level well-being outcome for the context or Batangas, as identified in the systems map. While there are many contributing factors that lead to the well-being outcome, focus on how a reduction in shocks and stresses, and appropriate responses to shocks and stresses, secure well-being. In order to reduce shocks or stresses, and ensure appropriate responses, individuals, households, and urban systems, must exhibit the appropriate resilience capacities. These resilience capacities will include both resources that people and institutions can access, and how they use or them, or the strategies they apply.

Resilience capacities are often reinforcing, and one capacity may lead to another. Accordingly, it may be useful to breakdown resilience capacities into intermediate outcomes, and sub-intermediate outcomes.

Present your theory of change back to your peers.

End of Session 5

SESSION 6: RESILIENCE MEASUREMENT METHODS

Session 6.1: Resilience Measurement Framework - Review

Session Objectives:

- › Review core concepts of the resilience measurement framework
- › Compare the resilience measurement framework to standard M&E frameworks

Session Format:

A. Reviewing the Resilience Measurement Framework

As stated in session 2.1, the resilience measurement framework captures how resilience capacities contribute to well-being outcomes in the face of shocks and stresses. For resilience measurement principles, refer to session 2.1



Consider a practical application of this framework. Imagine an urban environment with high levels of income disparity and inequality among households, and large rates of malnutrition. The goal of a development program working in this context may be to see household asset growth, increased investment, and improved dietary diversity among poor urban populations. However, imagine the urban area is regularly affected by coastal floods and typhoons which, among other factors, repeatedly undermine these outcomes. To best mitigate these factors, the program has decided to focus on building early warning systems, developing evacuation routes, supporting improved household budget management, ensuring households have predictable and safe employment options, and ensuring disaster infrastructure is in place in order to mitigate risks. These risk mitigating measures could all be considered resilience capacities. In order to measure whether any of these factors actually mattered for resilience, a resilience measurement model would look like this:

EXAMPLE OF APPLYING THE RESILIENCE MEASUREMENT FRAMEWORK



B. Resilience Measurement Indices

It is often useful to group resilience capacities into indices. As discussed in section 2.2, resilience measurement indices are often created around the characteristic of a resilience capacity – whether it is absorptive, adaptive, or transformative – or around the system that they belong to. Definitions of absorptive, adaptive and transformative capacities are provided in section 2.2. Examples of resilience measurement indices are provided below.

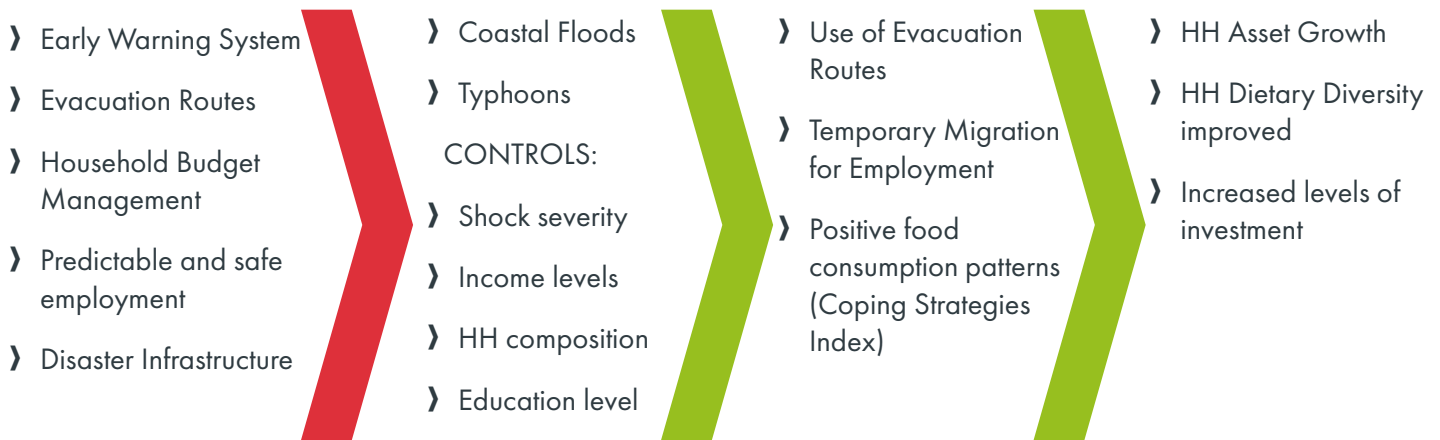


C. Resilience Measurement and Responses

When using the resilience measurement framework to understand how resilience capacities are being employed in conjunction with a shock, it is important to also look at how people are employing those capacities after a shock. This means identifying and measuring responses. The resilience measurement model with responses can be found in section 2.2.

To build upon the example in section A above, the model can also examine what households were actually doing after the shock. This may include testing whether household members used evacuation routes, were able to migrate temporarily for labor, and whether they were able to rely on less distressful food consumption patterns immediately after the shock.

MEASUREMENT MODEL WITH RESILIENCE CAPACITIES AND RESPONSES



D. Resilience Measurement and Monitoring and Evaluation

The resilience measurement approach can be transcribed against a typical results framework, and the associated monitoring and evaluation approach. In a typical program, a set of activities or outputs contributes to a set of intermediate outcomes that then result in higher-level outcomes or impact. In resilience measurement, intermediate outcomes are typically associated with various resilience capacities. The implementation of appropriate responses to reduce the impact of a shock, or the reduction of a shock itself, is typically associated with the outcome. This resilience effect should then help secure the final impact of the program, or the development goal defined by the well-being outcome in the resilience measurement framework.



Session 6.2: Resilience Measurement Methods

Session Objectives:

- › Review practical methods for measuring resilience
- › Understand post-shock and recurrent monitoring methods
- › Understand how to measure losses avoided and shocks reduced

Session Format:

A. Just Monitoring and Evaluation: Why Baseline and Endline are Still Important

A typical monitoring and evaluation plan, often captured in a program monitoring plan, or PMP, is a good place to start to being applying the resilience measurement framework. This typically consists of a baseline, mid-term and end-line to capture, and intermittent monitoring to check on the performance of activities and their contribution to intermediate outcomes.

In a resilience measurement framework, the baseline, mid-term and endline would serve as an opportunity to measure the status of resilience capacities and well-being outcomes, as well as how frequently and severely people are affected by shocks and stresses. Measures of shocks and stresses are needed both as a control measure, but also to understand how resilience capacities are contributing to resilience in the face of various disturbances. The table below shows us how a typical evaluation plan can help us begin to understand resilience.

Baseline	Mid-term Evaluation	Endline Evaluation
Take status of resilience capacities	Track changes in level of resilience capacities	Measure final status of resilience capacities
Take status of well-being outcomes	Track changes in level of well-being	Measure final status of well-being outcomes
Identify experience of shocks and stresses	Examine how shocks and stresses are affecting the population	Evaluate whether resilience capacities have contributed to well-being outcomes
Understand to what extent resilience capacities are associated with particular well-being outcomes	Evaluate contribution of capacities to well-being outcomes in the face of shocks and stresses (test theory of change)	

Use of Program Evaluations to Measure Resilience:

B. Shock Measures

A resilience program also needs to incorporate measures of the key shocks and stresses, to which it is trying to build resilience. While household baseline surveys can support gathering this data, shocks and stresses may happen and affect the population at a more frequent rate than household data can be gathered. Also household surveys may not always be designed to pick-up trends in shock dynamics, and this data can be accessed more quickly and efficiently from secondary sources. Secondary data sources for shock and stress monitoring may include hydrological or meteorological services, satellite data that tracks vegetation cover, and market price and financial market data that shows trends in price fluctuation of key commodities, or help track currency trends.

The following table provides a process for introducing improved measures of shocks and stresses into a program monitoring and evaluation plan:

Prioritize shocks and stresses	Floods Land subsidence
Floods	Exhaust secondary data for measures of trends, severity Incorporate measures into baseline questionnaires for HH effects
Identify monitoring data sources	Identify regular sources of secondary data such as: hydrological services, financial market data, satellite data, early warning systems
Determine data sources for monitoring shock effects	Refer to humanitarian data Monitor effects at the household level through post-shock monitoring

C. *Post-shock, recurrent monitoring*

Post-shock, recurrent monitoring allows periodically tests the effects of a particular shock and stress on the well-being outcomes of a given population, as well as to what extent resilience capacities are helping to improve the well-being outcomes, despite the fact that a shock or stress has impacted the group.

Post-shock monitoring requires household-level panel data on responses and well-being outcomes soon after a shock has hit, typically within a month to six weeks. If a recent data set (i.e. a baseline, annual or mid-term evaluation) is not available on the status of resilience capacities, this information will have to be collected as well. This allows the program to test its theory of change, by understanding how households are actually coping, and whether resilience capacities are contributing to improved responses and well-being outcomes after a shock.

A shock is rarely a single isolated event. Often households experience shocks and stresses as a series of reinforcing and compounding events. For example, a flood may lead to an increase in disease outbreak, that leads to the death of a family member. While a household may have been able to draw on its resilience capacities to deal with the effect of one shock, when faced with multiple subsequent shocks, these resilience capacities may no longer be sufficient. It is therefore important to conduct recurrent monitoring, repeating data collection at regular intervals following a shock, for example at three month periods, to further understand whether a households’ resilience is actually improving when faced with shocks and stresses.

Key principles to keep in mind around post-shock, recurrent monitoring include:

- › Data should be collected at regular intervals following a shock, for example every two months
- › Data is collected from a panel of households, this means the same set of households are tracked over time
- › Survey instrument is designed to measure trends in capacities and responses, following a shock, and potentially multiple shocks and stresses
- › Survey instrument is designed to measure the contribution of resilience capacities to responses and well-being outcomes over time

The following diagram shows a process for post-shock, recurrent monitoring:

D. Measuring Reduction in Shocks and Stresses



FIGURE 22 PROCESS FOR POST-SHOCK, RECURRENT MONITORING

A similar process and framework can be applied to measuring a reduction in shock and stresses, which can also help calculate losses avoided. In this case, a program would have to establish a measure of trends in the frequency and severity of shocks and stresses, and monitor for how this trend is changing over time.

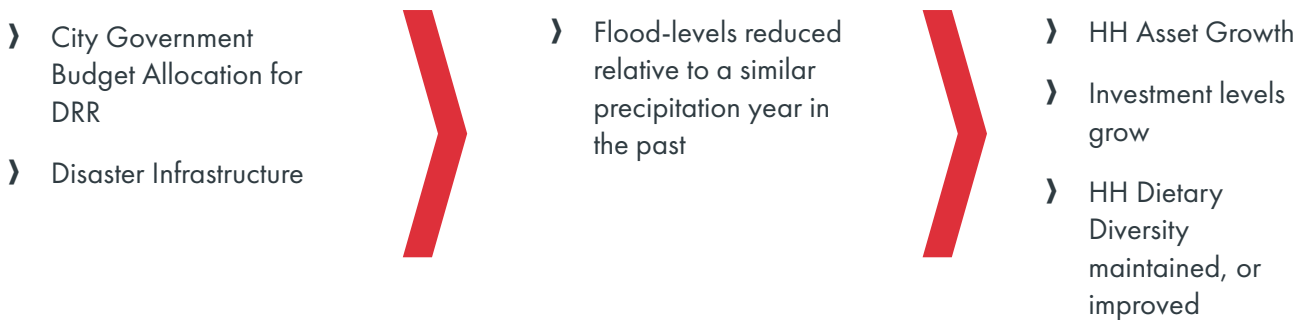
For example, imagine a particular city has historical data on precipitation and corresponding levels of flooding and related economic losses over a period of 50 years.

The program could track precipitation levels during its interventions and map this to expected versus actual levels of flooding relative to historical trends. This would help track whether flood events are increasing or decreasing. This can data can also support an economic valuation of losses avoided. Similarly, a program can track levels of deforestation or afforestation through satellite images.

This measurement approach would still incorporate baseline, endline and other periodic measures of resilience capacities and well-being outcomes, to help capture to what extent resilience capacities have contributed to a reduced level of a shock or stress, and to what extent this than contributes to improved well-being outcomes.

An example of a model for measuring reduced shock affect and its contribution well-being is provided below:

The process for monitoring the reduction of shocks and stresses, and the contribution to well-being over time, is



provided below:



E. Key Questions for Applying Resilience Measurement

Embarking on a process of resilience measurement requires that some critical questions are answered.

1) Do we pursue quantitative or qualitative methods? Rigorously testing resilience measurement models, or evaluating program attribution requires the use of quantitative methods. However, these processes are often

FIGURE 23 PROCESS FOR MEASURING A REDUCTION IN SHOCKS OR STRESSES

elaborate and expensive, and do not always provide program implementation teams with the results they need in order to make adjustments to their theory of change, or course-correct in their approaches. The use of qualitative methods can often provide information more quickly, and offer a richer insight into why certain things are happening. A decision to use qualitative, quantitative or a combination of both methods should be carefully weighed against the specific objectives of data collection, usability, and costs.

2) Who does the work and who pays for it? This may seem like a simple question, but resilience measurement, even when implemented through qualitative methods is technical and challenging. It requires experienced M&E and resilience professionals, and the frequency and technicality of data sets means it typically requires much higher level of resources than what typical programs budget for. It is also important to consider who implements. External evaluations are often useful for donors to have the big picture, but often do not support the program with adaptive decision-making. Programs may often have to outsource the data collection, but in doing so, should work closely with the monitoring and evaluation partner to ensure the implementation process lines up with the programs data needs and uses.

End of Session 6

SESSION 7: DEVELOPING A MONITORING AND EVALUATION PLAN FOR URBAN RESILIENCE

Session Objectives:

- › Review urban resilience Monitoring and Evaluation plans from peer programs
- › Develop an M&E plan for measuring the urban resilience results framework (theory of change) for Batangas

Session Format:

A. Reviewing Peer Program Methodologies

Partner programs, will present their approaches to urban resilience measurement. The teams will reflect on where this intersects with the resilience measurement approaches presented, points of divergence, strengths and areas for improvement.

B. Group Work: Developing an M&E plan for Urban Resilience (1.5 hour)

Refer to the theory of change developed in session 5.2 and work in the same groups of 2 or 3. Using that framework, fill out the following monitoring and evaluation framework. Focus on no more than 2 or 3 measures for each level.

	Measures	Indicator	Index	Data Sources	Data Collection Methods	Frequency
Well-being Outcomes						
Responses or Reduction in Shock						
Shocks/ Stresses						
Capacities						

Present the monitoring and evaluation frameworks to the group and obtain feedback.

End of Session 7 and Final Reflections

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