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# Measuring Urban Resilience in Asian Contexts

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Bangkok, Thailand  
July 11-14, 2017



# Context: South and Southeast Asia

- Asian population → 64% urban by 2050
- High population density
- Increased demand for infrastructure, public services, economic opportunities
- Building in ecologically vulnerable areas: coastal areas, floodplains → more exposed to extreme weather events
- Sociopolitical environment lacks capacity to mitigate negative impacts → weak governance, corruption

# Context: South and Southeast Asia

Rapid economic growth + poverty, social and economic inequality:

- One third lives in extreme poverty: <US\$1.51/day

Shocks: earthquake, tsunami, flood

Structural challenges: governance, corruption

Stresses: population pressure, climate change, water and land scarcity



Impacts: food insecurity, competition over resources, uncertain production and income, population displacement, migration, asset divestment, debt

# Resilience: Definitions

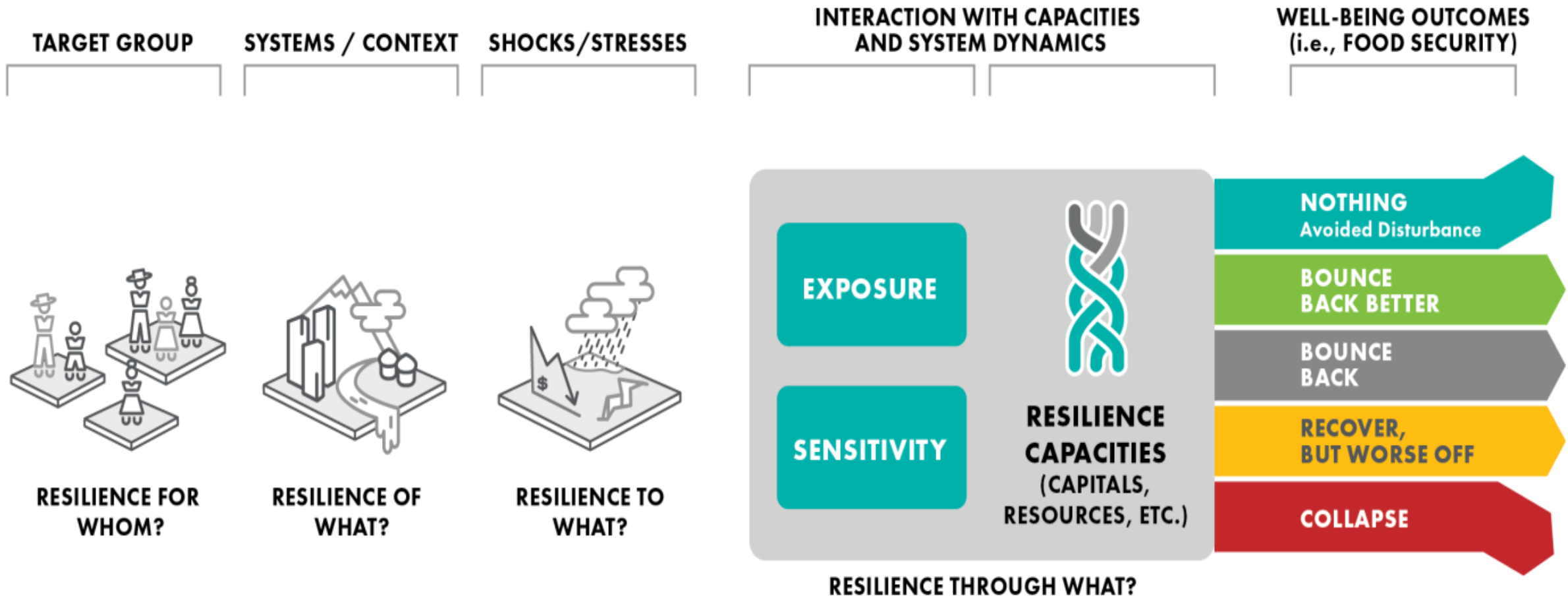
## Resilience:

- *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)*
- *The capacity to ensure that adverse shocks and stressors do not have long lasting adverse development consequences (FSIN)*

# Resilience Conceptual Framework

- **Resilience for Whom:** The vulnerable and marginalized populations in a given context that are exposed to shocks and stresses
- **Resilience of What:** The context and systems that people are embedded in and the constraints and development challenges within those systems
- **Resilience to What:** The range of shocks and stresses that impact the system and concerned population
- **Resilience Through What:** The capacities embedded or lacking within the context that help people manage shocks and stresses
- **Development Outcomes:** What people are trying to achieve in the face of shocks and stresses

# Mercy Corps Resilience Conceptual Framework



Source: Mercy Corps 2016; adapted from TANGO Resilience Conceptual Framework 2014

# Resilience: Approaches

1. Rural contexts: coping with, mitigating impacts
  - Dominated by agriculture-related shocks/stressors
    - Climate change and variability → food/income deficits
  - Measured at the household and community levels
  - Resilience capacity
    - **absorptive, adaptive**, transformative
- Agency, capacity - individuals, households and communities have the skills, knowledge and resources to prepare for, deal with, and respond to shocks/stressors

# Resilience: Approaches

2. Urban contexts: planning, preparation
  - Primarily large covariate natural hazards (tsunami, earthquake)
    - affect urban infrastructure and operating systems
    - exacerbated by climate change
  - Measured at the systems level (institutions, policies)
    - markets, security, economic, labor
  - Resilience capacity
    - **Transformative** - critical infrastructure and services (water, bridges, sanitation, etc.), policies, laws, leadership
- Enabling environment – systems able to deliver resilience (maintain function) to individuals, HHs, neighborhoods, institutions, businesses



# Resilience: Approach 1

- Examples of resilience approaches for rural contexts
  - USAID (TANGO)
  - Mercy Corps
  - RIMA-II (FAO)
- Household/community capacities:
  - assets, income, social capital, access to basic services/ infrastructure, social safety nets, human capital, access to natural resources

# Resilience: Approach 2

- Examples of resilience approaches for urban contexts
  - City Resilience Framework and Index (CRFI)
  - Urban Resilience Framework (URF)
- The ability of a city to survive, adapt and thrive no matter what kinds of chronic stresses or acute shocks they experience. (Rockefeller Foundation; Arup)
  - “City” – individuals, communities, institutions, businesses and systems
- Factors that allow individuals or communities to survive, adapt, or thrive in an urban context are not necessarily the same that allow businesses or institutions to survive, adapt, or thrive in the same urban context.

# Resilience: Approach 2

- Focuses on the performance of a system in the face of multiple hazards, e.g., the larger governance environment and design qualities of physical and other systems and services:
  - water, sanitation, power, communications, transport, governance structures for maintaining/operating systems, markets, labor policies, local business development

# Resilience Measurement

- Resilience measurement involves:
  - Vulnerable populations (Resilience for whom?)
  - Context (Resilience of what?)
  - Exposure to shocks and stresses (Resilience to what?)
  - Capacities /factors (Resilience through what?)
  - Development outcomes

# Resilience *for Whom*

## Rural context

- Landless HHs
- Female-headed HHs; with high dependency ratios
- Youths
- Poor/food insecure HHs
- HHs vulnerable to climate-related shocks and stressors
- Businesses employing the poor or near-poor

## Urban context

- Homeless people
- Informal settlements
- Rural-urban migrants
- Women and young girls at risk of being trafficked
- Youths
- Poor and emerging middle-class HHs
- Businesses employing the poor or near-poor

# Resilience of What

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## Rural context

- Agriculture-based economies, livelihoods, single risk profile; degraded ecosystems
- Weak governance, corruption
- Un/underemployment, limited economic opportunities for women
- Gender bias/constraints
- Limited basic services (education, health care, etc.)
- Rural-urban out-migration (e.g., youths)
- Lack of markets

## Urban context

- Diverse livelihoods, multiple risk profiles
- Un/underemployment
- Weak governance, corruption
- Dense population, urbanization
- Expansion into environmentally-sensitive areas
- Rural-urban in-migration (e.g., youths)
- Market instability
- Terrorist attacks

# Resilience of What

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## Rural context

- **Entrenched gender biases >> limited opportunities for women**
- **Income-generating activities potentially limited by access to land, natural resource availability, distance to larger urban areas**

## Urban context

- **Heterogeneity between neighborhoods; differences in wealth, vulnerability, access to/quality of services and infrastructure, etc.**
- **Large poor population, small middle-income, smaller wealthy**
- **Monthly wage earners; cycle of indebtedness with mid-month loans**
- **Multiple government and jurisdictional levels**

# Resilience to What

## Rural context

- Drought, variable rainfall, floods
- Landslides, soil erosion
- Crop/livestock diseases
- Food price increases
- Unemployment (e.g., youths); out-migration
- Conflict over natural resources (watering holes, grazing areas)
- Death of income-earner

## Urban context

- Tsunamis, typhoons, floods, earthquakes
- High population density, migrant influx; associated pressure on services/ infrastructure
- Food price increases
- Unemployment
- Pollution (air, water, waste)
- Disease pandemics in population-dense areas
- Political unrest, violence
- Terrorism



# Resilience to What

## Rural – Urban linkages

- **Out-migration; loss of labor; reduced pressure on natural resources, land**
- **Unreliable remittances from urban areas**
- **Drought/low rainfall >> low food production >> increased prices in urban areas**
- **In-migration; increased demand and competition for jobs; depressed wages**
- **Increased pressure on housing, basic services, infrastructure**
- **Economic shocks >> decreased employment >> reduced remittances to rural HHs**

# Resilience *Through* What

**Absorptive capacity:** minimize vulnerability and/or sensitivity to shocks and stressors

- Access to infrastructure
  - **Sea walls, flood diversion canals, roads, etc.**
- Disaster risk planning, evacuation routes
- Budgeted disaster contingency funds
- Early warning systems
- Savings, credit and insurance
- Informal safety nets
- Rural – measured by HH access to or communities with....
- Urban – measured by city provision of....

# Resilience *Through* What

**Adaptive capacity:** pro-actively modify conditions and practices to respond to or prepare for future shocks and stressors

- Financial services
  - Diversification of livelihood skills
  - Education/training
  - Exposure to information and ideas/informed decision-making
  - Use of improved technologies and practices
  - Access to financial services
  - Social networks
- Rural – measured by HH access to or use of.....
  - Urban – measured by city provision of....

# Resilience *Through* What

**Transformative:** enabling conditions to facilitate systemic change and a positive environment in which people are willing and able to invest and innovate while managing risk

- Formal and informal governance systems and institutions (local, district, national levels)
  - Provision of (quality) basic services and infrastructure (e.g., water, sanitation, education, health, roads, bridges)
  - Policies/laws (e.g., trade, equal rights, justice, labor)
  - Functioning formal safety nets
- 
- Rural – measured by HH access to or communities with....
  - Urban – measured by city provision of.....

# Resilience Measurement: Indices

- Rural - absorptive, adaptive & transformative capacity indices; measures what interventions are doing at HH and community levels re:
  - Preparedness and response (**absorptive** capacity)
  - Adaptive measures (**adaptive** capacity)
  - Enabling environment (**transformative** capacity)
- Urban – city resilience index; measures strengths and weaknesses and relative performance of systems over time; used for planning
  - Health and well-being
  - Economy and society
  - Infrastructure and environment
  - Leadership and strategy

# Resilience: Measurement Focus <sup>22</sup>

## Rural context

- HH access to....
- HH use of ....
- Communities with.....
- Capacity, response, impact

## Urban context

- City systems that provide, promote, assist, foster, or ensure.....
- Planning – how cities can/do protect against climate-related shocks

# Resilience: Measurement Focus

- **Rural areas** – higher-level systems also very important for ensuring HH access to/use of and community availability of resources that enhance resilience capacity (educational opportunities, roads to markets, access to inputs, etc.)
- **Urban areas** – Provision by higher system level  $\neq$  availability of/access to at household or community levels
  - Differences in vulnerability (security, markets, jobs, etc.), access to services/infrastructure between neighborhoods in large urban areas

# Resilience: Urban contexts

*The ability of a city to survive, adapt and thrive no matter what kinds of chronic stresses or acute shocks they experience.*

(Rockefeller Foundation; Arup)

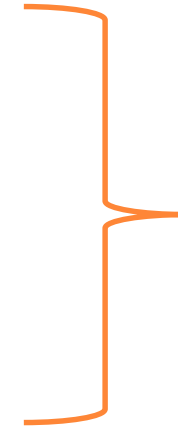
- “City” – individuals, communities, institutions, businesses and systems

- Systems

- Ecosystems
- Infrastructure
- Institutions
- Knowledge

- Social agents

- Individuals
- Households
- Private businesses
- Public agencies



**Human  
Agency**

Agency can be limited by access to the services provided by urban systems



# Resilience in a Development Context

## Rural context

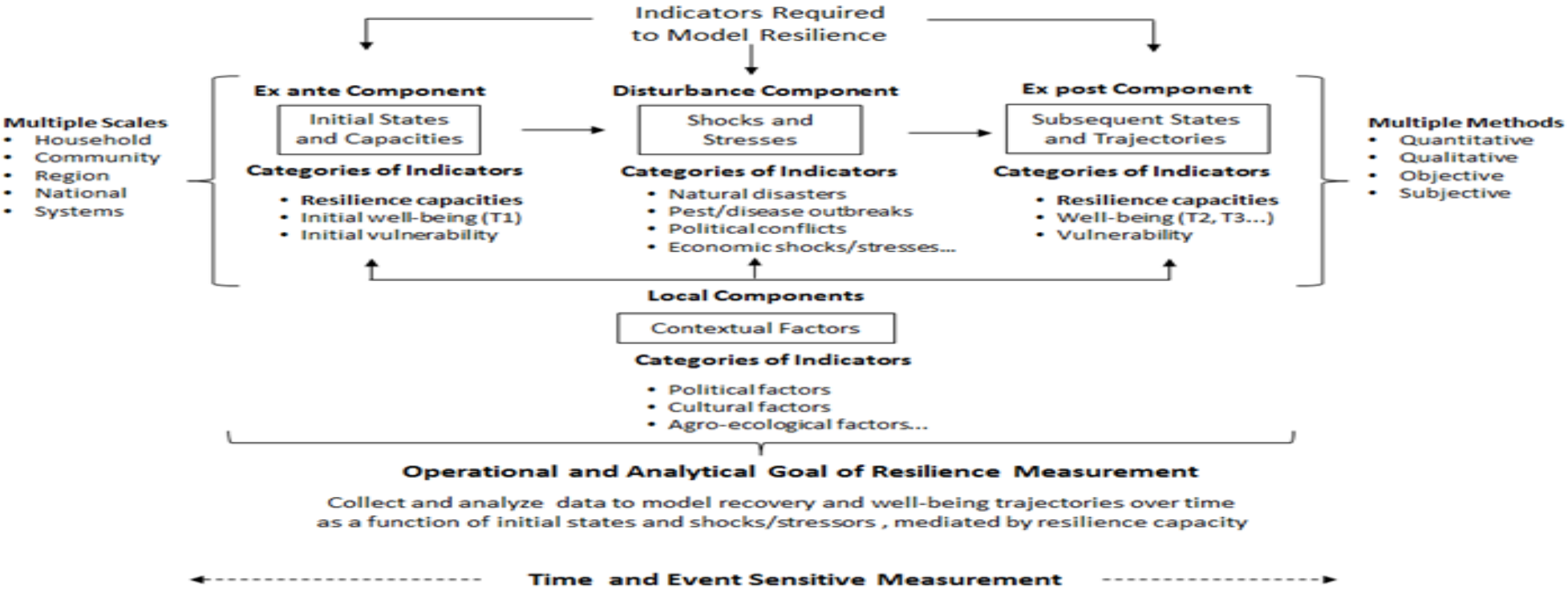
- Need more measurement focus at higher systems levels (e.g., local, regional, national)
- Systems that provide, promote, ensure, etc.....

## Urban context

- Need more measurement focus at household and community (e.g., neighborhood) levels
  - HH access to.....
  - HH use of .....
  - Communities with....

# Resilience Measurement Framework

**Resilience Defined as an Instrumental Capacity that Affects Well-Being in the Face of Shocks and Stresses**



Source: Conostas, M., T. Frankenberger, J. Hoddinott, N. Mock, D. Romano, C. Béné and D. Maxwell. 2014. A common analytical model for resilience measurement: causal framework and methodological options. **Food Security Information Network (FSIN)** Technical Series No. 2. Rome: WFP

# Resilience Measurement: Key Principles

- Resilience capacities are used in preparation for and in response to a disturbance or shock.
- Resilience capacity:
  - draws on a wide array of resources: human, social, economic, physical, programmatic, and ecological
  - should be indexed to a given well-being outcome
  - is often observed at a given level but is understood as a multi-level construct



# Resilience for *Whom*

## In urban settings:

- Differences in vulnerability across neighborhoods
- Heightened vulnerability in informal settlements
- Greater economic disparities:
  - Large poor population, small middle-income, smaller wealthy group
  - Monthly wage earners: cycle of indebtedness when loans taken mid-month



# Urban Systems

- Complex and multi-layered
- Urban systems affecting resilience:
  - Land and natural resources
  - Infrastructure
  - Governance (including enforcement and regulatory system)
  - Security
  - Information
  - Housing
  - Markets
  - Public services (energy; health; water and sanitation)
  - Food supply



# Urban Systems

- Layers of systems – local, regional, national – can lead to conflicts over jurisdiction
- Examples:
  - Large covariate shock (e.g., typhoon) affects roads and bridges in different jurisdictions.
  - May delay emergency response; may slow the recovery of market systems.



# Urban Systems

- Need a balance between efficiency and redundancy
- Complex systems with many stakeholders
  - Individuals, formal and informal institutions with control over resources
  - Stakeholder mapping should be part of urban systems mapping



# Social Capital

- Social capital highlighted in urban environments as key to recovery from covariate shocks
  - Residential identity ++ (can help)
  - Church, school groups ++ (can help)
  - Transient populations – (can hinder)
- Different neighborhoods, different social capital
  - Important to understand for targeting





# Resilience Measurement

- Requires evidence on what factors contribute to resilience, in what context, for what types of shocks
- **Ex-ante component:** initial states and capacities before a shock or stressor occurs
- **Disturbance component:** the shocks and stressors
- **Ex-post component:** subsequent states and trajectories following the shocks and stressors
- **Multiple scales:** individual, household, community, district/provincial, national and larger systems

# Urban Resilience Measurement Frameworks

- Less emphasis on household & community level
- More on urban **systems, institutions, and policies**
  - Risk management; communications; infrastructure; local business development; safety nets
  - Quality of service delivery; regulatory functions of municipality; inclusivity and transparency of processes
  - Includes private sector and markets
  - Tangibles and intangibles



# Ex-Post

- Measures responses after an actual shock
- Post-shock recurrent monitoring
  - Requires a baseline
  - Household data: quantitative surveys; panel data
  - Community and systems-level data: qualitative interviews
  - Collect soon after shock hits, then every two months for one year
  - Enables measurement of long-term resilience, because one or more shocks may occur subsequent to the initial shock



# Resilience Measurement: Part of M&E

- Resilience measurement should be embedded in a larger M&E framework
- Resilience capacities are intermediate outcomes that lead to responses to shocks and stresses (**outcomes**) that impact well-being (**impact**)
- Resilience measures are a means, not an end goal
- Improvements in well-being outcomes must be related to exposure to shocks and stressors, and to the resilience capacities and responses that enable vulnerable populations to sustain or improve those outcomes

# Resilience Program Design

- Strategic resilience assessment methodology (STRESS) (Mercy Corps)
- Objectives:
  1. Identify key system constraints and shocks and stresses that impact key development outcomes
  2. Define the impact of shocks and stresses on different population subgroups or geographies
  3. Understand the capacity of households, communities and systems to manage shocks and stresses
  4. Develop a resilience-focused theory of change

# Thank you!



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