Should Resilience be Conceptualized and Measured Differently in Asian Rural and Urban Contexts?

Tim Frankenberger and Olga Petryniak

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Background

Despite South and Southeast Asia's rapid economic growth, the region continues to face poverty and social and economic inequality. Earthquakes, tsunamis, floods, and other catastrophic natural and manmade disasters plague the region and have a direct impact on the lives of millions of people.[3] According to recent statistics, a staggering one-third of Asia's population lives below the World Bank extreme poverty line, which defines 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.[5] Against this already challenging backdrop, a complex set of drivers and dynamics has resulted in a large and growing resilience deficit characterized by the inability of individuals, 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.

Chief among these drivers and dynamics are population pressure, increasing climate change events and variability, and reliance by households on ever-disappearing local sources of water and land for their food needs. The combination of these dynamics and drivers and the interaction among them has led to increased susceptibility to food price volatility, competition over resources, uncertain production levels, declining land security and land tenure, population displacement, regional migration, declining and variable incomes, divestment of assets, and indebtedness. Population growth rates, the impact of infectious diseases and debilitating health challenges, upwardly volatile food prices, and predicted increases in the frequency and intensity of climatic shocks suggest that, if left unaddressed, the depth and breadth of the already large resilience deficit in South and Southeast Asia will continue to grow at an accelerated pace.[6] Weak governance, corruption, and entrenched structural obstacles also impact household, community, and systems resilience.

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[1] President, TANGO International

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

[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.

[6] Between 2004 and 2013, natural disasters in Asia and the Pacific caused economic damage of over US $560 billion. Disaster-induced deaths in the Asia-Pacific region rose more than threefold in the past decade (205,388 to 713,956). See UN News Centre. 2014. Asia-Pacific report: World's most disaster prone region experiences three-fold rise in deaths.

Asia is also the fastest urbanizing region in the world, with urban populations increasing by 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 a stressor, as public institutions lack the capacity to adequately provide for the surge of migrants from rural areas, and there is growing demand for improved infrastructure, public services, and economic opportunities. Making matters worse, 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 effects of global climate change, market instability, environmental health hazards, and ecosystem degradation, fueled or exacerbated by the pace and scale of city development, are common and growing problems in Asian cities. These factors are also creating a real resilience deficit.[7] 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.

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 both rural and urban areas affected by climate change and other shocks. Efforts aimed at strengthening resilience must work across scales (households, communities and wider systems) and across geographies (rural and urban environments).

This paper focuses on the key conceptual and measurement factors that must be taken into account in the resilience of Asian rural and urban environments. In particular this paper addresses whether the conceptual and measurement frameworks developed for rural areas are applicable in urban areas and what conceptual and measurement differences need to be considered.

Definitions of Resilience

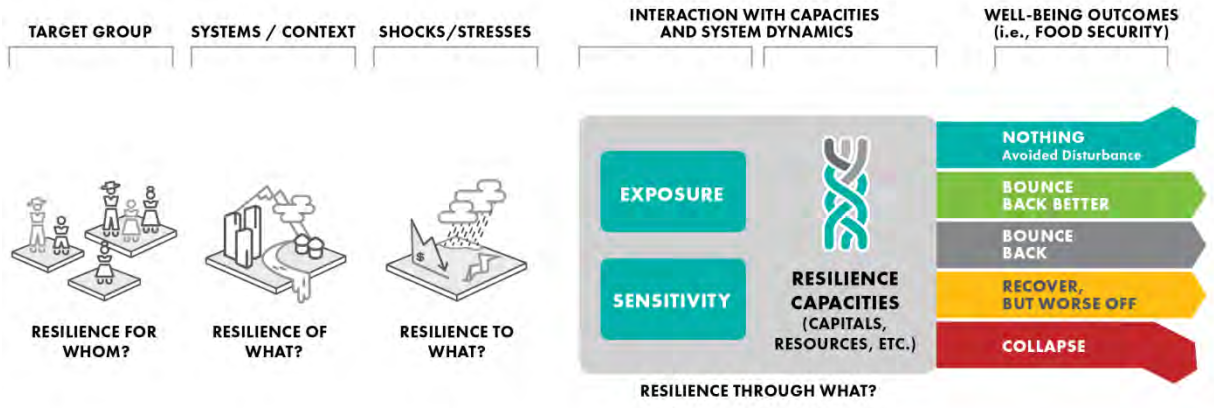
The definitions used by USAID, Rockefeller Foundation, and the Resilience Measurement Technical Working Group of the Food Security Information Network are very similar and apply to both rural and urban areas. All definitions focus on vulnerable populations (at multiple scales) that are exposed to shocks and stressors; all emphasize capacities that enable people to manage these shocks and stressors; and all focus on development outcomes.

Resilience Conceptual Framework

[7] Asia's Booming Cities Most as Risk from Climate Change. Asian Development Bank. May 6, 2015.

The key components that need to be taken into account in resilience programming and measurement are generally the same in rural and urban settings, though those for urban contexts should consider increased systems complexity. In both settings we are concerned about the vulnerable and marginalized populations in a given context that are exposed to shocks and stresses (**Resilience for Whom**); the context and systems that people are embedded in and the constraints and development challenges within those systems (**Resilience of What**); the range of shocks and stresses that impact the system and concerned population (**Resilience to What**); the capacities that are embedded or lacking within the context that help people manage shocks and stresses (**Resilience Through What**); and the development outcomes that people are trying to achieve in the face of shocks and stresses. These key components are identified in the resilience conceptual framework presented below.

Mercy Corps Resilience Conceptual Framework



Mercy Corps 2016; adapted from the TANGO Resilience Conceptual Framework 2014.

Although these conceptual components are similar in rural and urban settings, there are important factors to take into account in urban contexts. Each component will be discussed in more detail to highlight these urban contextual elements.

Resilience for Whom in Rural and Urban Areas

In rural and urban areas, we want to improve the resilience of populations or subgroups that are vulnerable. For example, in rural areas these could include landless households, female-headed households with high dependency ratios, or households that are vulnerable to shocks and stressors. In urban areas, these may include recent rural migrants, emerging middle-class households that are vulnerable to crises that could erode their meager resources, women living in informal settlements, or adolescent girls and women at risk of being trafficked. In both rural and urban areas, businesses that employ the poor and near-poor could also be are vulnerable to shocks. It is critical to unpack the differential vulnerability of specific population segments that a program is targeting. In addition, the impact population may not be the population that the program works with directly. For example,

if a program is trying to reduce the incidence of cholera due to flooding in an urban slum, working at the systems level with the water and sanitation department of the city government to improve water drainage may be the more strategic entry point rather than working directly with the community affected.

Different neighborhoods in a city do not have the same vulnerabilities. This is because some neighborhoods have more resilience capacities to draw upon. For example, some neighborhoods with strong social cohesion can engage in collective action for recovery. Other neighborhoods in informal settlements have difficulty accessing basic services. It is important to understand these differences in targeting interventions.

Economic disparities can be more pronounced in cities than in rural areas. Most cities are characterized by a bi-modal distribution of income (i.e., a large poor population segment, a small middle-income group, and an even smaller rich population segment), which can create long-term stresses in a city. Poor households that receive low wages on a monthly basis can be trapped in a debt cycle where they run out of money before the end of the month and have to borrow on credit at high interest rates that must be paid at the end of the month.

Resilience of What in Rural and Urban Areas

Urban areas are linked to the rural areas in their given context. Not only do people migrate to cities for employment, but also resources such as food and other commodities are exchanged between urban and rural communities on a regular basis. Rural and urban systems are linked in a feedback loop in terms of shocks and stresses as well. For example, poor production in rural areas due to low rainfall can lead to food supply shortfalls in urban areas and thus to higher food prices. With limited production, more people may migrate to urban areas for jobs, leading to competition in the labor market, which could decrease wages. A large urban influx can put more pressure on basic services, housing, and employment.

Systemic failures in urban areas can also have negative and cascading effects on vulnerable populations in both urban and rural areas. Economic shocks that affect businesses in urban areas can reduce urban employment opportunities for the poor, reducing the amount of remittances transferred to rural areas. Breakdowns in market chains in urban areas can increase the cost of equipment, inputs and food supplies in rural areas.

The systems that make cities function are often complex and multi-layered. The types of systems in urban areas that can have an effect on the resilience of urban populations include land and natural resources, infrastructure, governance (including enforcement and the regulatory system), security, information, housing, markets, public services (energy, health and water and sanitation), and food supply.

Multiple layers of governance systems in cities (local, regional, national) can lead to conflicts over jurisdiction. Certain key infrastructure (e.g., bridges, roads) may be under different jurisdictions,

which can slow the recovery rates of supply chains after a large covariate[8] shock such as a typhoon or an earthquake. Similarly different branches of government may have different roles in emergency response. Because of this layering of governance systems, cities and the private sector that operate in urban contexts are constantly struggling with the right balance between redundancy and efficiency.

Just as there are more complex systems in urban areas, there are often more stakeholders that can influence how decisions are made in cities. These stakeholders can be individuals or formal and informal institutions that wield control over resources. Thus, it is important to do a good stakeholder analysis as part of any urban systems mapping.

Resilience to What in Rural and Urban Areas

Similar to rural areas, cities can be exposed to climatic shocks and stressors and natural disasters that can have a negative effect on urban populations. Cities are particularly vulnerable to environmental pollution that can lead to health hazards. This is because they consume large quantities of materials and energy and release large quantities of waste.[9] Cities are a major source of air, water, and soil pollutants.

Rural-urban migration can be a significant stressor on urban areas as the population increases beyond the carrying capacity of basic services.

Economic shocks can equally affect both rural and urban areas, but can have significant impacts on cities because of the common use of cash to purchase food and other commodities. Global and regional market instabilities can lead to food price volatility, currency shocks, and unemployment. Economic shocks can also lead to political shocks and stresses that can trigger political unrest and urban violence.

Health shocks such as disease outbreaks are a serious threat in urban environments because of the higher population density and influx of migrants from areas where disease is prevalent. Slums and informal settlements with poor water and sanitation conditions can exacerbate water-borne disease pandemics.

In many cities, the enabling socio-political environment required to mitigate the negative impacts of shocks and stressors is missing or ineffectual. For example, in many low-income and middle-income nations, municipal governments may be unwilling or reluctant to provide protective infrastructure and services to low-income populations living in informal settlements that are most at risk from floods and storms.[10]

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[8] Covariate shocks are those that affect many households in the same locality.

[9] Conference on Urban Environment and Pollution, June 12-15, 2014. Toronto Canada.

[10] Satterthwaite, D. (2013) The Political Underpinnings of cities' accumulated resilience to climate change. Environment and Urbanization. Volume 25, number 2, pages 31-391.

Resilience through What in Rural and Urban Areas

In both rural and urban areas, all three resilience capacities are important. **Absorptive capacity** is important to enable cities to minimize the sensitivity of urban populations to shocks in the short term. Infrastructure such as sea walls, flood canals, and dams can protect cities from tidal surges and typhoons. Disaster risk planning that identifies evacuation routes is an important absorptive capacity that cities and the private sector can put in place to improve response and recovery. Disaster contingency funds can be allocated as a regular line item in the city budget to enable the city to better prepare for covariate shocks. Early warning systems can alert populations of an impending storm surge so that they can move to higher ground before the storm. Access to savings, credit and insurance for marginalized urban populations could help them better prepare for and respond to coastal floods and windstorms, allowing them to maintain their food supply and employment after a shock.

Adaptive capacity helps urban populations to proactively modify conditions and practices in anticipation of – or as a reaction to – shocks and stressors to reduce sensitivity and exposure in the medium term. Cities offer many opportunities for livelihood diversification, but employment opportunities can be negatively affected by volatile markets. Access to financial services can enable households and businesses to diversify and pursue viable income-generating activities. Diversifying the skill sets that people are trained in can also be adaptive.

Transformative capacity is the supportive enabling environment within which households and communities can access appropriate resources, and apply resilience strategies in order to absorb and adapt to shocks. Transformative capacity creates the conditions to facilitate systemic change and a positive environment in which people are willing and able to invest and innovate while managing risk. These capacities include the formal and informal governance systems and institutions that operate at multiple scales. Urban dwellers/residents who are better linked to government bodies can advocate for their needs and hold these institutions accountable.

In urban contexts, it is important to understand each of these three resilience capacities at systems, community, household, and individual levels. Individuals and households have their own resilience capacities, but they are embedded within urban neighborhoods, which are further reliant on wider urban systems.

The Importance of Social Capital

Social capital is a key resilience capacity found in both rural and urban environments.[11] Resilience studies carried out in urban environments have found that social capital is a key capacity

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[11] Woodson, L., Frankenberger, T., Smith, L., Langworth, M. & Presnall, C. (2016). The Effects of Social Capital on Resilience Capacity: Evidence from Ethiopia, Kenya, Uganda, Niger and Burkina Faso. Report prepared by the Technical Consortium, a project of the CGIAR. Technical Report Series No 2: Strengthening the Evidence

that enables some neighborhoods to recover quickly from covariate shocks.[12] Neighborhoods that have more residential identity and better connections through community organizations such as school and church groups are better able to mobilize social capital to support each other and to engage in collective action. Neighborhoods with weaker residential identity and more transient populations are less able to mobilize social capital for collective action. Such neighborhoods have few capacities to manage covariate shocks.[13]

Given that cities are made up of a patchwork of neighborhoods with varying degrees of resilience capacities, it is important to identify which neighborhoods have weak capacities in order to target them for urban resilience interventions. Taking a more organic approach to designing resilience programs for urban areas that factors in these neighborhood differences will likely lead to better programming.

Resilience Measurement Framework

To measure improvements in resilience, empirical evidence is needed on what factors contribute to it, in what contexts, and for what types of shocks.[14] The ability to measure the relationship between shocks, responses, and future states of well-being depends on the analysis of a number of substantive dimensions and structural features.[15] Substantive features comprise initial- and end-state measures, disturbance measures, and capacity measures. These measurement components are applicable in both rural and urban settings.

The indicators required to measure resilience in both rural and urban contexts fall under the following components: i) ex ante component – the initial states and capacities before a shock or stressor occurs, ii) disturbance component – the shocks and stressors themselves, and iii) ex post component – the subsequent states and trajectories following the shocks and stressors (see Resilience Measurement Framework below). Resilience measurement should focus on multiple scales (e.g., individual, household, community, district/provincial, national, and larger systems).

This framework, developed by the Food Security Information Network Technical Working Group, has primarily been applied in rural contexts. For example, this measurement framework was

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Base for Resilience in the Horn of Africa. Nairobi, Kenya: A joint International Livestock Research Institute (ILRI) and TANGO International publication.

[12] Aldrich, D. P. (2012). *Building resilience: Social capital in post-disaster recovery.* Chicago: University of Chicago Press.

[13] Nancy Mock, personal communication, reflecting on Katrina.

[14] Béné, C., T. Frankenberger, S. Nelson. 2015. Design, Monitoring and Evaluation of Resilience Interventions: Conceptual and Empirical Considerations. Brighton: Institute of Development Studies. Working paper 459. July.

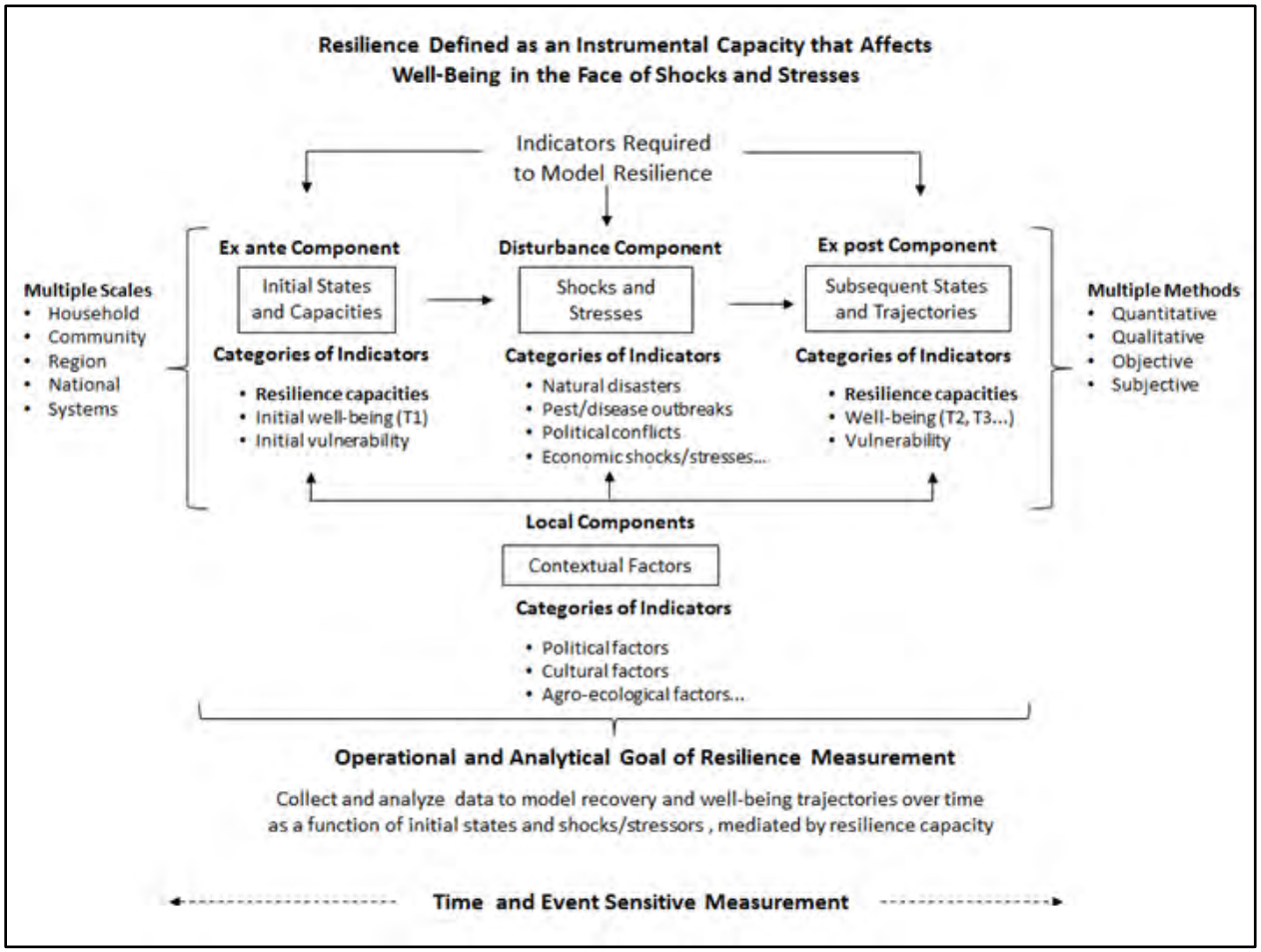
[15] Constas, M., T. Frankenberger, J. Hoddinott, N. Mock, D. Romano, C. Béné and D. Maxwell. 2014. A common analytical model for resilience measurement: causal framework and methodological options. Food Security Information Network (FSIN) Technical Series No. 2. Rome: World Food Programme.

recently applied in Bangladesh for the SHOUHARDO II Project.[16]A version of the framework was also applied in Nepal and the Philippines by Mercy Corps.[17] The framework enables the analyst to conceptualize and implement resilience measurement by incorporating the collection of data at multiple levels. The indicators to be used 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 determine which level has the greatest potential to strengthen a critical resilience capacity that will enable a vulnerable household to manage the shocks and stressors to which it is exposed.

[16] Smith, L. and Frankenberger, T. (2016).Does resilience capacity reduce the negative impact of shocks on household food security? Evidence from the 2014 floods in Northern Bangladesh. Draft. July.

[17] Petryniak, O., Kurtz, J., and Frischknecht, S. (2015). What Next for Nepal? Evidence of What Matters for Building Resilience After the Gorkha Earthquake. Washington, DC: Mercy Corps. Retrieved on July 28, 2016 at www.mercycorps.org/research-resources/what-next-for-nepal. Also see Hudner, D. & Kurtz, J. (2015). Do Financial Services Build Disaster Resilience? Examining Determinants of Recovery from Typhoon Yolanda in the Philippines. Washington, DC: Mercy Corps. Retrieved on July 28, 2016 at https://www.mercycorps.org/research-resources/do-financial-services-build-disaster-resilience.

Resilience Measurement Framework[18]



All of the key resilience measurement principles apply equally to rural and urban settings. These 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.

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[18] Constas, 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: World Food Programme.

Although this measurement framework puts a strong emphasis on resilience capacities, urban resilience measurement frameworks rarely focus on capacities.[19] Most urban resilience measurement frameworks focus on systems, institutions, and policies, not on capacities or wellbeing outcomes.[20] These urban frameworks tend to focus on the qualities of urban systems. For example, the ARUP City Resilience Framework and index defines these qualities as reflective, robust, redundant, integrated, resourceful, and inclusive.[21]

Urban resilience measurement frameworks also focus on higher systems rather than on households or communities. They focus on the enabling conditions such as inclusive labor policies, supportive financial mechanisms, and local business development that support diversified livelihoods.[22] They are more likely to look at urban planning functions for managing risk. These could include municipal planning processes that are inclusive, communication systems, the business environment and vulnerable supply chains, and infrastructure (electricity, drainage systems, roads, and transportation networks). Systems-level resilience measurement takes into consideration governance, power, and social inclusion. The role of the private sector and markets in managing risk is also an important component in these measurement frameworks. Key indicators for the ARUP framework are the quality of service delivery and regulatory functions of different municipal entities.

Systems themselves are influenced by policy decisions made at higher systems levels as well as by a range of shocks and stressors such as climate change, economic shocks, and demographic shifts. Systems have tangibles that can be measured and intangibles that are difficult to measure. An example of an intangible could be social capital flows in neighborhoods trying to manage shocks.

Assessing resilience at a household or community level without taking in consideration higher-system-level factors that influence resilience could result in interventions that do not build resilience in the long run. Similarly, looking only at higher level systems without taking into consideration the agency of people and the resources and capacities available to them would provide an incomplete picture of resilience. It is important to understand the interaction between scales, and the tradeoffs in building resilience across scales.[23] Resilience must be measured as a multi-level construct in both rural and urban settings.

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[19] Resilience Measurement Frameworks and Approaches: A Bird's Eye View. (2016) Draft. Overseas Development Institute. July.

[20] Ibid.

[21] Through funding from the Rockefeller Foundation, ARUP had developed the City Resilience Index. This framework is based on three years of research and analysis in 28 diverse cities spread across the world. See Arup (2015) 'City Resilience Index'. New York. The Rockefeller Foundation.

[22] Resilience Measurement Frameworks and Approaches: A Bird's Eye View. (2016) Draft. Overseas Development Institute. July.

[23] Ibid.

A Blending of Resilience Measurement Approaches

In both rural and urban areas, a starting point for measuring resilience is to identify what resilience capacities at different levels are important in a given context, and conduct a baseline[24] to determine the status of these resilience capacities. These capacities need to include more than preparedness and response strategies; they should also include the adaptive and transformative capacities that enable households, communities, or neighborhoods and systems to manage shocks and stressors. Transformative capacities that are the enabling conditions are often embedded in systems.

In both rural and urban contexts, it is useful to group resilience capacities into indices. Resilience indices are often created around absorptive, adaptive and transformative capacities.[25] This enables programs to understand what interventions are doing in terms of preparedness and response (absorptive capacity), medium-term adaptive measures (adaptive capacity), and the enabling environment (transformative capacity).

In urban contexts, indices will need to be created to help measure the contribution of different systems to resilience, such as water and sanitation systems, energy systems, market systems, or government disaster planning. If a system's performance contributes to improved well-being in the face of shocks and stresses, the components of that system need to be analyzed as resilience capacities. A major issue for resilience measurement in urban areas is developing indicators for measuring these system contributions to resilience.

In both rural and urban areas, measuring capacities before a shock is not enough. It is also important to measure actual responses after the shock. Responses at a household level can include drawing on savings and assets, accessing insurance, migrating, drawing on social capital (e.g., neighbors) for support, and collective action for recovery. At a city systems level, responses may include activating emergency response teams, allowing small business to access capital for re-start-up, and repairing the communication system.

One way to effectively capture responses to shocks and stresses in both rural and urban areas is through post-shock recurrent monitoring. Data are collected on households using quantitative surveys, and on communities and systems through qualitative interviews. This requires household-level panel data[26] derived from a baseline that captures responses and well-being

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[24] Examples of such baselines have been conducted for the USAID Ethiopia Pastoralist Areas Resilience Improvement Project (2015), and the USAID Resilience in the Sahel-Enhanced Project (2016).

[25] Absorptive, Adaptive and Transformative capacity indices were created in the two baselines mentioned above. See Smith, T., T. Frankenberger, B. Langworthy, S. Martin, T. Spangler, S. Nelson, and J. Downen (2015): Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) Project Impact Evaluation. Baseline Survey Report. Volume I and II. USAID Feed the Future Feedback Project. October. Also see Smith, L., T. Frankenberger, S. Aguiari, and C. Presnall (2016) Resilience in the Sahel-Enhanced (RISE) Project Impact Evaluation. Baseline Survey Resilience Analysis. Volume 1 and 2. USAID Feed the Future Feedback Project. April.

[26] Panel data are obtained when data are collected from the same household at multiple points in time allowing for analysis of the change in a given household over time.

outcomes soon after a shock hits. Data are then collected every two months[27] for a whole year to capture the downstream effects of shocks and peoples' responses.

Often households, communities and systems experience shocks and stresses as a series of reinforcing and compounding events. Households, communities and systems may be able to use their resilience capacities to deal with the effect of one shock, however when faced with multiple subsequent shocks, these capacities may no longer be sufficient. Thus, is it important to conduct recurrent monitoring in both rural and urban settings to understand whether households, communities and systems are resilient in the long term. Tracking changes in well-being over time can help to determine optimal points in time to launch social protection interventions.

Resilience measurement in both rural and urban areas should be embedded in a monitoring and evaluation framework that maps to well-being outcomes (See Annex 1). Resilience capacities are intermediate outcomes that lead to responses to shocks and stresses (outcomes) that impact well-being (impact).[28] Thus, resilience measures should be viewed as a means rather than an end goal.

Development impact measures are not synonymous with resilience. By itself, the achievement of improvements in well-being outcomes does not indicate greater resilience.[29] 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 the outcomes in question.

Resilience Program Design

To appropriately apply a robust resilience measurement framework that takes into consideration multiple scales, it is important to design a program using a resilience lens. To inform program design, the strategic resilience assessment methodology (STRESS)[30] developed by Mercy Corps can be applied in both rural and urban contexts. STRESS is an approach for applying a resilience lens when developing a development strategy and a development project. The STRESS process provides a framework for assessing the dynamic social, political, ecological, and economic systems within which communities are embedded. The approach helps identify vulnerabilities, how shocks and stresses impact these systems, and cross-sectoral feedback loops. The process also

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[27] This is the recommended interval based on work from Ethiopia.

[28] See Lisa Smith, Tim Frankenberger, Ben Langworthy, Stephannie Martin, Tom Spangler, Suzanne Nelson, and Jeanne Downen (2015): Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) Project Impact Evaluation. Baseline Survey Report. Volume I and II. USAID Feed the Future Feedback Project. October. Also see Smith,L., Frankenberger, T., Aguiari, S., Presnall, C. (2016) Resilience in the Sahel-Enhanced (RISE) Project Impact Evaluation. Baseline Survey Resilience Analysis. Volume 1 and 2. USAID Feed the Future Feedback Project. April.

[29] Béné, C., T. Frankenberger, S. Nelson. 2015. Design, Monitoring and Evaluation of Resilience Interventions: Conceptual and Empirical Considerations. Brighton: Institute of Development Studies. Working paper 459. July.

[30] The STRESS Process at Mercy Corps 2015. Available at: d2zyf8ayvg1369.cloudfront.net/sites/default/files/STRESS_Doc_R7%20(1).pdf

identifies the capacities of individuals, households, communities and systems that help them absorb, adapt and transform in the face of risks found in that context.

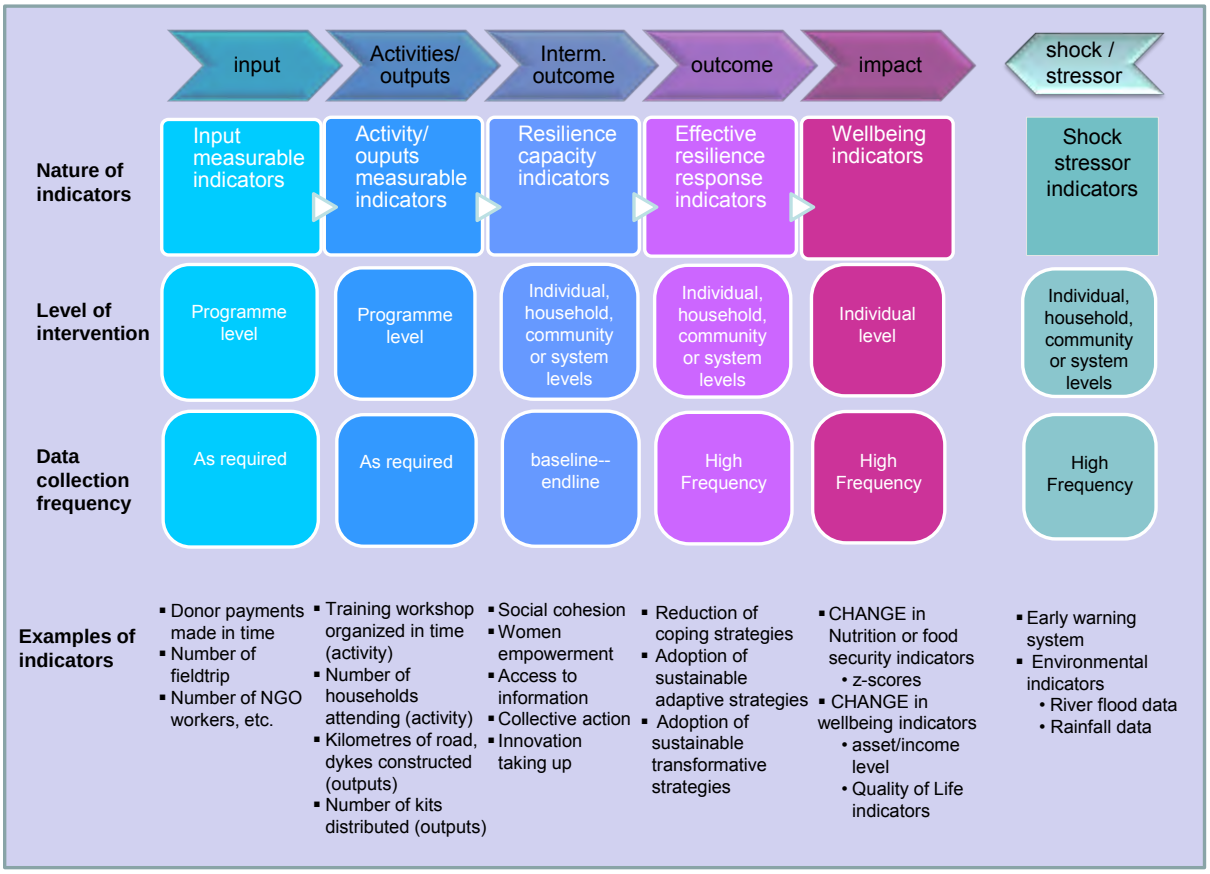
The STRESS process seeks to achieve four key objectives: 1) identify key system constraints and shocks and stresses that impact key development outcomes; 2) define the impact of shocks and stresses on different population subgroups or geographies; 3) understand the capacity of households, communities and systems to manage shocks and stresses; and 4) develop a resilience-focused theory of change.

The STRESS process is a very useful methodology for analyzing the complexity of urban systems. It helps identify the immediate drivers of a core development problem within each system, as well as any downstream impacts of that system. A systems-mapping methodology is used to map out the problems in a cause-and-effect logic. Shocks and stresses and resilience capacities are then woven into the map. This facilitates the identification of program entry points that can have the strongest downstream effects. The map shows the relationship between resilience capacities, their effects on shocks and stresses, and core development outcomes. This map forms the basis of a resilience theory of change.

Conclusion

How we conceptualize and measure resilience is heavily influenced by context. This paper set out to review the resilience conceptual and measurement frameworks that are used in rural Asian settings to see if they are applicable in urban settings. The authors feel that these frameworks can generally be applied in both settings taking some key differences into account. The key differences are the types of vulnerable populations found in the urban context (e.g., migrant populations, people living in informal settlements, emerging middle class that are vulnerable to shocks); the complexity of the systems in urban settings and the multiple stakeholders that can influence responses to shocks and stressors; the types of shocks that cities experience (e.g., climatic, economic a,nd political); and the range of transformative capacities related to systems found in cities.

Annex I.



Béné, C., T. Frankenberger, S. Nelson. (2015). Design, Monitoring and Evaluation of Resilience Interventions: Conceptual and Empirical Considerations. Brighton: Institute of Development Studies. Working paper 459. July.