Measuring Shocks and Stressors as Part of Resilience Measurement

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This paper, which reflects the deliberations of the RM TWG as a whole, elaborates on the concepts presented in Technical Series Nos. 1 and 2 regarding the definition, principles and proposed common analytical model for resilience measurement. Selected members of the RM TWG served as internal reviewers of earlier drafts of the paper, and feedback was also provided during a one-day meeting in April 2015 in Rome, where Technical Series lead authors presented drafts of their respective papers to leaders from World Food Programme (WFP) and the Food and Agriculture Organization (FAO) jointly responsible for creating and coordinating the RM TWG. It is in this regard that the RM TWG recognize the contributions of Arif Husain (Chief Economist and Deputy Director, Policy, Programme and Innovation Division, WFP) and Luca Russo (Senior Economist, Agriculture Development Economics Division, FAO). The RM TWG also wish to thank the individuals in the field who provided compelling questions and informal contributions. Ultimately, the demand for high quality and useful measures of resilience for food security has been the most fundamental motivation behind the group's activities.

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Abbreviations

FAO	Food and Agriculture Organization of the United Nations
FSIN	Food Security Information Network
GNDR	Global Network of Civil Society Organisations for Disaster Reduction
IPCC	Intergovernmental Panel on Climate Change
NGO	Non-governmental organization
RM TWG	FSIN's Resilience Measurement Technical Working Group
SIPED	Mercy Corps' Strengthening Institutions to Peace and Development
STRESS	Mercy Corps' Strategic Resilience Assessment
UN	United Nations
UNISDR	United Nations International Strategy for Disaster Reduction
USAID	United States Agency for International Development
WFP	World Food Programme

I. Introduction

Resilience is increasingly seen as a unifying concept and policy instrument that uses humanitarian and development approaches to address the chronic vulnerability of populations exposed to recurrent shocks and stressors. While some believe shocks have become more frequent, a recent study of five types of shocks[1] suggests that not all shocks are increasing in frequency, although many are increasing in their severity, scope and impact (Zseleczky and Yosef, 2014). Global economic losses from disasters are increasing, largely because of the "increasing exposure and vulnerability of people and their assets" (Oxley, 2013). On average, natural disasters caused more than US$ 141 billion in damages a year over the last decade, nearly double the average of the previous decade.[2] Globally, mortality from disasters is concentrated in the poorest countries and communities. Of the ten countries with the highest rates of disaster mortality in 2013, half were low income or lower-middle income economies. Just three of them accounted for 88 percent of globally reported disaster mortality.

Conceptual and analytical frameworks for measuring resilience have been proposed and discussed in great detail elsewhere. They typically involve measuring well-being outcomes (e.g. food security, health or poverty) as a function of vulnerability, resilience capacity and shocks (Constas et al., 2014a; Constas et al., 2014b). Although these conceptual frameworks explicitly measure well-being outcomes, they give less attention to how to measure shocks. Shocks and stressors are often analysed separately from other measures or excluded from current resilience measurement practices.

1. Conflicts, natural disasters, climate change, food price volatility and health crises related to food safety and agriculture.
2. Centre for Research on the Epidemiology of Disasters Emergency Event Database.

II. Background

Building resilience involves making investments that strengthen the absorptive, adaptive and transformative capacities[3] of vulnerable populations to cope with and recover from specific shocks and stressors. Understanding how different types of shocks affect household and community well-being is therefore fundamental to designing resilience-building programmes.

Resilience is a compelling idea for development assistance and humanitarian aid because it highlights the positive capacity to prepare for and respond to shocks and stressors that prevents individuals, households and communities from suffering long-term adverse consequences. From an analytical perspective, resilience focuses attention on the relationship between well-being (e.g. food security, basic health and livelihood status), shocks and stressors, and the capacity to preserve and improve well-being in the face of shocks and stressors.

Therefore, reliable measures of shocks and stressors are needed to determine the effectiveness of a given resilience approach. Resilience measurement also demands robust ways to relate shocks and stressors to development outcomes, livelihoods, ecosystems and other systems. This paper reviews a number of principles for measuring shocks, how people perceive shocks and how they respond to them.

3. Please see the glossary for detailed definitions of absorptive, adaptive and transformative capacities.

III. Six Principles for Shock Measurement

1. **Conduct a comprehensive analysis of the larger risk landscape**[4] **– including potential risks over time – as part of any resilience-building initiative**. In the field of development, shocks have been defined as "external short-term deviations from long-term trends, deviations that have substantial negative effects on people's current state of well-being, level of assets, livelihoods, or safety, or their ability to withstand future shocks" (Zseleczky and Yosef, 2014). In contrast, stressors are long-term pressures (e.g. degradation of natural resources, urbanization, political instability or diminishing social capital) that undermine the stability of a system (i.e. political, security, economic, social or environmental) and increase vulnerability within it (Bujones et al., 2013). A resilience approach acknowledges the need to measure shocks and stressors within complex systems and over extended periods of time (Mock et al., 2015).

   Shocks can be man-made (such as market, conflict or technological shocks) or naturally occurring (such as droughts, floods, cyclones or epidemics). Different types of shocks affect households, communities and higher-level systems in different ways. Economic shocks can affect labour demand, asset holdings, food consumption patterns, market functions, food and commodity prices, or public transfers that in turn affect individual or household well-being (Constas et al., 2014b; Skoufias, 2003). Natural hazards can affect crops, infrastructure and markets, and they can destroy personal property and assets. Health and agro-ecological shocks affect the productivity and income-generating ability, level of assets, and food consumption patterns of individuals and households.

   Shocks can be transitory, intensive or extensive, seasonal or structural, and their frequency, severity and duration can vary widely. They range from low-intensity shocks with gradual onsets (e.g. drought) to more intense and sudden onset shocks (e.g. earthquakes). They can affect large geographic areas or populations (covariate) or single households (idiosyncratic).
   A comprehensive analysis of the risk landscape should help answer the following questions: resilience of what, to what, for whom and through what? Mercy Corps' Strategic Resilience Assessment (STRESS) is a process for conducting such an analysis.[5] It is designed to assess existing socio-ecological contexts and systems dynamics in order to develop a coherent theory of change for a resilience-building strategy or programme. In Zimbabwe, a STRESS analysis is being used to assess the vulnerabilities and resilience capacities of rural communities, and to identify a set of characteristics that are likely to strengthen household resilience to major food security and income shocks.

4. The risk landscape is the array of risks that people are exposed to in a given context.
5. See: https://d2zyf8ayvg1369.cloudfront.net/sites/default/files/STRESS_Doc_R7%20(1).pdf

2. **Measure shocks and stressors at multiple scales and over different time periods**. Shocks and stressors can have impacts – and can be measured – at different spatial and temporal scales. Capturing the full range of how shocks affect and are perceived by individuals, households, communities and higher-level systems requires macro-level measurements of large-scale collective shocks, mid-level measures of extensive shocks, household surveys that quantify the impacts of idiosyncratic shocks, and qualitative or perceptions-based data that captures the 'why' of results from quantitative data analysis.

   Global platforms such as the Integrated Food Security Phase Classification and the Famine Early Warning Systems Network conduct macro-level assessments of food security, and as such provide for objective measurements of shocks when they occur. Other examples of useful secondary sources of macro-level data include the Armed Conflict Location and Event Data Project, FAO's Global Information and Early Warning System, the Agricultural Market Information System, and WFP's Global Food Security Update.

   National early warning systems provide more localized or contextualized information than macro-level systems. For example, Mali's *Système d'Alerte Précoce* early warning system consists of teams of experts from various ministries (e.g. livestock, water and forests, agriculture), elected officials and political party representatives from each county of Mali.[6] These teams provide reports to regional authorities and the national government based on their analysis of rainfall, animal health and water availability. The reports can be used by the government, NGOs and others to target responses.

   However, macro-level and national early warning systems do not necessarily reflect the exposure of households or communities, nor do they capture in detail how households perceive or respond to shocks and stressors. Thus, data on shocks – particularly from extensive risks – should also be collected locally. Emergency Market Mapping and Analysis can provide information on local market systems. In Nigeria, a community-led conflict early warning system has been set up to try and diffuse tensions between Christian and Muslim communities by promoting religious dialogue and building trust.[7]

   Household surveys can capture the impacts of idiosyncratic shocks that would not necessarily be detected through higher level early-warning systems. The surveys can include questions about the types of shocks experienced over a certain time period, their duration, severity and what coping strategies were employed. This quantitative data can be explored more fully with qualitative data gathered through focus groups or key informant interviews to better understand how certain shocks are perceived. Living standard household surveys often include some form of module for measuring shocks, although there needs to be more standardization and uniformity across surveys to facilitate accurate and comprehensive resilience measurement (Carletto et al., 2015).

6. See: www.irinnews.org/report/90845/mali-niger-good-early-warning-slow-response
7. See: www.insightonconflict.org/2014/06/unique-early-warning-project-northern-nigeria/

Shock and stressors – as well as their impacts – manifest themselves differently over time. Some shocks can have intense immediate impacts as well as long-lasting consequences, while others have progressively more negative impact with time (e.g. the cumulative effect of recurrent drought). Understanding these dynamics is key to analysing resilience. Measuring shocks in the short-, medium- and long-term can capture differences in severity, duration and recovery time. Historical data on the frequency, intensity and trends of shocks and stressors is needed to inform resilience-building interventions.

3. **Measure the connections and interrelationships between shocks and stressors.** Shocks and stressors may be interrelated and/or occur simultaneously. One type of shock may contribute to another: high food prices can lead to social unrest and political instability (Lagi et al., 2011). Food insecurity, drought or degraded natural resources can be both a cause and a consequence of conflict (Breisinger et al., 2014). Shocks in one geographic area or higher-level system may affect a different area or system. For example, reduced agricultural production caused by a shock in one geographic area might affect the labour markets in another area if agricultural employment opportunities become limited.

   Shocks and stressors seldom occur as isolated events. Households or communities may experience more than one type of shock at once, requiring different and potentially contradictory response strategies (Constas et al., 2014a). For example, households who rely on subsistence production may be more resilient to the effects of food price increases than those who rely on purchased food, yet the subsistence households may be less resilient to shocks affecting production, such as droughts or floods. In other words, strengthening household or community resilience to one type of shock or stressor does not necessarily improve resilience to a different type of shock or stressor (Constas et al., 2014a).

   So the potential for multiple shocks – as well as interactions between shocks, and between shocks and livelihood systems – suggests that shocks cannot be considered (or measured) in isolation from each other. A systems approach is therefore vital to conducting a comprehensive analysis of the larger risk landscape – including potential risks over time – as part of any resilience-building initiative (Mock et al., 2015).

   Different techniques can be used to measure the effects of multiple, concurrent shocks and stressors on household well-being or welfare. Aggregating the total number of disturbances experienced by a given household or community, and possibly weighting them by their severity, may be appropriate when trying to evaluate the effectiveness of an intervention in mitigating the negative effects of a range of shocks and stressors. The Pastoralist Areas Resilience Improvement and Market Expansion evaluation in Ethiopia used a shock exposure index that measured the number of shocks experienced by a household as well as the perceived severity of each shock (Smith et al., 2014).[8] To understand which characteristics and factors contribute to resilience, it is important to disaggregate the analysis by specific types of shock.

8. See: https://agrilinks.org/sites/default/files/resource/files/EthiopiaPRIMEVol1final.pdf

Another approach to understanding the interrelationship between shocks, stressors and livelihoods would be to disaggregate sources of income, expenditure and access to food based on the sensitivity of each to the multiple and/or concurrent shocks experienced by a household. This could be done for different socio-economic groups and for different geographic areas (e.g. livelihood zones).

4. **Measure both the objective and the subjective aspects of shocks**. Different types of data are required to accurately measure shocks, including their severity, frequency and duration. Objective data is directly observed or measured (e.g. satellite data, rainfall or the destruction of assets); it is generally considered 'unbiased' and therefore broadly applicable. Global monitoring systems such as the Global Observing System of the UN's World Meteorological Organization or national early warning systems provide objective measurements of shocks. Subjective data is based on perceptions and depends on the point of view of the respondent(s), limiting its applicability to other contexts. Mixed methods are particularly useful for measuring complex concepts such as resilience (Maxwell, 2015).

   For resilience programming, it is important to consider how shocks and stressors are perceived by affected populations (i.e. what constitutes a shock or stress), and how those perceptions may then affect the duration and depth of recovery. Understanding trends or the shock history of an area or population can shed light on people's perceptions of their exposure and vulnerability to certain shocks and stressors, as well as their perceived ability to recover. For example, some shocks occur with such frequency or are of such long duration that they are no longer considered shocks but rather "the norm". A Catholic Relief Services study in Niger reported that drought had become so commonplace over a 10-year period that respondents no longer considered it a shock (TANGO International, 2013).

   To understand the actual and perceived severity of shocks and stressors, subjective data should be combined with objective measures (often from secondary sources) (Maxwell, 2015). A good example of this is Mercy Corps' research on the determinants of resilience to the effects of Typhoon Yolanda in the Philippines (Hudner and Kurtz, 2015). To calculate exposure to the typhoon, this study calculated the severity of storm damage based on wind speed and other secondary data, as well as respondent-reported data on which major household assets were damaged, including their house and land. Similarly, the Modified Mercalli Intensity Scale measures the severity of an earthquake by ranking the intensity of its perceived and observed effects.[9]

   Data on household perceptions of shocks and their coping strategies is often collected retroactively, sometimes several years after the last shock event. But data should be collected soon after a shock to improve how accurately respondents recall events. Repeat data collected over time – particularly panel data – captures real-time impacts and changes in how people are coping at different points in time after a shock, as well as their rate of recovery. Panel data collected through high frequency monitoring – which can be triggered after a shock – helps capture exposure to shocks and real-time household responses.[10]

9. The scale includes descriptions such as "not felt"; "felt indoors by many with dishes, windows, doors disturbed"; and "damage considerable in designated structures, buildings shifted off foundations". See U.S. Geological Survey website: http://earthquake.usgs.gov/learn/topics/mercalli.php
10. This effort is ongoing as part of the Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) Impact Evaluation for USAID's Feed the Future FEEDBACK project in Ethiopia.

5. **Measure the occurrence of large-scale and small-scale shocks**. Resilience discussions tend to focus on large-scale, covariate shocks but households manage risks associated with both covariate and idiosyncratic shocks. Thus, there is a need to consider small-scale extensive risks that affect households on a regular basis. The most common risk profile of vulnerable populations is that of low-intensity, high-frequency shocks, or extensive risks that occur regularly, rather than the high-intensity, low-frequency shocks, or intensive risks such as earthquakes and cyclones that tend to make headline news (Oxley, 2013). A study conducted by the United Nations International Strategy for Disaster Reduction (UNISDR) reported that shocks from extensive risks make up 99 percent of disaster records (UNISDR, 2013) and can result in significant economic losses that are often not recognized internationally.

   According to a study by the Global Network of Civil Society Organisations for Disaster Reduction (GNDR), 90 percent of disasters experienced by households are "regular" small-scale events that are typically "unrecognized, unrecorded and unsupported" at national and global levels (GNDR, 2015). Regular disasters include seasonal floods that affect livelihoods, health and well-being; the cumulative effects of pollution on the environment, farming and drinking water; and crime that damages livelihoods (GNDR, 2013). Additionally, areas of frequent extensive risk (e.g. flood plains) often also experience intensive risks (e.g. cyclones), to which they may be particularly vulnerable (United Nations, 2010).

   The distinction between intensive and extensive risks has important implications for measurement. For the former, measures of the magnitude of and exposure to major covariate shocks can often be obtained from secondary sources. Also, because sudden onset disasters such as typhoons and earthquakes are discrete events, it is easier to gain reliable retrospective data on household conditions before the shock. This type of pre-shock data is critical for identifying the existing capacities or programmes that may have made people or communities more resilient to the effects of the disaster.
   Yet it is often the case that no large-scale shock takes place during the implementation of a development programme. To understand how programmes contribute to resilience in these situations, greater emphasis should be placed on measuring idiosyncratic shocks and longer-term stressors, which are typically present in some form. This often requires more intensive data collection efforts at individual or household level to capture a range of common shocks or stressors they may have experienced during a given recall period.

   It can be difficult to differentiate and measure individual shocks and stressors in risk-prone environments, particularly in those characterized by multiple risks and shocks. Empirical evidence is needed on whether it is better to focus on the most important recurrent risks and large covariate shocks (excluding small-scale extensive risks) in such circumstances. Some studies are already attempting to measure both.[11]

11. For example, Smith et al. 2014.

6. **Shock and stressor measurement should include indicators of political instability and conflict.** Disaster risk reduction approaches tend to avoid addressing conflict or risks associated with political instability or weak governance systems. However, it is difficult – if not impossible – to build resilience without considering the impact of conflict and political shocks. Unfortunately, resilience measurement approaches also overlook conflict and political instability: the methods tend to focus on a limited set of risks or stressors (e.g. climate shocks). Yet between 2005 and 2009, over half the people affected by natural hazards lived in fragile and conflict-affected areas (Harris et al., 2013). The differential impacts of the 2011 drought in the Horn of Africa made clear how conflict and political instability can exacerbate the impacts of natural hazards: central southern Somalia experienced a famine, while similarly drought-affected populations in northern Kenya did not.

   The interconnectedness between naturally occurring shocks and conflict is underscored by the Climate Change and African Political Stability initiative based at the Robert S. Strauss Center for International Security and Law at the University of Texas in Austin.[12] This five-year research effort aims to identify "where, when and how climate-related events disrupt security and development in Africa" to help policymakers identify where security and foreign aid are most needed, and which types of intervention would be the most effective.

   A study of Mercy Corps' Strengthening Institutions to Peace and Development (SIPED) programme in southern Ethiopia showed that peace-building and conflict mitigation activities improved the resilience of pastoralist communities to drought in the border regions of Somalia-Oromia (Kurtz and Scarborough, 2012). Conflict over pasture and water is a long-standing issue for pastoralist communities in many parts of the Horn of Africa, but it is exacerbated during severe or sustained drought (Smith et al., 2014). In attempting to avoid conflict, pastoralist households are less free to migrate to ensure the survival of their animals, and their ability to cope is therefore reduced. The peace and improved security resulting from the SIPED programme meant pastoralists enjoyed greater freedom of movement and access to key resources such as pasture and water.

   Accurate measures of violence and insecurity are needed to understand the impact of conflict and political instability on resilience. Primary data can be collected on people's experience of different forms of conflict, e.g. via victimization surveys. In addition to measuring the actual incidence of violence, it is essential to gauge people's responses to perceived insecurity, including their levels of fear, their freedom of movement and any displacement as these factors can greatly affect their ability to cope. Useful sources of secondary data on conflict include the Uppsala Conflict Data Program Georeferenced Event Dataset[13] and the Social Conflict in Africa Database.[14]

12. See: www.strausscenter.org/ccaps/research/about-climate-vulnerability.html
13. See: http://www.ucdp.uu.se/ged/
14. See: https://www.strausscenter.org/scad.html

IV. Conclusion

Building resilience involves investing in activities that strengthen the absorptive, adaptive and transformative capacities of vulnerable populations to cope with and recover from specific shocks and stressors. Understanding how different types of shocks affect household and community well-being is therefore fundamental to designing resilience-building programmes. A resilience approach requires assessing the types, frequency, duration and severity of shocks and stressors; how households and communities perceive shocks and stressors; and their capacity to recover.

Several key points emerge from this briefing:

- Resilience programming requires a systems approach and comprehensive analysis of the larger risk landscape.

- Shocks and stressors should be measured at different temporal and spatial scales to account for hierarchical dependencies and interactions between scales.

- Resilience measurement needs to include the connections and interrelatedness of shocks and stressors, as shocks do not necessarily occur as isolated events and one type of shock can precipitate another.

- Both objective and subjective measures of shocks and stressors help explain how shocks affect and are perceived by households, communities and higher-level systems.

- More empirical work is needed to determine how to measure small-scale extensive risks and large-scale intensive risks.

- The measurement of shocks and stressors should include measures of political instability and conflict.

- Multi-level data on shocks and their impacts is needed, as each level only captures part of how shocks affect and are perceived by households, communities and higher-level systems.

- There is a clear need for more frequent and standardized data collection on how individuals and households are affected by shocks and stressors. This should include panel data where possible.

V. Glossary

Adaptive capacity - The ability to make proactive and informed choices about alternative livelihood strategies based on changing environmental, climatic, social, political and economic conditions.

Absorptive capacity - The ability of individuals, households, communities or higher-level systems to minimize their exposure to shocks and stressors and to recover quickly when exposed.

Conflict - Organized violence that includes the use or threat of physical force by a group or groups. These include state actions against other states or against civilians; civil wars; electoral violence between opposing sides; communal conflicts based on regional, ethnic, religious or other group identities or competing economic interests; gang-based violence and organized crime; and international non-state armed movements with ideological aims (World Bank, 2011).

Covariate shocks - When many households in the same locality suffer similar shocks (e.g. crop failure from drought or floods).

Disaster - Severe alterations in the normal functioning of a community or a society caused by hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery (IPCC, 2014).

Exposure - The magnitude, frequency and duration of shocks or stressors.

Extensive risk - The widespread risk associated with the exposure of dispersed populations to repeated or persistent hazardous conditions of low or moderate intensity, often of a highly localized nature, which can lead to debilitating cumulative disaster impacts.

Hazard - The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources (IPCC, 2014).

Idiosyncratic shock - When one household's experience is typically unrelated to the shocks faced by neighbouring households. It is a selective shock that only affects some livelihood groups, households or individuals in a community.

Intensive risk - This is mainly a characteristic of large cities or densely populated areas that are not only exposed to intense hazards such as strong earthquakes, active volcanoes, heavy floods, tsunamis or major storms but also have high levels of vulnerability to these hazards.

Panel data - Also known as longitudinal data, panel data is obtained when multiple cases (households, plots, etc.) are observed at multiple (two or more) points in time, allowing for analysis of the change over time of a given case.

Resilience - The capacity that ensures stressors and shocks do not have long-lasting adverse development consequences.

Risk - The potential for an uncertain event or trend to have adverse consequences on lives; livelihoods; health; property; ecosystems and species; economic, social and cultural assets; service provision (including environmental services); and infrastructure (IPCC, 2014).

Risk Landscape - The array of risks that people are exposed to in a given context.

Sensitivity - The degree to which an individual, household, community or higher-level system will be affected by a given shock or stress. Greater sensitivity implies a lower degree of resilience; lower sensitivity implies greater resilience.

Shocks - External short-term deviations from long-term trends that have substantial negative effects on people's current state of well-being, level of assets, livelihoods, or safety, or their ability to withstand future shocks (Zseleczky and Yosef, 2014).

Stressors - Long-term trends or pressures that undermine the stability of a system and increase vulnerability within it (Zseleczky and Yosef, 2014).

Theory of Change - This describes a process of desired change by making explicit the way we think about a current situation or problem, its underlying causes, the long-term change we seek, and what needs to happen in order for that change to come about.

Transformative capacity - The ability to create an enabling environment through investment in good governance, infrastructure, formal and informal social protection mechanisms, basic service delivery, and policies/regulations that constitute the conditions necessary for systemic change.

Vulnerability - The degree to which a system is susceptible to, or unable to cope with, the adverse effects of or harm caused by exposure to a hazard.

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FSIN
Food Security Information Network

Technical Series No. **5**

Resilience **M**easurement **T**echnical **W**orking **G**roup




FSIN was launched in October 2012 under the leadership of FAO, IFPRI and WFP to help build sustainable food and nutrition security information systems. One major objective is to provide access to standards, methods and tools on food and nutrition security (FNS) information systems.

Resilience has recently garnered intense, wide spread interest among FNS practitioners and policy makers because it focuses attention on people's and communities' capacities to reduce their exposure and cope with and/or adapt to shocks and stressors. However, a common understanding of how to identify and measure the factors that predict various dimensions of well-being, such as food security, in the face of shock and stressors is lacking. The ability to evaluate the impact of resilience programmes and the opportunity to track progress depend on effective measurement and clear understanding of plausible cause-effect relationships related to resilience. In this context, the *Resilience Measurement Technical Working Group* (RM-TWG) was established by FSIN to identify and promote means of operationalizing the concept of resilience in humanitarian and development practice.

Operationalizing resilience as a focus of measurement requires the provision of credible, data-based insights into the attributes, capacities and processes observed at various scales (e.g., individual, household, community and national). Therefore, the RM-TWG promotes the adoption of best practice in resilience measurement through collaborative development of three primary outputs published as a Technical Series:

- A report that provides a definition of resilience along with resilience measurement principles;
- A report that provides a common analytical model and causal framework for resilience measurement; and
- A set of technical briefings that provide guidance on specific aspects of resilience measurement.

These outputs provide practical guidance for those working in field settings and serve as a reference for continued discussions on how to collect measurement data on resilience that is accurate and useful.

For more information and to join the network: www.fsincop.net

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