
Summary of the Expert Consultation on Resilience Measurement for Food Security

February 2013

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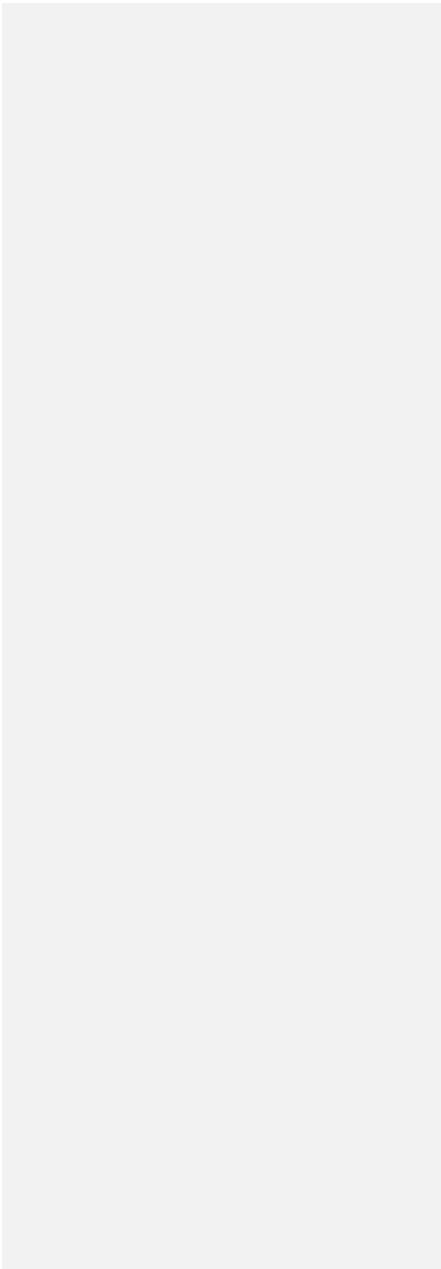


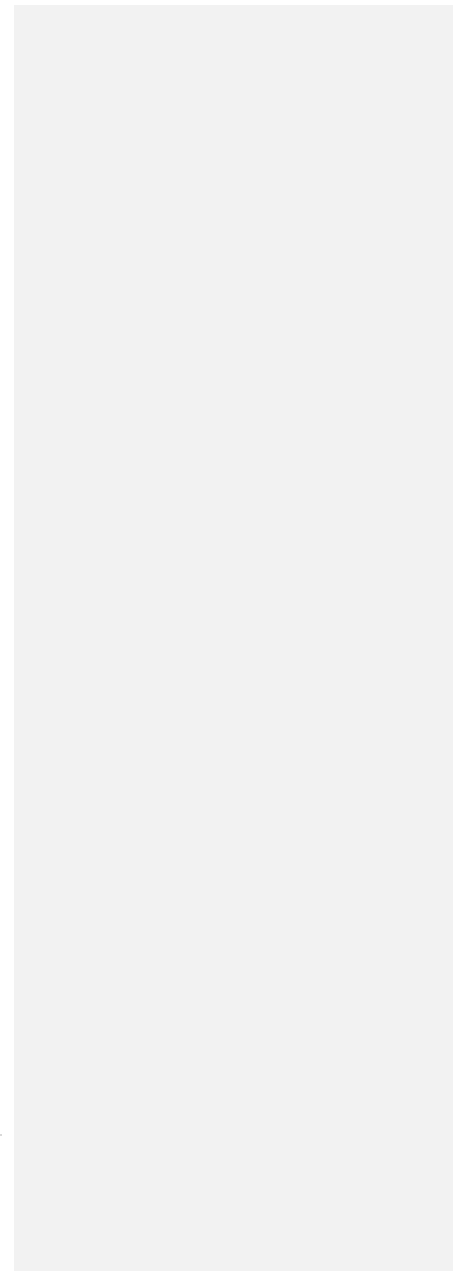
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I. Introduction

Over the last few decades, recurring crises in the Horn of Africa, the Sahel, and parts of Asia have cost international donors and national governments millions of dollars (Frankenberger et al. 2012). Despite meeting short-term humanitarian needs regarding survival, large-scale emergency interventions have not substantially improved regional or local capacity to withstand future shocks and stresses (USAID 2011). As a result, the concept of resilience has emerged as a plausible framework for substantially improving regional or local capacity to withstand future shocks and stresses, and reducing the need for humanitarian response. The main value of using a resilience concept lies in integrating approaches and communities of practice rather than as a novel approach to addressing poverty and food insecurity (Béné et al. 2012).

Given the relatively recent emergence of the concept of resilience within the wider development community, there is an understandable scarcity of robust, verifiable evidence of impact among programmes seeking to build resilience (DfID 2011; Headey et al. 2012). A major milestone in achieving resilience at a significant scale will be the ability to measure resilience outcomes at the household, community and national levels. Empirical evidence is needed that illustrates what factors consistently contribute to resilience, to what types of shocks and in what contexts. Such evidence can be used both for planning and programming purposes as well as for assessing programme impact.

While various models for measuring resilience are currently 2010; FAO 2010, 2011, 2012; ACCRA 2012; Frankenberger et al. 2012; Frankenberger et al. 2012; TANGO 2012a), few have been field-tested and adopted as “standard.” This is inherently difficult to measure. Nonetheless, such relative potential of different approaches to building

“Not everything that can be counted counts, and not everything that counts can be counted”
- Einstein

under development (Alinovi et al. 2008, al. 2012; Hughes 2012; TANGO 2012a), partly due to the fact that resilience is information is critical for assessing the resilience in the face of recurring shocks.

Supported by the European Commission (EC) and the United States Agency for International Development (USAID), the Food and Agriculture Organization (FAO) and World Food Programme (WFP) hosted an Expert Consultation on measuring resilience in Rome, February 19-21, 2013. The consultation brought together stakeholders, donors and practitioners in order to promote a common understanding of the key issues regarding resilience measurement and best approaches for going forward. A list of participants is provided in Annex 1.

States Agency for International (FAO) and World Food Programme (WFP)

Organization of Consultation

Presentations during the three-day consultation were organized in a manner that elicited the measurement needs of donors and implementing agencies first, followed by a summary of key metric and methodological approaches and issues derived from a review of recent literature

(Frankenberger and Nelson 2013). This was followed with presentations by the Food and Agriculture Organization (FAO), World Food Programme (WFP), Oxfam GB, Catholic Relief Services (CRS), Mercy Corps (MC), University of Florence, United States Agency for International Development (USAID), Tulane University, International Fund for Agricultural Development (IFAD), the Wahenga Institute, Cornell, and the World Bank. The consultation concluded with small group work on quantitative and qualitative approaches to measuring resilience, measuring community and higher systems resilience, and next steps.

II. Key Approaches to Measuring Resilience

A number of models for measuring resilience were presented, each with their own strengths and limitations. Several studies take a multi-dimensional approach to measuring resilience, though they employ different types of analyses (e.g., FAO, University of Florence, Tulane, Oxfam GB, ACCRA, USAID). FAO's model involves development of a suite of latent variable indices that are derived from a number of observable indicators. These indices are then used to derive a single resilience index that is a weighted sum of the factors generated using Bartlett's scoring method and the weights are the proportions of variance explained by each factor (Alinovi et al. 2008, 2010).

The study conducted by the University of Florence expands on the approach developed by Alinovi et al. (2008, 2010) by applying it to a specific shock event. It measures food security resilience of rural households affected by Hurricane Mitch in Nicaragua in 1999 and produces a single agricultural resilience index, which is itself a composite index made up of 11 latent variables estimated through factor analysis (Ciani and Romano 2013). Though based on the FAO model, it adds certain household characteristics, and social, economic and physical connectivity, which suggests whether households are able to tap into alternative options for taking advantage of opportunities and accessing the resources needed in order to deal effectively with shocks, i.e., to adapt.

Tulane University's Disaster Resilience Leadership Academy (DRLA) and the State University of Haiti (UEH) also employ a multi-dimensional approach for analyzing resilience and the effects of humanitarian assistance on resilience outcomes in the aftermath of the 2010 earthquake (Tulane and UEH 2012). A Haiti Resilience Impact and Change Model was developed based on three components: the resilience characteristics of an individual, household or community; the scope and nature of the shock; and the presence and type of humanitarian response. Deconstruction of the composite scores calculated for each of the seven dimensions of resilience illustrates how individuals, households and communities who experience a shock adapt, absorb, erode or fail. A key strategy utilized in developing the evaluation involved stakeholder input to guide design and implementation, help identify resilience indicators of significance in the Haiti context, and develop survey tools.

USAID's multi-dimensional approach to measuring resilience in the Horn of Africa and the Sahel seeks to identify resilience factors contributing to food security in the face of droughts. The model focuses on creating indices around six domains of resilience, each of which "contribute to and collectively constitute" resilience: income and food access, assets, social capital/safety nets, nutrition and health, adaptive capacity, and governance (Collins 2013).

The multi-dimensional approaches utilized by Oxfam and ACCRA involve identifying household and community characteristics of resilience, regardless of whether a shock has occurred. Oxfam utilizes the Alkire-Foster (AF) method of analysis rather than the multi-stage factor analysis described in the FAO study. Both factor analysis and Alkire-Foster analysis can help reduce the complexity inherent in trying to measure a dynamic, multi-dimensional process such as resilience. One of the differences between the approaches utilized by Oxfam and FAO is in the assignment of weights. Oxfam's approach assigns weights for each dimension of resilience based on priorities identified by the researchers, though "there is no reason why the weights for either the dimensions or specific characteristics cannot be defined through stakeholder consultation and/or participatory processes" (Hughes 2013). In the FAO approach, weights are data-driven (i.e., derived by the data that are directly captured from the interviewed households) and no assumption is subjectively done by the researchers.

A resilience index may well predict food security but it does not add diagnostic value for programming. Deconstruction of indices into their separate factors can be very useful however, especially for understanding the complex nature of resilience and the relationships between the different factors or variables. Unpacking helps identify constraints and programmatic priorities, and can verify or expose as false common assumptions or proxies.

Other approaches attempt to measure resilience by assessing household coping/adaptive strategies used in response to shocks (e.g., CRS, MC). CRS's Sahelian Resiliency Study analyzed not only exposure to specific types of shocks, but also the types of risk management strategies households adopt in order to deal with them, including coping responses (short-term adjustments until the household returns to its prior livelihood strategy) and adaptive responses (structural changes in livelihood strategies in response to shocks or longer-term stressors). Thus, the study examines differences in risk management strategies adopted by households and how those differences lead to differences in both current food security status and household resilience (TANGO 2012b). The Mercy Corps study examines household resilience factors most closely associated with the conflict, drought and governance shocks that resulted in the 2011 famine in Somalia. Again, this study assesses both coping and adaptive strategies adopted by households in response to shocks, as well as other well-being outcomes.

Still other approaches focus on outcome monitoring, i.e., tracking whether well-being indicators are stable (or change) in response to shock (e.g., HEA, WFP). WFP is using trend analysis of historical food security indicators to measure household resilience in Niger (Bauer et al. 2013). Analysis focuses primarily on the speed and extent of recovery following the drought in 2009. The Household Economy Analysis is being used in a number of instances (e.g., Food Economy Group, The Wahenga Institute) to assess the effect of shocks and stressors on future access to household food and income. In assessing outcomes through HEA, total household income (food and non-food income) is converted into a common unit (% kcals or cash) and compared against two thresholds, each of which is defined on the basis of local patterns of expenditure (Ventor et al. 2012).

Certain approaches have or will make use of panel data, considered the ideal source of data for measuring resilience (e.g., CRS, MC, University of Florence, USAID, FAO/WFP/UNICEF). Some approaches stress the importance of using existing data wherever possible (e.g., USAID, FAO, WFP,

HEA, IFAD), such as the Living Standards Measurement Study (LSMS), Household Income and Expenditure Surveys (HIES), population based surveys (PBS), national household surveys, etc.

Several approaches employ qualitative methods in conjunction with quantitative methods (e.g., CRS, Tulane, USAID) though most recognized the advantages of a mixed methods approach. A number of approaches include self-assessment or self-perception measures (e.g., USAID, IFAD, Tulane, Oxfam GB), but only one study (i.e., Tulane) included a truly participatory process that involved various stakeholders in defining resilience, helping identify key thematic areas that describe resilience dimensions, and developing key indicators. Only a few approaches included a psychosocial component (e.g., Tulane, MC) or are attempting to measure resilience beyond the household level (i.e., at the community or higher systems levels) or at multiple levels (e.g., MC, Oxfam GB, IFAD).

III. Key Summary Points for Resilience Measurement

Over the course of the three day workshop, certain themes and issues emerged as overarching considerations for measuring resilience. In no order of importance, they are listed below.

- **Focus of measurement:** From a donor perspective, resilience measurement should include significant focus on determining the most cost effective way of helping targeted beneficiaries, i.e., value for money. Cost effectiveness was not considered to be necessarily more important than, or contradictory to, improving the well-being of targeted beneficiaries. Value for money suggests a view that stresses the number of people that are reached per dollar; a resilience perspective focuses on identifying who needs that dollar and how they can most effectively be helped to deal with future shocks. However, more analytical work is needed on the relative costs and benefits of different interventions within different contexts, particularly quantifying benefits over the longer-term. An intervention that is effective in one context might be ineffective in another. Participants agreed that additional analytical work is fundamental for guiding programming at the design stage (e.g., through preparation of resilience profiles) as well as during implementation assessment (e.g., as the basis for M&E and impact assessment).

“If you think that education is expensive, try ignorance.”
- Derek Bok

There is however, tension between what worked “yesterday” (i.e., what was measured) and what will work in the future. Yesterday’s solutions may not necessarily represent solutions to tomorrow’s problems. Likewise, what provided value for money today may not be equally cost effective tomorrow. Thus, emphasis on value for money over programme impact may not prove satisfactory from a donor perspective in the long run, particularly when considering the cost of not taking action.

In geographic areas where multiple donors are funding complementary or overlapping programmes, measurement approaches will need to consider contribution rather than attribution.

- **Unit of Analysis:** Based on the studies presented, the main unit of analysis in resilience measurement is the household. Even programmes that promote resilience at community and higher systems levels measure resilience at the household level. Household level measurements – typically conducted through population-based surveys – may not adequately capture certain indicators, such as social capital. For example, current approaches to analyzing social networks may not be appropriate in all contexts; the *number* of formal and informal groups to which a household belongs may not be as relevant as the *types* of groups to which they belong. Mapping and assessing interactions and relationships between groups (i.e., social network analysis) may be more insightful for understanding the interconnectedness between people, communities and organizations than strict quantitative measurement of the number of groups people belong to within their communities.
- **Types of measurements:** Both objective and subjective approaches are important in measuring resilience. For example, shocks and stressors are important in resilience measurement and determination of what constitutes a shock for a target group is a necessary and prerequisite step to analyzing how households respond to shocks. Some shocks can be measured objectively through use of satellite imagery; for example, drought can be quantified through use of the Water Requirements Satisfaction Index (WRSI) and the Normalized Differences Vegetation Index (NDVI). Shocks can also be measured subjectively, using consultative/participatory processes with programme beneficiaries and other stakeholders. Subjective measures can often shed light on higher level factors of resilience that can be difficult to capture through objective measures. Yet, certain shocks occur within some communities with such frequency or are of such duration that they are no longer considered “shocks” but rather as “the norm.” In CRS’s resilience study in Niger, quantitative evidence of drought existed even though drought was not identified as a shock by participants in the household survey.
- **Data collection:** There is a current proliferation of household surveys and lengthy questionnaires, though they do not appear to be capturing all the relevant dimensions of resilience at the household level. This suggests the need for development of a core set of questions – that could be added to existing surveys – in order to capture certain domains of resilience, and the need for more systems level analysis. Data collection is expensive and time-consuming. Piggy-backing on on-going efforts provides value for money, i.e., more information is gained from existing efforts, and can help reduce the likelihood of assessment fatigue through fewer and more streamlined surveys.

Models of resilience must take into account the level and intensity of programme engagement, e.g., how the household benefits, and the occurrence of other household surveys that might lead to response bias (i.e., the Hawthorne effect¹). New resilience indicators are likely not needed, but rather, new ways of assessing the information might be critical. Likewise, it must be determined which domains of resilience are best captured through quantitative data collection and which through qualitative data collection.

- **Timing/frequency of data collection:** Temporal considerations are critical to measuring resilience. Is the concept of resilience “too big” vis à vis development goals? Can it be measured within the 3 to 5 year timeframe of most development programming? For example, the length of time required to affect changes in governance or institutional processes important for resilience building may be longer than most programme timelines, which conflicts with the need to report on programme impacts within 3-4 years of initiating interventions. Yet, it is critical that resilience measurement systems take into account measures of institutional mechanisms and processes.

In contrast, important information might be missed altogether if measurement were to occur only at baseline and end-line. Development of “lighter” questionnaires and other measurement tools would allow for more frequent collection of data without adding to assessment burden and fatigue among households. Additionally, increasing measurement intensity of a few key variables could help capture adaptive processes in rapidly changing shock environments.

- **Qualitative approaches:** Qualitative data needs to be collected more regularly to help contextualize measurement dimensions and to enable better understanding of the perceived significance of changes that are measured quantitatively. Qualitative surveys enhance understanding of local concepts and definitions of resilience, intangible measures of resilience (e.g., social capital), the interrelationships between capitals (e.g., how improvements in social capital, such as through training or education, can lead to increased income, or financial capital), and the factors contributing to adaptive and transformative capacities within different contexts.

Qualitative data is limited in its ability to capture the complexity of drivers of resilience as well as attribution of results. When used iteratively with quantitative techniques, qualitative approaches are key to understanding situational awareness of the drivers of resilience and providing a deeper understanding of processes and interrelationships relevant to household and community resilience.

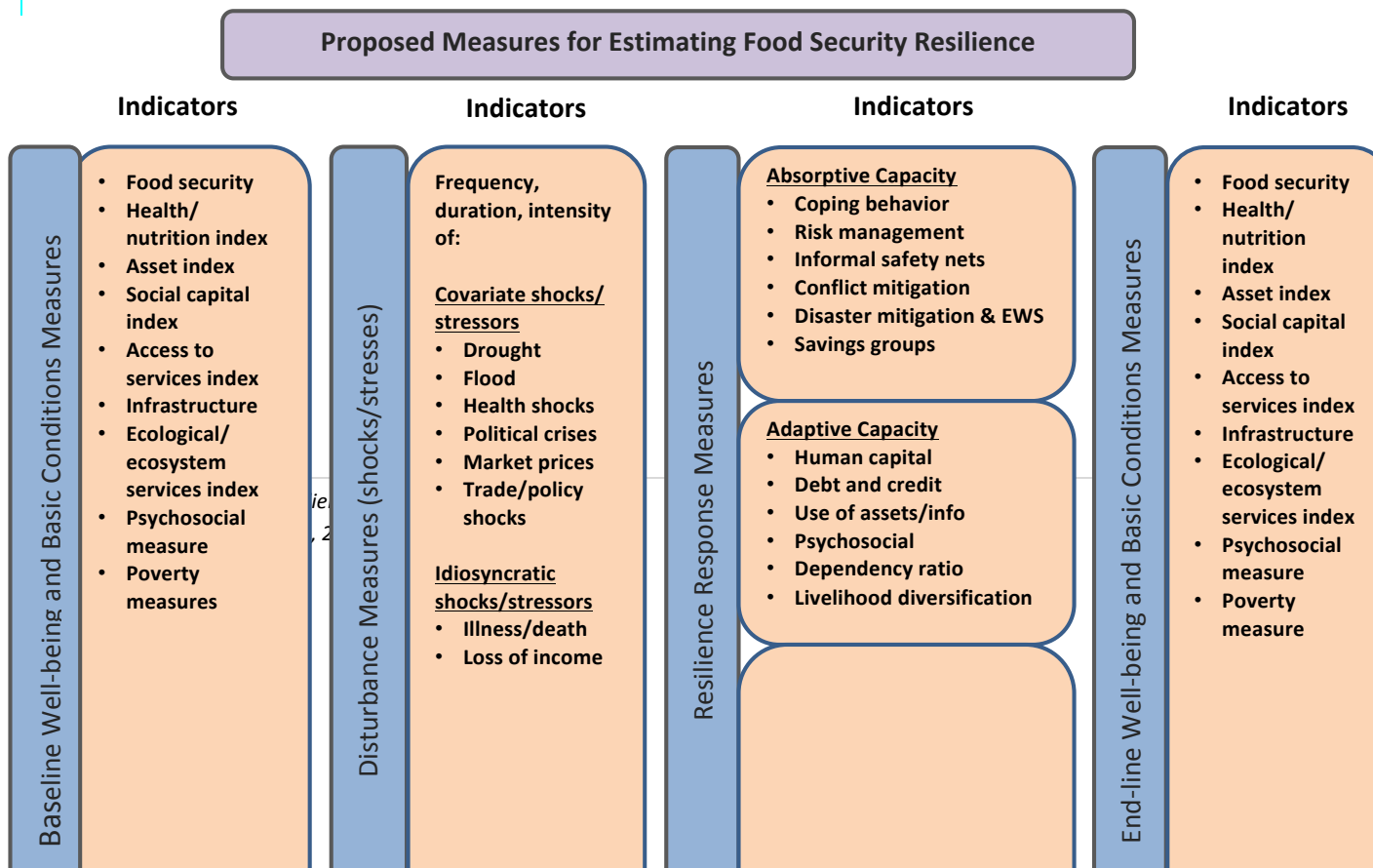
- **Technical standards:** More work is needed to ensure the reliability and validity of resilience measurements, especially in the development of resilience indices. The multidimensionality and dynamic nature of resilience makes it difficult to measure. Factor analysis and the Alkire-Foster method help reduce the complexity of measuring resilience. However, great care needs to be taken when identifying factors to be included in such analysis and in assigning weights.

¹ The Hawthorne effect refers to the tendency of people to change some aspect of their behavior being assessed when they know they are being studied rather than as a result of a treatment effect.

Resilience is a determinant of an outcome (e.g., food security, poverty, nutritional status, health status). The degree to which a particular household, community or population may be considered resilient is determined in part by their ability to maintain or improve their well-being (i.e., escape poverty traps) in the event of periodic shocks. However, in the construction of resilience indices, the same variable should not be used both as a resilience outcome and a predictor of resilience.

- **General/flexible framework:** Participants agreed on the need for an analytical framework that is general enough to be applied in different contexts but flexible enough to be contextualized. According to Conostas and Barrett (2013), two sets of metrics are required to effectively measure resilience to food insecurity: standard measures and context-specific measures. Combining input from Conostas and Barrett (2103) with that from participant discussions at the consultation, a framework in which standard measures can be used to model dynamics of resilience in relation to food security and are general enough to allow their use across various contexts was developed and is presented in Figure 1. Standard measures include baseline well-being and basic conditions, or “initial states,” disturbance measures (e.g., shocks, stressors), resilience response measures (e.g., absorptive capacity, adaptive capacity, transformative capacity), and well-being and basic conditions measures at the end-line. **Measures of the initial dynamic state** include food security, health/nutrition, assets, social capital, access to services, infrastructure, ecological/ecosystem services, psychosocial measures and additional poverty measures. These can be single indicators or composite indexes that represent some level or state of well-being/condition and can be measured

Figure 1. Analytical framework for measuring resilience



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at the household, community (e.g., ecosystem health) and higher systems levels (e.g., large-scale infrastructure).

Disturbance measures include measuring the type, duration, intensity and frequency of shock or disturbance. Shocks are natural, social, economic, and political in nature. They can occur as slow or rapid onset shocks or longer-term stresses or trends and can be idiosyncratic or covariate in nature. Shocks can be transitory, seasonal, or structural, and their frequency, severity and duration can vary widely.

Building resilience requires an integrated approach, and a long-term commitment to improving three critical capacities: **absorptive capacity** (e.g., coping strategies, risk management, savings groups), **adaptive capacity** (e.g., use of assets, attitudes/motivation, livelihood diversification, human capital) and **transformative capacity** (e.g., governance mechanisms, policies/regulations, community networks, formal safety nets). Resilience responses can be measured before, during and after shock and at household, community and higher systems levels.

Resilience is a determinant of well-being outcomes, such as food security, poverty, nutritional status, health status. **Ex post analysis of the well-being and basic conditions indicators** measured at baseline allows for analysis of changes over time as the basic measure of resilience.

Resilience is context-specific, i.e., it is defined by the type of change or shock experienced, as well as by the social, economic, environmental, and political context in which the shock occurred and household or community response decisions are made. Context-specific measures will vary by program, location, population, etc., but could be based on a shared framework of contextual categories (see Figure 1), which would allow for comparison across contexts.

- **Harmonization of indicators:** To reduce duplication among practitioners, there is a clear need for harmonization and development of standard measures or measurement principles. Oxfam's characteristics approach identifies more than 35 individual indicators! New indicators may not be required in order to effectively measure resilience; rather, new ways of assessing and analyzing familiar indicators may be needed.
- **Resilience learning:** Given the context-specificity of resilience, there was a widely recognized need for identifying what constitutes resilience within various contexts. Currently Tulane University is working with 20 universities across Africa to establish resilience hubs that will help contextualize resilience and enhance understanding of the drivers of household and community resilience within different environments. In addition, a focal point or repository (e.g., regional centre of excellence) for housing and disseminating resilience best practices is urgently needed.
- **Community and higher systems levels:** There is currently less work being done to measure resilience at the community or higher systems levels, where indicators can help capture non-linear trends and tipping points or thresholds. Measures of community resilience may be better captured through qualitative techniques and include proxies for social cohesion, socio-political organization, community-based planning, reciprocity (including informal risk mitigation mechanisms), community-based ecosystem management, intercommunity relationships/cooperation and ability to restructure community capacities. Other measures that contribute to community resilience

include market access, conflict resolution mechanisms, and access to basic services. Higher level governance and enabling conditions at the regional or national levels that contribute to household and community resilience include legal/regulatory frameworks, large-scale infrastructure, information systems, contingency preparedness plans, and formal safety nets.

IV. Moving Resilience Measurement Forward

While verifiable evidence on the impact of resilience programming continues to build, there remains a need for continued research regarding how best to assess or measure household reaction to the shocks and stresses they experience, as well as the extent to which programme interventions enhance resilience to those shocks. The recently established Food Security Information Network (FSIN) has emerged as an umbrella mechanism under which to facilitate activities outlined by the group as important next steps.

Establish a Community of Practice (CoP): As an important first step, a Community of Practice on food and nutrition security resilience measurement will be established as a forum to vet ideas among practitioners. Among others, the CoP will draw on participants from the Expert Consultation, as well as members of regional bodies (e.g., IGAD, SADC), national institutions, NGOs, donors, the Global Alliance for Action for Drought Resilience and Growth and the Global Alliance for Resilience Initiative-Sahel/West Africa (AGIR). By identifying and sharing best practices in resilience measurement, the CoP will help link the demand and supply sides of measuring resilience (i.e., linking programmes to analysis). Information shared through the CoP can serve as the technical evidence base for country investment planning. The CoP will also facilitate evidence-based food and nutrition security decision-making at national, regional and global levels.

Establish Technical Working Group (TWG): A small, task-oriented Technical Working Group (TWG) on resilience measurement will be established to help draft the analytical framework, identify guidelines, principles and good practices for measuring resilience, review case studies and pilots, or conduct further tests of existing approaches in various contexts. The TWG will also review papers by practitioners and other stakeholders prior to publication.

Taking advantage of momentum generated by the Expert Consultation, the following list of specific tasks and timeline was presented:

Timeframe	Tasks
Within 6 months	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare and distribute workshop proceedings <input type="checkbox"/> Agree on common overarching analytical framework <input type="checkbox"/> Map who is doing what and where (inventory of approaches, methods and tools); expand as necessary <input type="checkbox"/> Initiate data mining/meta-analysis and expand/adapt to measuring resilience to food and nutrition security as required <input type="checkbox"/> Begin online consultation/facilitated dialogue between programme and decision-makers <input type="checkbox"/> Produce publications, executive briefs, etc. on results of the work <input type="checkbox"/> Call for papers as incentive to CoP members

Within 1 year	<input type="checkbox"/> Papers peer reviewed by TWG and published <input type="checkbox"/> Case studies, pilots and/or further testing of existing approaches in other contexts (e.g., “data milking,” filling gaps); FAO approach in Somalia, USAID approach in Ethiopia and Kenya, WFP trend analysis in Niger <input type="checkbox"/> Identify good practices (TWG review of case studies) <input type="checkbox"/> Develop guidelines for resilience measurement (e.g., on data collection and risk/trend analysis)
Longer term	<input type="checkbox"/> Identify a common set of core indicators to measure resilience in food and nutrition security <input type="checkbox"/> Identify new indicators to better measure resilience in food and nutrition security, as required <input type="checkbox"/> Through the CoP identify and share best practices

Harmonization of methods: As evidenced in the Expert Consultation, a wide range of approaches are currently being utilized to measure resilience. While it is unlikely that a single method can capture resilience in all contexts, it is critical to develop a set of harmonized standards, methods, tools and indicators to guide resilience measurement for practitioners. Important first steps to be conducted under the auspices of the FSIN include agreement on a common overarching analytical framework and development of a common set of indicators for measuring resilience related to food security. Longer-term, it is envisioned that continued assessment and identification of new indicators to better measure resilience will be necessary as evidence accrues.

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