



# Advanced Resilience Monitoring & Evaluation Training (ARMET)

## PARTICIPANT GUIDE

13-17 June 2016

The Advanced Resilience Monitoring and Evaluation Training (ARMET) for Field Practitioners is supported by USAID/Senegal and developed by TANGO International, Inc. as an associate of the Technical and Operational Performance Support (TOPS) program, led by Save the Children.

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## INTRODUCTION

The objective of this Advanced Resilience Monitoring and Evaluation Training (ARMET) is to ensure that key Resilience in the Sahel-Enhanced (RISE) M&E stakeholders, including participants from the United States Agency for International Development (USAID)/Senegal, USAID's Office of Food for Peace (FFP), U.S. Office of Foreign Disaster Assistance (OFDA), as well as staff based in the field offices of USAID/Niger and USAID/Burkina Faso, implementing partners from the Resilience in the Sahel-Enhanced (RISE) Project, and relevant staff from the governments of Niger and Burkina Faso (including 3N<sup>1</sup> and Burkina Permanent Secretariat of the Coordination of Sectorial Agricultural Policies M&E staff) have a common understanding of key resilience M&E aspects, and that they have the necessary skills to better carry out resilience monitoring and evaluation activities at field level in the RISE zone of intervention. ARMET builds upon the Humanitarian to Development Resilience Collaboration Training for Field Practitioners (HADA Training) held in Senegal in February 2015 under the Technical and Operational Performance Support (TOPS) Leader with associate TANGO International.

### Goals and objectives:

The purpose of ARMET is to ensure that resilience-focused M&E points of contact are prepared to effectively monitor and evaluate resilience-building efforts within their respective portfolios. To achieve this training objective, USAID has determined four intermediate results (IRs) in ensuring that RISE M&E stakeholders have strengthened knowledge and ability to:

- **IR 1:** Measure the three resilience capacities and the set of four well-being outcome indicators;
- **IR 2:** Design a resilience-focused impact evaluation (IE) and monitor the process;
- **IR 3:** Learn from resilience performance monitoring, impact evaluations and data analysis; and
- **IR 4:** Design and operationalize a resilience-focused knowledge management system to capture learning and integrate into the program cycle.

These objectives are achieved through a mixed-methods training design. The overall training approach uses a mix of plenary presentations and discussion for instruction, as well as break-out sessions and hands-on small group exercises to apply the instruction. The training is organized into five modules, with each day consisting of one module, see below:

- **Module 1 – June 13:** Participants will learn resilience concepts and measurement principles and how to apply a resilience lens to an M&E framework. Additionally, participants will learn how to develop resilience-appropriate indicators. Examples will be used from RISE and other studies.
- **Module 2 – June 14:** Participants will review findings from the RISE baseline to understand the resilience capacities and well-being of target communities. Participants will apply this information to strategically plan for future RISE

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<sup>1</sup> The 3N Initiative refers to the Government of Niger initiative *Les Nigériens Nourrissent les Nigériens*; please see <http://www.initiative3n.ne/>

evaluations.

- **Module 3 – June 15:** Participants will apply insight obtained from RISE baseline results to delve into a robust discussion of findings for programming needs.
- **Module 4 – June 16:** Participants will briefly learn about the use of Recurrent Monitoring Surveys (RMS) to measure resilience in real time and will be presented with findings from the first RMS conducted in Ethiopia using the Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) project as an example. Participants will learn about RMS planning and analysis as it is related to shocks, triggers, and data sources. Participants will also work with the facilitators to determine what the recurrent monitoring should look like in the Sahel, and identify next steps on making that vision come to fruition. The primary output will include a consensus on what triggers will be used for RISE, a process for monitoring (who, how often, etc.) and agreed upon next steps (including a timeline) for proceeding.
- **Module 5 – June 17:** Participants will finalize RMS planning and will also learn to design and operationalize a resilience-focused knowledge management system as part of the program cycle. Participants will also provide feedback through an informal debrief session in order to improve future trainings, as well as develop an action plan moving forward.

## MODULE 1: RESILIENCE CAPACITIES AND RISE INDICATORS

*Participants will learn in this module resilience concepts and measurement principles and how to apply a resilience lens to an M&E framework. Additionally, participants will learn how to develop resilience-appropriate indicators. Examples will be used from RISE.*

**Background:**<sup>2</sup> The agro-pastoral and marginal agriculture zones in the Sahel suffer from high levels of poverty, historical (and current) marginalization, water scarcity, weak governance and gender inequality. Against this already challenging backdrop, a complex set of drivers and dynamics have resulted in a large and growing resilience deficit characterized by the inability of people, households, communities, countries and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth.

Chief among these drivers and dynamics are population pressure, climate change and variability, and a growing reliance by households on markets to meet their food needs. The combination of these dynamics and drivers and the interaction between them has led to increased susceptibility to food price volatility, competition and conflict over resources, land degradation, uncertain production, declining land holdings, households exiting from farming and livestock keeping, declining and variable incomes, divestment of assets, and indebtedness. Population growth rates, 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 these zones will continue to grow at an accelerated pace.

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 these drought-prone regions. USAID defines resilience as the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. The United States Government (USG) has committed to leveraging both humanitarian and development resources to support these regional and national efforts. The USG is also committed to broader coordination with governments, regional bodies, the international donor community and other development and humanitarian partners.

**RISE:** The USAID-funded initiative, Resilience in the Sahel-Enhanced (RISE), whose baseline results are the primary focus of this training, does just that. The focus of this program is to build the resilience of the chronically vulnerable population in the agro-pastoral and marginal agriculture livelihood zones of the Sahel. The five-year project is being implemented in targeted zones of Burkina Faso and Niger, including areas within the Eastern, Northern Central, and Sahel regions of Burkina Faso, and the Zinder, Maradi and Tillabery zones in Niger (see Figure 1). The objective of RISE is to achieve resilience by (1) increasing and sustaining economic well-being by targeting poor households and marginalized women, (2) strengthening institutions and governance by targeting

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<sup>2</sup> Source: TOPS' ARMET Proposal, AID 625-LA-15-00002.

communities, and (3) improving health and nutrition by targeting children under 5 and women of reproductive age.

The chronic vulnerability of households in the RISE program area is marked by high levels of poverty—an estimated 36.1 percent of all people live on less than US\$ 1.25 per day<sup>3</sup> – water scarcity, weak governance, and gender inequality. A complex set of drivers have resulted in a large and growing resilience deficit such that households are increasingly unable to mitigate, adapt to, and recover from shocks and stresses in a manner that does not further exacerbate their vulnerability.

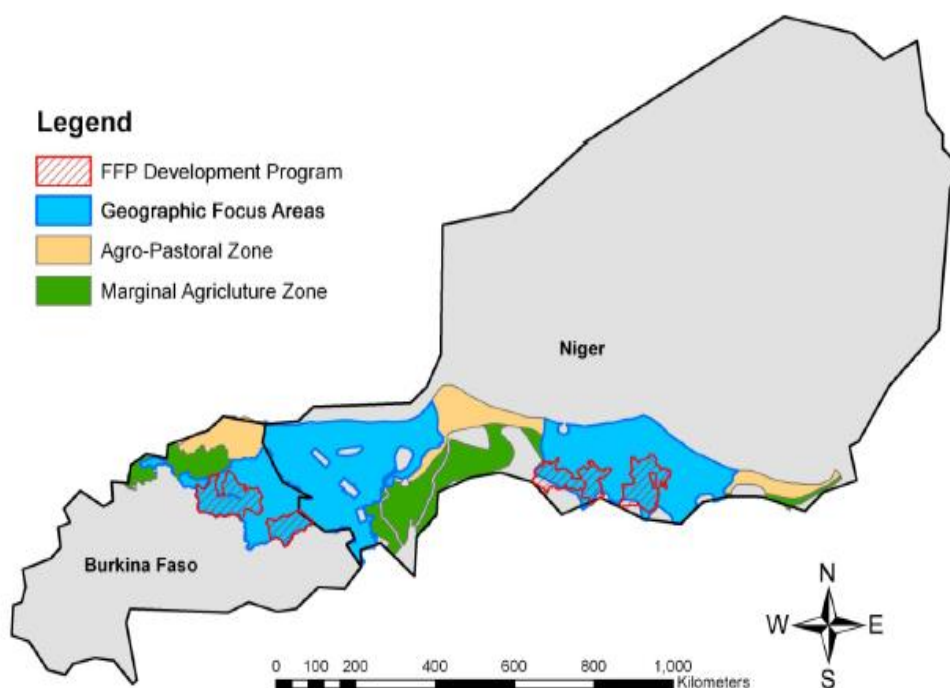
Three main drivers are at the root of the area’s resilience deficit. The first is population growth, which exerts pressure on social and economic systems and strains already degraded natural resources, increasing conflicts over water, pasture rights and agricultural land. Both Burkina Faso and Niger have among the world’s highest population growth rates. The second driver is climate change and variability. Climate change is already causing temperature and rainfall extremes that exceed historical patterns across the Sahel. Climate models predict increasing temperatures, more variable rainfall, and more frequent extreme events, such as droughts and floods, over the coming decades. Given that the large majority of households’ livelihoods are dependent on rainfall, the result is more uncertain production levels, food price volatility, income variability, asset depletion and increased indebtedness. The third driver is a growing reliance on markets to meet households’ food needs, leading to increased vulnerability to food price volatility. The area is structurally in food deficit, being increasingly dependent on the market for staple cereals from more productive areas to the south.

Together, these drivers underlie a trend towards populations in former pastoralist areas becoming increasingly involved in agriculture as well as wage labor and other cash income-generating activities such as petty commerce. Faced with repeated crises, more and more poor households are finding themselves with no other choice but to leave their villages in search of other forms of income. In Burkina Faso this “distress migration” often is to work in gold mines, while in Niger it is to seek employment in urban areas or even to beg.

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<sup>3</sup> SAREL 2015

**Figure 1. Map of the RISE area**



Source: USAID Feed the Future. 2016, draft.

## **Session 1.1: Introduction to TANGO's Resilience Framework**

The Food Security Information Network (FSIN) Resilience Measurement Technical Working Group (RM-TWG)<sup>4</sup> has defined resilience as:

*The capacity that ensures adverse stressors and shocks do not have long-lasting adverse development consequences.<sup>5</sup>*

Key principles of resilience include improving our understanding of shock dynamics and of the multidimensional and multi-level capacities of resilience, which are indexed to well-being outcomes. As explained by the RM-TWG, “an optimal combination of resilience capacities can only be identified by measuring shocks”<sup>6</sup> These principles include:

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

<sup>4</sup> The Resilience Measurement Technical Working Group is co-sponsored by the European Union and USAID and is comprised of 20 individuals from government and non-governmental organizations.

<sup>5</sup> Please see [http://www.fsincop.net/topics/resilience-measurement/en/?page=4&ipp=7&no\\_cache=1](http://www.fsincop.net/topics/resilience-measurement/en/?page=4&ipp=7&no_cache=1)

<sup>6</sup> FSIN, 2012 (please see the end of Module 1 for a complete list of references).



Strengthening resilience requires an integrated approach and a long-term commitment to improving the **three resilience capacities**: absorptive, adaptive and transformative. Absorptive capacity relates to disaster risk management, as it is the ability of households and communities to minimize exposure to shocks if possible and to recover quickly after exposure. Adaptive capacity is the ability of households and communities to make active and informed choices about their lives and their diversified livelihood strategies based on changing conditions. Transformative capacity relates to system-level changes that ensure sustained resilience.

### **Components of conceptual framework**

**The conceptual framework for resilience integrates four types of frameworks/approaches: Disaster risk reduction (DRR), climate change adaptation (CCA), livelihoods, and ecology. See**

## Figure 2. Resilience conceptual framework

for the resilience conceptual framework chart and description below.

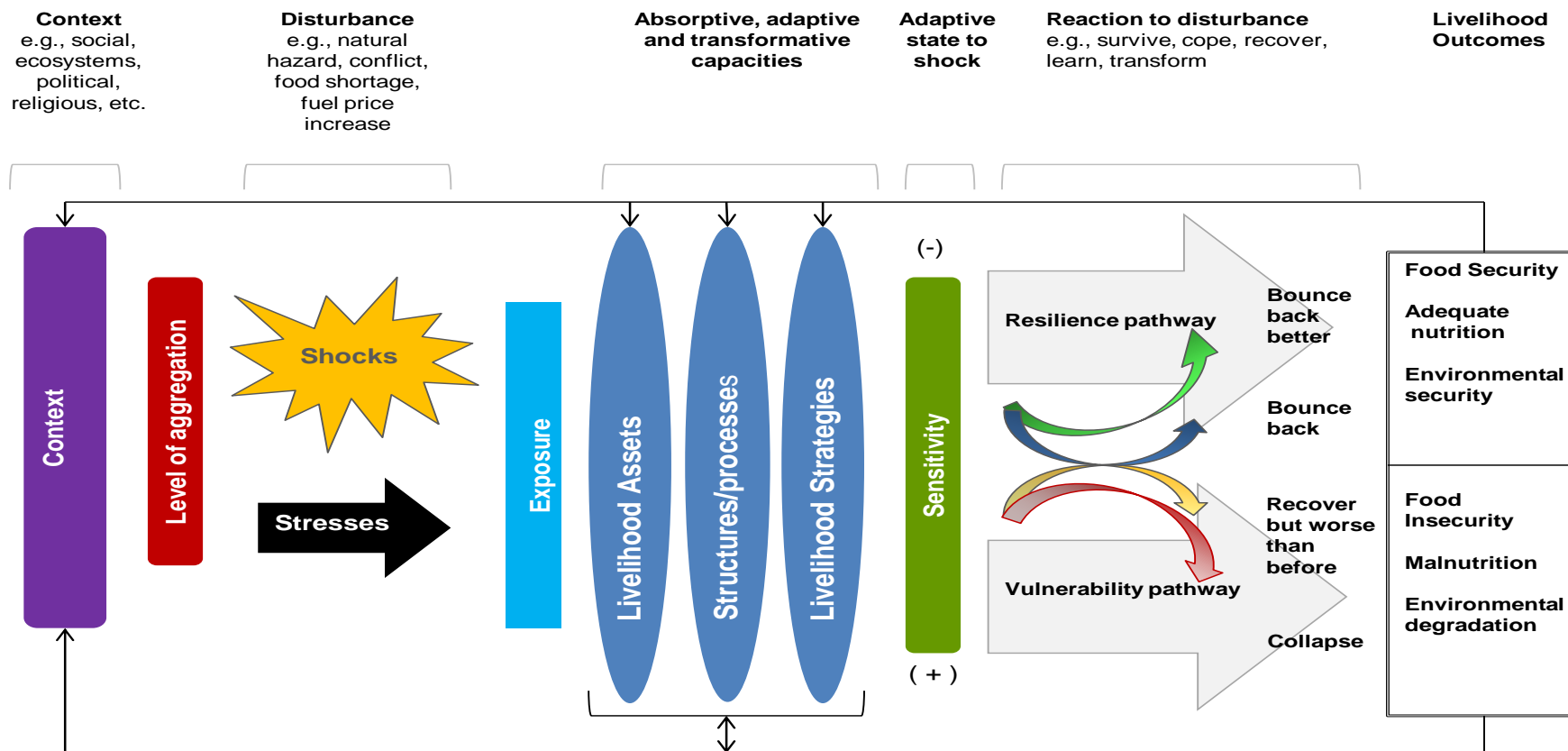
The context includes environmental, political, social, economic, historical, demographic, religious, conflict, and policy conditions. Context influences and is impacted by absorptive and adaptive capacities.

The level of aggregation, or unit of analysis (i.e., individual, household or community levels), for building resilience capacities should be determined with the following questions in mind, beginning with: *resilience to what?* and *resilience for whom?* The capacities represent a nested hierarchy that should be considered when determining the target unit. Resilient individuals and households are the foundation for resilient communities. However, resilience at one level does not automatically result in resilience at higher levels, and resilience to one type of shock does not ensure resilience to others. Finally, resilience and vulnerability are not outcomes—they are processes, and the resilience capacities are not linear.

The type and level of disturbance are also important to understand. Resilience to one type of shock does not ensure resilience to others. This is the point where risk reduction and absorptive capacity are crucial. Resilience can be measured before, during and after shocks to further understand resilience and vulnerability pathways.

Finally, resilience should not be considered an outcome or program goal but instead a determinant of well-being and livelihood outcomes, such as food security, poverty, and nutritional status. These outcomes affect future vulnerability to risk. Overall, baseline and endline analysis of well-being and livelihood outcomes, basic conditions, shock exposure and resilience capacity indicators will enable the program—based on the comprehensive assessment and sound problem analysis/theory of change—to determine changes over time in resilience capacities.

**Figure 2. Resilience conceptual framework**



Frankenberger, T. R., M. A. Constanas, S. Nelson and L. Starr. 2014. "Current Approaches to Resilience Programming among Nongovernmental organizations." Building Resilience for Food & Nutrition Security. Paper prepared for the 2020 Conference. Paper No. 7. May.

## Humanitarian and development coordination

For areas like the Sahel facing the impacts of climate change and recurrent shocks, resilience building necessitates humanitarian and development coordination. To be effective and to further the objectives of humanitarian and development interventions, a resilience approach needs to identify opportunities for layering, integrating, and sequencing programming. See the box below for description of each of the three components, as explained by USAID.<sup>7,8</sup>

Actively working toward a common goal includes coordination throughout planning, project design, procurement, and learning. This can help ensure a coherent strategy that ensures better utilization and strengthening of host country systems to promote greater capacity building, lasting institutions, and resilience. In this context, development programs need to be designed with flexibility to allow for changes that occur on the ground to manage and adjust to crisis modifiers through embedded humanitarian responses. Humanitarian assistance programs, on the other hand, need to establish a platform that development investments can build upon in order to protect resilience and development gains.

### **Layering, integrating, and sequencing humanitarian and development programs for building resilience**

*Layering:* Layering programs involves targeting the same geographic area and demographic population with both humanitarian and development assistance. This allows humanitarian actors a means of protecting development gains, primarily through early and appropriate response to early warnings.

*Integrating:* When program objectives are integrated, objectives set forth in humanitarian work strengthen development assistance through reinforcing means. Similarly, investments in development assistance can be used as a means of reducing recurrent humanitarian assistance needs and building greater resilience capacities.

*Sequencing:* Strategic and logical sequencing of programs allows development assistance to transition smoothly from humanitarian work in a way which builds upon the successes of humanitarian programming, both in response and recovery. In this manner, strengthening humanitarian work enhances the existing opportunities towards long-term development work and resilience.

**Small Group Discussion:** Follow the instructions and prompts of the facilitator. In small groups discuss the follow questions:

- *How does your organization currently conceptualize resilience? Do we have a common understanding of resilience across USAID partners?*
- *What are the differences with the framework presented here, or across agencies?*

## Session 1.2: Introduction to Resilience Measurement

The indicators that follow have been identified for each resilience capacity. These can be single or composite indices that represent some level or state of well-being/condition and can be measured at the household, inter-household, community and higher systems levels.<sup>9</sup>

<sup>7</sup> USAID. 2012.

<sup>8</sup> USAID. N.D. Principles of SLI.

<sup>9</sup> Please note: the Absorptive, Adaptive, and Transformative Capacities presented are measured on a normalized scale estimated using the Principal Component Analysis (PCA) scale with a mean of zero and a Standard Deviation of one.

These same indicators may be part of a performance monitoring system and measured at baseline and endline along with changes in risk exposure and resilience capacities. Data may come from surveys, interviews/focus groups, monitoring activities and other secondary sources.

<b>Absorptive capacity</b>	
Bonding social capital <sup>10</sup>	Conflict mitigation
Preparedness (early warning, response planning)	Low coping strategy Index
Informal safety nets (saving groups, other self-help groups)	Mitigation measures (seed banks, livestock offtake)
Hazard insurance	Ability to recover
<b>Adaptive capacity</b>	
Bridging social capital <sup>11</sup>	Human capital
Diversity of livelihoods in different risk profiles	Asset ownership and use
Aspirations/attitudes/confidence/risk tolerance (psycho-social measures)	Access to financial services
	Access to natural capital/resource flows
<b>Transformative capacity*</b>	
Linking social capital <sup>12</sup>	Policies and regulations
Formal safety nets	Governance mechanisms
Communication networks	High quality basic services
Functioning and well-governed markets	Well-managed and sufficient natural resources
Sufficient quality and quantity of infrastructure	Security

\*Transformative capacity building requires a systems perspective to construct measures that reflect the highly interconnected relationships at the systems level.

### Causal framework

Causal frameworks are useful because they focus measurement activities and because they provide a potential link between the logic of interventions and the organization of data analysis that follows measurement. The resilience causal framework shown in Figure 3 provides an organizational scheme in which the task of developing resilience measures can be conceptualized and implemented. The components include the:

- *Ex ante component* – generates data to describe the initial state at time one (t1), before the occurrence of a shock;
- *Disturbance component* - generates data to describe the intensity and effects of various types of shocks and stressors; and
- *Ex post component* - generates data to describe the end state at time one (t2). There are important considerations for the timing of ex post data collection, such as administering the survey at more than one point in time to ensure that observed patterns of adaptation and transformation are not short-lived.

The added value of using a resilience measurement framework can be further explained on its ability to explain well-being in the face of shocks by providing the “presentation of measurement as a sequence of ordered and observable attributes, events and conditions” in which cause-and-effect relationships can be tested<sup>13</sup>.

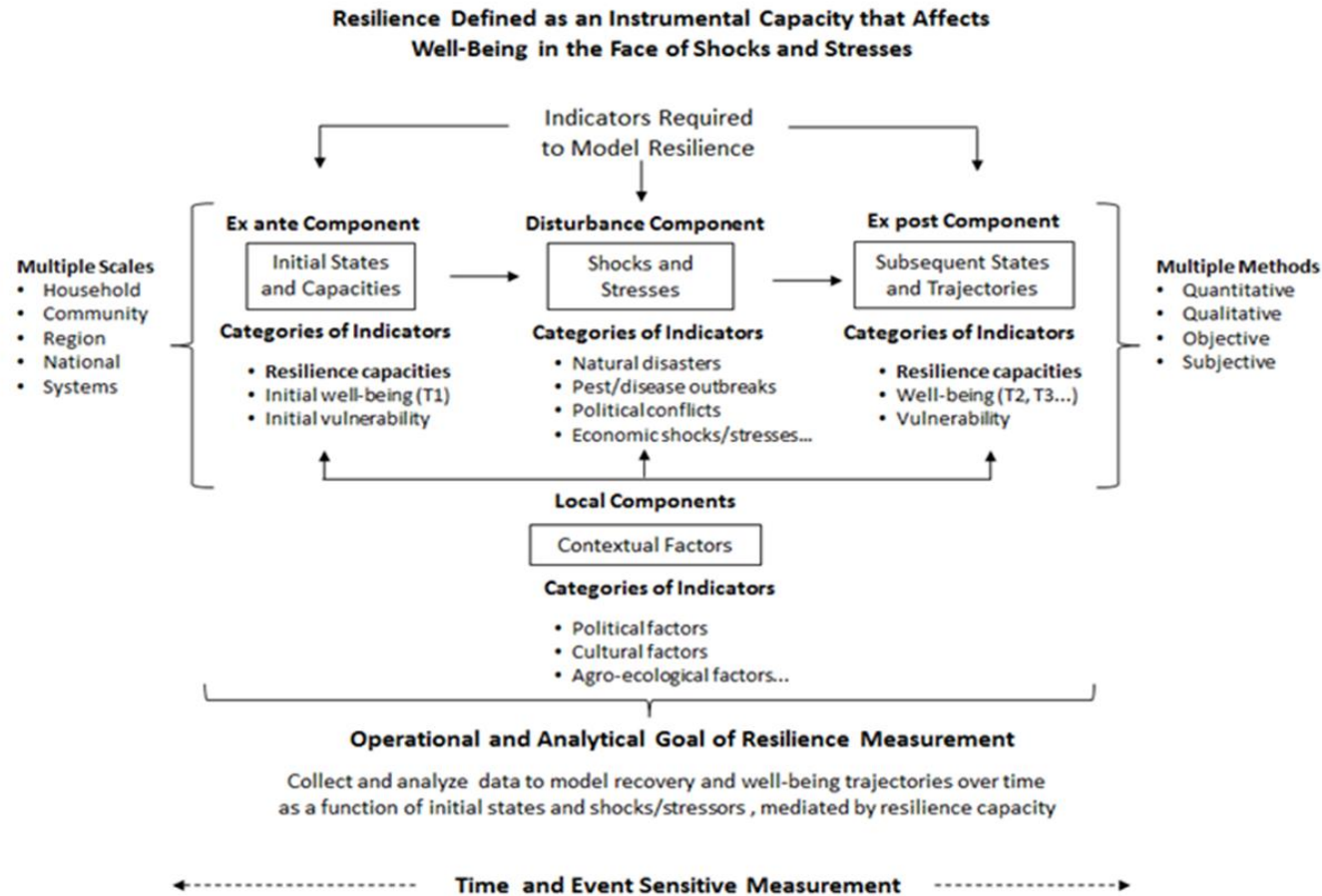
<sup>10</sup> Bonding social capital is seen as the bond between community members. Bridging social capital connects members of one community or group to other communities/groups. Linking social capital is seen in trusted social networks between individuals and groups interacting across explicit, institutionalized and formal boundaries in society.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

<sup>13</sup> FSIN, 2014, Series No. 2.

Figure 3. Resilience measurement framework<sup>14</sup>



Source: FSIN, 2014, Series No. 2

<sup>14</sup> The resilience measurement framework was developed by the Food Security Information Network (FSIN) to conceptualize and develop resilience measurements for implementation, which is facilitated through USAID. See also USAID’s technical note on “The Resilience Agenda” listed in the references box at the end of this module.

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. In plenary discuss the follow questions:

- *What information is important for resilience measurement, and in the Sahel, in particular?[Conceptual discussion which can feed into future data collection]*
- *What do we want to gather from resilience measurement in the Sahel?*

### **Session 1.3: Resilience Indicators, Constructing Indicators and Measuring Resilience**

Resilience should be viewed as a set of capacities that enable households and communities to effectively function in the face of shocks and stresses while still meeting a set of well-being outcomes. The ability to measure resilience involves measuring the relationship between shocks, capacities, responses, and future states of well-being. *Thus, there is no single indicator that measures resilience, and the variables that comprise the indexes are FLEXIBLE based on the context and further analysis.* There is a need for a number of indicators to be used as part of a measurement framework. The following are key factors to consider in measuring resilience:

- Identify the well-being outcomes to be achieved and measure resilience in relation to these outcomes;
- Identify the shocks and stresses that individuals, households, communities and systems are exposed to and the severity and duration of these shocks and stresses;
- Measure the absorptive, adaptive and transformative capacities in relation to these shocks and stresses at different levels; and
- Identify the responses of individuals, households, communities and systems to these shocks and stresses and trajectory of well-being outcomes.

#### **Resilience measures in practice**

TANGO is building an evidence base with these resilience indicators and indices in practice. The resilience study uses a mixed-methods approach to collect quantitative and qualitative information that will provide the basis for addressing the research questions. The quantitative methods include household and community level surveys. The qualitative methods use focus group discussions (FGDs) and key informant interviews (KII) and the information is triangulated across the quantitative data sources.

#### **Constructing indices**

The table on the next page lists the elements of each resilience index used in the RISE impact evaluation. The indicators described for each index are combined using *polychoric factor analysis*.

#### **Tell me more: What is PCA?**

The resilience capacities are a composite measure based on multiple other measures and in this case a principal components analysis (PCA) or a polychoric factor analysis is used to construct these indices. This technique reduce a set of input variables that are hypothesized to be related to one another to a single variable by detecting structure in the relationships among the input variables from their correlation matrix. PCA is appropriate to use when all of the input variables are continuous. Polychoric factor analysis<sup>15</sup> is the PCA analog that is appropriate to use when some variables are binary or ordinal. For both,

<sup>15</sup> Kolenikov and Angeles. 2004.

the variables are combined using weights that represent their correlations with the single variable produced. Indices are constructed using this technique only if the signs of the weights for the input variables are as expected (positive or negative) given our conceptual understanding of the relationships between the input variables and the indicator being measured.

Index categories	Survey	Composition of indicators
<b>Absorptive Capacity Index:</b> Perceived ability to minimize exposure to shocks and stresses (ex ante), where possible, and to recover quickly when exposed: bonding social capital, savings, asset ownership, informal safety nets, disaster preparedness and mitigation, hazard insurance, conflict mitigation	Household	Index of bonding social capital: giving and receiving assistance with relatives and non-relatives within one's village
		Binary variable if a household member currently holds savings
		Household Asset Score (defined using PCA)
	Community	Number of community organizations providing safety nets (e.g., micro-finance, savings, religious groups)
Binary variable indicating whether or not community has an institution providing conflict mitigation		
Binary variable if community has institutions where people can receive assistance due to losses of livestock		
<b>Adaptive Capacity Index:</b> Ability to make proactive and informed choices about alternative livelihood strategies based on changing conditions: access to financial resources, human capital, diversity of livelihoods, exposure to information, asset ownership, aspirations and confidence to adapt, bridging social capital, and linking social capital	Household	Index of human capital: binary variable if household has any adults with primary or higher education; binary variable if household has any adults with literacy and numeracy skills; and number of trainings adults have had (e.g., vocation, business, natural resource management - NRM, etc.)
		Number of different livelihood risk profile categories of income sources as well as risks derived from different risk profile categories
		Number of topics for which respondent has received information in the last year (e.g., early warning information, health and sanitation messaging, etc.)
		Household Asset Score
		Index of bridging social capital: giving and receiving assistance with relatives and non-relatives outside one's village
		Aspirations and confidence to adapt (absence of fatalism, sense of individual power, exposure to alternatives to the status quo, individual power, and exposure to alternatives)
		Index of linking social capital: number of topics for which respondent has received information in the last year from different types of sources/officials
	Community	Binary variable if community has institution that provides credit
		Binary variable if community has institutions/groups for savings
		Index of linking social capital: access to and quality of community services for roads, health, veterinary, agricultural extension
<b>Transformative Capacity Index:</b> System-level changes that enable more lasting resilience that related to governance	Household	Index of bridging social capital: giving and receiving assistance with relatives and non-relatives outside one's village
		Index of linking social capital: number of topics for which respondent has received information in the last year from different types of sources/officials



<b>Index categories</b>	<b>Survey</b>	<b>Composition of indicators</b>
mechanisms, policies/regulations, infrastructure, community networks, and formal safety nets which are part of the wider system in which households and communities are embedded: formal safety nets, access to markets, access to infrastructure, access to basic services, access to communal natural resources, bridging social capital, linking social capital	Community	Number of formal safety nets available in community where people can receive: food assistance, housing and non-food items, assistance due to livestock loss, and availability of disaster response program from Government or non-governmental organizations (NGOs)
		Markets score: number of markets available within 20 km of the community for livestock, selling, and purchasing agricultural products
		Infrastructure score: number of communities with at least half of households that have access to improved water source; to electricity; community has cell phone service or public telephone; and community can be reached by paved road
		Basic service score: number of communities with a primary school within 5 km; health center within 5 km; veterinary service within 5 km; agriculture extension service offered in the area; an institution that give loans; and a security service/force in the area
		Communal natural resources score: number of communities with communal grazing land; communal animal water source; and communal land for firewood
		Index of linking social capital: Access to and quality of community services for roads, health, veterinary, agricultural extension
<b>Household Resilience Index</b>	Household and community	Indexes of absorptive, adaptive, and transformative capacities
<b>Community Resilience Index:</b> Community-based NRM, Community disaster planning group, social protection index, managing and maintaining public goods index, and conflict mitigation	Household	Proportion of households who have received support from relatives, friends, or neighbors in the last year
		Proportion of households who have given assistance to relatives, friends, or neighbors in the past year
		Eight questions that measure proportion of households who could obtain or would give money/food or help with work to/from relatives or others living in the community if they had a problem, or to/from others outside the community
	Community	NRM index: binary variables if community has water user group. Grazing land user groups, groups regulating the collection of firewood, and if the community has defined rules to ensure good NRM
		Binary variable of presence of disaster planning group in community
		Binary variable of presence of NRM-related conflict resolution committee
		Social protection index: binary variables if community has a savings group, mutual help group, charitable group, youth group, women's group
		Managing public goods index: binary variables if community has active civic improvement group to manage and maintain public goods; has roads in good quality condition; has school in good quality condition

**Example survey categories of indicators to measure capacities at the household level: applied to RISE**

- Economic resources (assets market access, supply chain efficiency)

- Livelihood strategies (diversity across risk profiles, climate smart)
- Risk management strategies (risk exposure and perception, decision making and planning)
- Human capital (education, skills and abilities, nutritional status, health and wellness)
- Social capital (bonding, bridging, linking)
- Technology and innovation (agriculture, tele-communication)
- Service infrastructure (roads and transportation, access to markets, water and sanitation, vet services, medical services, security)
- Institutions and governance (coverage, structural integrity, effectiveness, conflict mitigation mechanisms)
- Social protection (focus and type, strategic aim, integration and duration)
- Agro-ecological (soils and water resources, natural resource management, cropping and grazing practices)

**Example survey categories to measure capacities at the community level: applied to RISE**

- Community characteristics: population fluctuations, ethnic/clan groups, years of existence, typical number of growing seasons, communal sources and community-based NRM such as rangeland, water (for animals), trees/firewood and irrigation.
- Community infrastructure and services: systems, sources, availability and/or conditions for drinking water, electricity, mobile and public phones, roads and public transportation, schools, health centers, veterinary and animal services, agricultural extension, markets, security/police force, and credit. This also includes an overview of typical housing materials and the availability of housing or food assistance, adult education, and other services.
- Community organizations: presence of various social networks and their participants (gender/age).
- Government and NGO programs: presence and types of government and NGO programs.
- Shocks: Experience of shocks in past five years and community response/coping to protect assets.
- Land management: types of NRM systems and practices
- Community governance: types of traditional and formal governance and conflict resolution systems that exist. Level of women’s participation in community governance/feedback and conflict resolutions systems.

**Outcome indicators for RISE**

**1. Household food security**

This is measured as the inverse of the Household Food Insecurity Access Scale (HFIAS)<sup>16</sup> score. The inverse is used so that the measure of resilience increases with increasing household food security. The HFIAS score is based on nine experiences that respondents are asked about; they include:

1. Worry that the household would not have enough food.
2. Any household member was not able to eat the kinds of foods preferred because of a lack of resources.

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<sup>16</sup> Coates, Swindale and Bilinsky. 2007.

3. Any household member had to eat a limited variety of foods due to a lack of resources.
4. Any household member had to eat some foods that they really did not want to eat because of a lack of resources to obtain other types of food.
5. Any household member had to eat a smaller meal than he/she felt they needed because there was not enough food.
6. Any household member had to eat fewer meals in a day because there was not enough food.
7. There was no food to eat of any kind in the household because of lack of resources to get food.
8. Any household member went to sleep at night hungry because there was not enough food.
9. Any household member went a whole day and night without eating anything because there was not enough food.

## **2. Household hunger scale (HHS)**

The HHS is similar to the HFIAS but is only based on the three HFIAS questions pertaining to the most severe forms of food insecurity<sup>17</sup> (see questions seven to nine above). Answers to the questions are used to construct a score on a scale of zero to six. The prevalence of hunger is then calculated as the percentage of households whose scale value is greater than or equal to two, which represents “moderate to severe hunger.”

## **3. Dietary Diversity Score (DDS)**

The DDS reflects the quality of households’ diets and is the total number of food groups, out of 12, from which household members consumed food in the last day. The indicator employed and calculation methods were developed by the USAID-funded Food and Nutrition Technical Assistance (FANTA) project.<sup>18</sup> The 12 food groups are: Cereals, roots and tubers, vegetables, fruits, meat, eggs, fish and seafood, legumes, dairy and dairy products, fats and oils, sweets (sugar, sugar cane, tamarind or honey), and other foods.

### **Qualitative study**

This information will be invaluable for elaborating and providing insight on the relationship between household and community level resilience. The qualitative component of RISE impact evaluation investigated topical areas described below and in the box that follows:

- *Government or NGO programs*: presence and types of government and NGO programs, impact on community, links through programs to other programs, and recommended changes, etc.
- *Shocks, risks and coping strategies*: characteristics of shocks and community responses, types of coping strategies, reliance on others and changes in social support, household and community adaptations to reduce impacts of shocks, role of community in reducing impact of shocks, role of organizations in managing shocks, gendered-differentiated impacts of shocks, etc.
- *Participation*: effectiveness of community leaders organizing support and of DRR/disaster risk management (DRM) strategies and risk/information-sharing

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<sup>17</sup> Ballard, Coates, Swindale and Deitchler. 2011.

<sup>18</sup> Swindale and Bilinsky. 2006.

networks, collective action to deal with shocks, gender/social/ethnic barriers to participation, perception of community recovery from shocks and reasons for recovery (or lack of recovery), etc.

### ***Topical Areas used in the RISE Qualitative Tool***

#### ***Shocks/Stressors***

- What types of shocks are experienced?

#### ***Household and Community Responses (attitudes) to Shocks***

- How do households and the community respond to the shock?

#### ***Behavior***

- What actions are households and the community taking to respond to the shock?

#### ***Participation***

- Are community leaders effective at organizing support for all members of the community? Why or why not?
- What collective action is the community taking to protect or maintain resources important to the whole community? Which resources and why?

#### ***Participation in Markets***

- To what extent do households and the community participate in marketing activities?

#### ***Livelihood Diversification***

- What kinds of livelihood activities are households engaged in?

#### ***Adaptive Capacity***

- Are there differences in the way that households recover from shocks?

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. In plenary discuss the follow questions:

- *What are the main challenges and considerations for constructing indices for resilience?*
- *[What specific data should structure the content that can be used to design resilience performance indicators?*

### **Session 1.4: Wrap-up**

This session allows time for the facilitator and participants to summarize the key objectives and discussion points of the module, related to:

- *What are the key challenges and opportunities for applying resilience concepts to the RISE M&E framework to contextualize to your experience?*

## Module 1 References:

### Session 1.1-1.2:

- [USAID Feed the Future. 2016, draft. Resilience in the Sahel-Enhanced \(RISE\) Project Impact Evaluation Volume 1. Baseline Survey. Resilience Analysis. April. Prepared by Lisa Smith, Tim Frankenberger, Sabrina Aguiari, and Carrie Presnall for the Feed the Future FEEDBACK project. \[Not available online/Full document provided in English in Supplementary Annex\].](#)
- [Frankenberger, T. R., M. A. Conostas, S. Nelson and L. Starr. 2014. "Current Approaches to Resilience Programming among Nongovernmental organizations." Building Resilience for Food & Nutrition Security. Paper prepared for the 2020 Conference. Paper No. 7. May.](#)
- [Béné, Christophe, Tim Frankenberger and Suzanne Nelson. 2015. Design, Monitoring and Evaluation of Resilience Interventions: Conceptual and Empirical Considerations. Supported by USAID and TOPS. IDS Working Paper. Volume 2015 No. 459, Brighton, UK. July.](#)
- [Frankenberger, Tim, Tom Spangler, Suzanne Nelson and Mark Langworthy. 2012. Enhancing Resilience to Food Security Shocks in Africa. Discussion Paper. TANGO International, Tucson, Arizona. 7 November.](#)
- [Food Security Information Network \(FSIN\). 2014. A Common Analytical Model for Resilience Measurement. Resilience Measurement Technical Working Group. Technical Series No. 2. FAO, IFPRI and WFP, Rome. November.](#)
- [USAID. N.D. Principles of SLI. Presentation.](#)
- [USAID. 2015. Annual Report: October 1, 2014-September 30, 2015. Resilience and Economic Growth in the Sahel Enhanced Resilience, Republic Of Niger and Burkina Faso, REGIS ER. USAID and NCBA CLUSA. Niamey, November.](#)
- [USAID. 2013. The Resilience Agenda: Measuring Resilience in USAID. Technical Note, June.](#)
- [USAID. 2012. Building Resilience to Recurrent Crisis: USAID Policy and Program Guidance. Washington, D.C. December.](#)

### Session 1.3:

- [Coates, J., A. Swindale, and P. Bilinsky. \(2007\). Household Food Insecurity Access Scale \(HFIAS\) for Measurement of Household Food Access: Indicator Guide \(v. 3\). Washington, D.C.: FHI 360/FANTA.](#)
- [Ballard, T., J. Coates, A. Swindale, and M. Deitchler. \(2011\). Household Hunger Scale: Indicator Definition and Measurement Guide. Food and Nutrition Technical Assistance II Project, FHI 360, Washington, D.C.](#)
- [Kolenikov, S. and A. Angeles. 2004. The Use of Discrete Data in PCA: Theory, Simulations, and Applications to Socioeconomic Indices. October.](#)

## MODULE 2: RISE Baseline Findings

*In this module, participants will review findings from the RISE baseline to understand the resilience capacities and well-being of target communities. Participants will apply this information to strategically plan for future RISE evaluations.*

### Session 2.1: RISE Methodology

The overall objective of the RISE impact evaluation was to provide insight into how the package of RISE interventions impacts (1) households' resilience; (2) households' and communities' resilience capacities (factors that enhance resilience); and (3) household resilience outcomes, which include income, assets, food security, and nutritional status. Using both qualitative and quantitative data, this resilience analysis set out the baseline status of all three of the above and undertakes exploratory analysis to understand how shocks and households' resilience capacities combine to affect the resilience outcomes among households in the RISE area.

Data was collected for the baseline evaluation from 2,492 households between April 29 and May 30, 2015. A *mixed-methods* approach was used where qualitative data from focus group discussions, positive deviant interviews, and key informant interviews were triangulated and integrated with the quantitative results to provide contextual interpretation to the findings.

#### **Tell me more: What is a mixed-methods approach?**

The RISE IE uses a mixed-methods design, combining quantitative and qualitative methods in both data collection and data analysis stages. A mixed-methods approach allows for triangulation of qualitative and quantitative information. This allows for a dynamic process where quantitative findings shape qualitative inquiry, and the combination of quantitative and qualitative analysis at each phase informs both in the next. In this convergence of evidence, the qualitative data analysis is used to interpret and supplement the quantitative results throughout the baseline report. It is integrated with quantitative findings to provide a more comprehensive and contextually specific picture of resilience dynamics at the local level. Essentially, this analysis combines information about *what? how many?* from quantitative results with information about *why?* and *how?* from qualitative results.

For instance, qualitative analysis findings provide further insights into government policies and programs influencing the resilience of target populations, local market dynamics, community social capital and relations with neighboring communities, savings and borrowing activities, spill-over effects of other development projects, and social and economic characteristics of distinct populations. Qualitative analysis also complements quantitative findings at the community and household levels by describing how social capital functions in the wake of shocks, including ways in which unequal power relations and unequal access to resources influences the ability of households to build and draw upon social capital.

In the RISE baseline report, key population sub-groups are reported across both household-level and community-level data for the descriptive analysis, reporting statistical significant differences of 0.05 level. For household-level data, the population subgroups are: RISE program areas (Burkina Faso or Niger), predominant livelihoods (pastoralism, agriculture, or other), and intervention groups (high exposure and low exposure). For community level

data, the population sub groups are: RISE program area (Burkina Faso or Niger), and intervention groups (high intensity/exposure and low intensity/exposure).

Strata	Definition
High Intensity	<b>Niger and Burkina Faso:</b> Communes in RISE zone where a) Resilience and Economic Growth in the Sahel – Enhanced Resilience (REGIS-ER)/ Resilience and Economic Growth in the Sahel – Accelerated Growth (REGIS-AG) intervenes (or will intervene) alone, b) REGIS-ER/AG intervenes with FFP or c) FFP intervenes alone
Low Intensity	<b>Niger and Burkina Faso:</b> Communes in RISE zone where neither REGIS nor FFP are/will be implementing activities

### Data collection

The sampling design was planned with the need to collect data for two intervention groups—high exposure and low exposure—in order to evaluate the impact of RISE interventions. The high exposure group consists of households residing in villages slated to benefit from a set of FFP projects,<sup>19</sup> the REGIS-ER project or the REGIS-AG project. The low exposure group, which will serve as the control group in the final impact evaluation analysis, consists of households residing in villages not slated to receive support from these programs.

The household survey followed a two-stage, stratified sampling design with the intervention groups serving as the strata. In the first stage, 50 villages were randomly selected within each of the groups. In the second, 25 households<sup>20</sup> were randomly selected within each village to reach the desired sample size of 2,500. Data were collected from a total of 2,492 out of the 2,500 households, giving a 99.7 percent response rate. The community surveys were conducted in all 100 household sample villages.

	Households	Clusters
High Intensity	925	37
Low Intensity	1575	63
Total	2500	100

### RISE research questions

The objective of the RISE impact evaluation is to provide insight into how the resilience capacities of communities affect the impact of program interventions on key resilience outcomes (income, assets, food security and nutrition) in beneficiary households. Household resilience outcomes are envisioned as depending on the initial level of community resilience capacities and the package of RISE interventions that the respective communities receive. The REGIS theory of change states that individuals, households, and communities need to be resilient in order for systems to be resilient.

<sup>19</sup> These include the projects Families Achieving Sustainable Outcomes - FASO (implemented by Catholic Relief Services) and the Victory against Malnutrition Project - VIM (Agricultural Cooperative Development International/ Volunteers in Overseas Cooperative Assistance - ACIDI/VOCA) in Burkina Faso and Pasam-Tai (Catholic Relief Services), Sawki (Mercy Corps) and Livelihoods, Agriculture and Health Interventions in Africa - LAHIA (Save the Children) in Niger.

<sup>20</sup> The actual number of households sampled was 28 in order to reach the target of 25 needed to achieve the desired sample size.

### **RISE Impact Evaluation Research Questions (from protocol, July 2015):<sup>21</sup>**

1. Does layering multiple RISE interventions into the same communities and among the same households result in greater gains in terms of household and community resilience capacities and household outcomes?
2. How do RISE interventions interact with existing community resilience capacities to improve household resilience capacities and outcomes?
3. What are the specific aspects of community resilience capacities that most strongly support household resilience capacities?
4. Will interventions designed to improve household resilience outcomes like food security have a lasting impact or are they just a short-term remedy? That is, is the impact brought about by improving household resilience capacities?

*Research Question 1 and 2 (from protocol)* focus on the impact of RISE as they examine whether the RISE interventions had their intended effect. The dependent variables of interest are household resilience capacity, community resilience capacity and household outcomes. The key variable used to examine the impact of RISE is binary (0,1) based on the following intervention arms: low intensity villages (control) and high intensity villages (intervention group).

*Research Questions 3 and 4 (above)* although broader, delve deeper into our understanding of resilience at the household level. *Research question 3* asks which types of community resilience capacities (CRC) most strongly support household resilience capacities (HRC). This question is explored within the context of multivariate regression analysis with indicators of HRC as dependent variables and indicators of CRC as independent variables. Other factors that will be controlled for are household socio-demographic characteristics and household wealth as proxies using an index of asset ownership.

*Research Question 4* examines if the designed interventions to improve household resilience outcomes (like food security) will have a lasting impact or if they are just a short-term remedy? That is, what is the impact brought about by improving household resilience capacities?

To gain further insight into the relationship between HRC and household outcomes such as food security, a multivariate regression analysis, as mentioned above, is used to examine the relationship between HRC and household outcomes. Specifically, does greater HRC reduce the negative impact of shocks on outcomes?

**Plenary discussion:** Follow the instructions and prompts of the facilitator. In plenary discuss the follow questions:

- *Reflect on and discuss RISE research questions and how (and why) have these been further formulated since the baseline IE was developed?*

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<sup>21</sup> USAID. 2015. Resilience in the Sahel-Enhanced (Rise) Initiative Impact Evaluation (IE) Protocol. Revised. 25 July. Prepared by Mark Langworthy and Tim Frankenberger, TANGO International.



**In order to help facilitate the discussion, examples of how the research questions have changed over the course of the RISE evaluation are included below as a reference (2016)**

1. In the face of shocks, how do well-being indicators fare in the RISE zone of influence (ZOI) vs. outside the ZOI?
  - a. Which interventions have significantly mitigated against the adverse effects of shocks
  - b. Was there any significant difference between male and female-headed households in well-being outcome indicators responding to shocks?
2. To what extent does layering multiple RISE interventions in the same communities contribute to well-being outcomes?
  - a. What types of collaborative models (sequencing, layering and integrating) for humanitarian assistance (HA) and development assistance (DA) show the most significant impact?
  - b. Which combination of activities contributes more significantly to positive outcomes?
3. How well do resilience capacities correlate to well-being outcomes?
  - a. In what ways and to what extent did household resilience interact with community resilience?
  - b. Which elements of resilience capacities have significantly mitigated against shocks?
4. How has learning contributed to improved outcome well-being indicators in RISE?
  - a. How well has the RISE programming adapted based on learning over time?
  - b. What have been key barriers to learning or adaptation?

### **Multivariate Regression (MVR) Analysis**

The following questions are explored in the multivariate regression analysis for RISE.<sup>22</sup>

- MVR1. How is household food security affected by household shock exposure?
- MVR2. How is food security affected by household and community resilience capacities?
- MVR3. How was the households' ability to recover from the shocks experienced in the year prior to the baseline survey influenced by their own and their communities' resilience capacities?
- MVR4. Does greater household resilience capacity reduce the negative impact of shocks on food security?

To investigate Question MVR1, the following equation is used:

$$foodsec = f(SE, household\ characteristics, \mu), (1)$$

where *foodsec* represents current household food security, SE is an index of shock exposure over the previous year, and the household characteristics controlled for are household demographic characteristics (adult equivalents, age-sex composition, gendered household type), education, predominant livelihood, and an index of asset ownership. The term  $\mu$

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<sup>22</sup> The results of all regression analyses from RISE should be interpreted as exploratory rather than causal given the nature of the data and the empirical techniques employed.

$\mu$  represents a set of dummy variables controlling for the area of residence of each household, which indirectly controls for factors in households' broader area of residence that influence their food security, such as elevation and cultural or political factors. When shock exposure is measured at the household level, the area is each households' village. When shock exposure is measured at the village level, the area is the program area (Burkina Faso or Niger).

The regression equations used to investigate Question MVR2 regarding household resilience capacity (HRC) and community resilience capacity (CRC) are:

$$foodsec = f(HRC, SE, household\ characteristics, \mu) \quad (2)$$

$$foodsec = f(CRC, SE, household\ characteristics, \mu). \quad (3)$$

In equation (2) the  $\mu$  term represents the same geographical areas as in equation (1), while in equation (3) it represents province or program area. The regression equations used to investigate Question MVR3 are the same as those to investigate Question MVR2, but the dependent variable is a measure of households' ability to recover from the shocks experienced in the previous year.

Finally, the regression equations used to investigate Question MRV4 are:

$$foodsec = f(HRC, SE, HRC * SE, household\ characteristics, \mu) \quad (4)$$

$$foodsec = f(CRC, SE, CRC * SE, household\ characteristics, \mu) \quad (5)$$

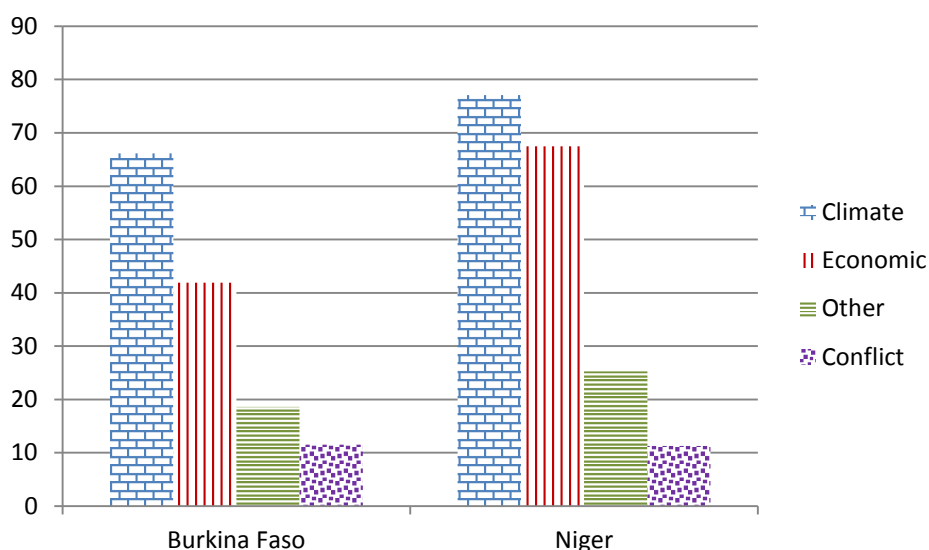
The interaction terms between shock exposure and the measures of resilience capacity help to determine whether greater resilience capacity reduces the negative impact of recent shocks on current well-being outcomes.

## **Session 2.2a: RISE Baseline Findings**

### **Shock Exposure**

The quantitative and qualitative data corroborate prior information that the RISE program area is highly shock-prone. The most commonly experienced shocks are climate shocks, but more specifically, drought and its downstream impacts. The typical downstream impacts of drought are: animal disease outbreaks, conflict between farmers and herders, theft of assets, sharp food price increases, increases in the prices of productive inputs, and drops in the prices of products sold. Another climate shock commonly reported is insect invasions.

**Figure 4. Percent of households experiencing climate shocks, economic shocks, conflict shocks and other types of shocks by program area**



Source: USAID FEED the FUTURE Feed the Future. 2016, draft.

Qualitative interviews in the Burkina Faso area point to a stronger impact of drought on women than men as women are responsible for providing water. Drought means water fetching duties by women take more time, leaving less time for their other care activities. Niger FGD participants pointed to the fact that drought conditions often lead men to migrate in search of work, leaving women with a greater work burden.

The data indicate very low resilience among households in the RISE area: the majority of households that experienced a shock were not able to recover from it. Only one-fifth of households were able to recover from drought and food prices increases, the most commonly-experienced shocks, for example. Summary measures of households' resilience to shocks show no differences across the Burkina Faso and Niger program areas and limited differences between the livelihood groups.

### Coping Strategy

The most common strategy used by households to cope with shocks, by far, is to sell livestock (employed by two-thirds of households), followed by reducing food consumption, and borrowing money from friends or relatives. Other commonly-employed strategies are: migration of some family members, drawing down on savings, receiving money or food from friends or relatives, and consuming seed stocks. Reducing food consumption and consuming seed stocks are particularly negative coping strategies. In addition, borrowing money from a money lender was utilized as a coping strategy by over 10 percent of households. Households in the Niger program area were more likely than those in the Burkina Faso area to use a number of coping strategies, consistent with the fact that they were more shock-exposed overall.

Livelihood diversification was seen as a way to prepare for and/or respond to shocks. Finally, sharing resources among extended family members and receiving money from children or relatives living elsewhere, especially those living in cities, was noted as important for

*We help each other after shocks through donations of provisions, seeds, lands, through lending which favors the most vulnerable.*

-FGD Zinder Region.

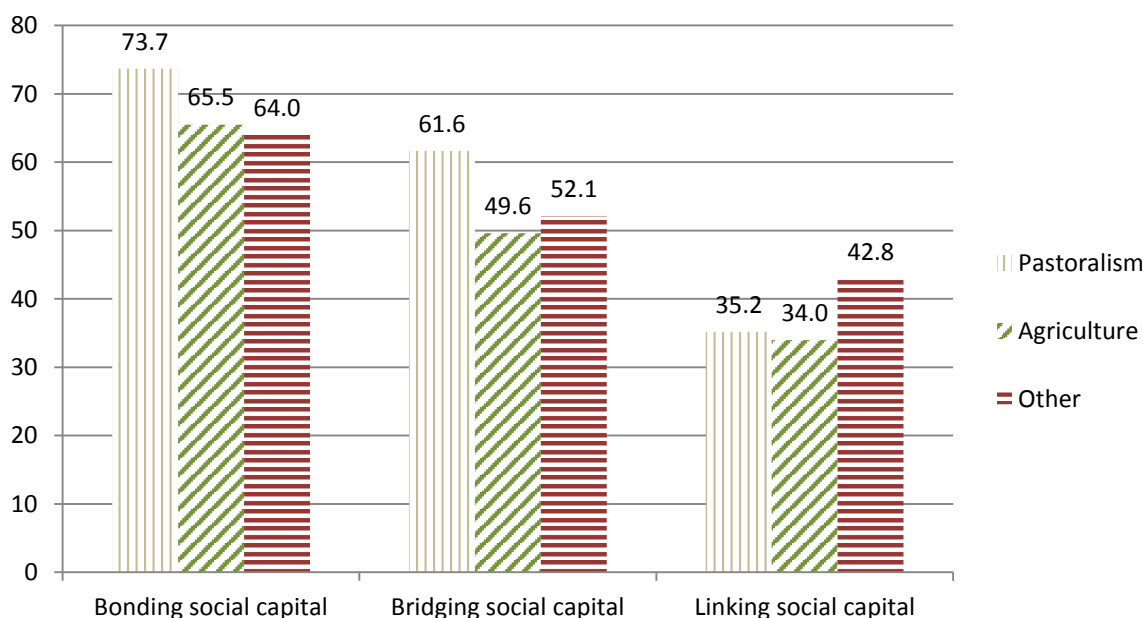
coping with shocks. However, the increasing frequency and severity of shocks is eroding solidarity and hampering the ability of households to help each other in times of need, thus, potentially having an erosive effect on social capital over time.

### Social Capital

Social capital is the quantity and quality of social resources (e.g., networks, membership in groups, social relations, and access to wider institutions in society) upon which people draw in pursuit of livelihoods and is thought of as the glue, so-to-speak, that binds people in society together. Respondents to the quantitative survey reported receiving informal support, mainly in the form of loans, gifts and remittances from relative, neighbors or friends far more often than formal sources of support, such as food aid, cash transfers, and capacity-building support.

Data were examined on three types of social capital: bonding social capital, bridging social capital, and linking social capital.<sup>23</sup> While bonding social capital is higher in the Burkina Faso program area than the Niger area, there is no significant difference in bridging and linking social capital. However, a pattern of greater bonding and bridging social capital among pastoralists, and greater linking social capital among households falling into the “other” group, who tend to gain their livelihoods outside of their own homes and villages, was found. Qualitative data reveal the primary importance of the social cohesion and communal support associated with bonding social capital for coping with shocks, of bridging social capital through remittances, and of linking social capital for receiving public aid and services.

**Figure 5. Indices of social capital, by predominant livelihood**



Source: USAID Feed the Future. 2016, draft. Resilience in the Sahel-Enhanced (RISE) Project Impact Evaluation Volume 1. Baseline Survey. Resilience Analysis. April.

<sup>23</sup> Bonding social capital is seen as the bond between community members. Bridging social capital connects members of one community or group to other communities/groups. Linking social capital is seen in trusted social networks between individuals and groups interacting across explicit, institutionalized and formal boundaries in society.

### **Livelihood Diversity**

Respondents in Niger and Burkina Faso pointed to livestock rearing, which provides wealth and savings, and off-season and irrigated vegetable gardening as important manners in which to diversify one's livelihood. In Burkina Faso, the most resilient households were identified by FGDs to be those that diversify livelihoods by growing staple crops, cash crops, rearing livestock, gold mining and engaging in off-farm activities such as commerce or skilled-based employment. In the Niger program area, the most resilient households were identified to be those which engage in both rain-fed and irrigated agriculture, rearing animals, relying on remittances, and accumulated savings.

### **Ownership of Assets/Access to Credit**

Asset ownership is slightly higher among households in the Burkina Faso program area and among the pastoralism-dominant livelihood group, the latter due to greater animal ownership. Access to credit, but not savings support, is more widely available in the Burkina Faso program area. Few differences were found in access to financial resources across the livelihood groups.

### **Access to Markets, Infrastructure, Services, and Communal Natural Resources**

All four of these resources are important elements of households' resilience to shocks. Being features of transformative capacity, they enable more lasting and sustainable resilience.

However, access to markets is not universal in the RISE program area: only 53 percent of households have access to a livestock market, 60 percent to a market for agricultural products, and 43 percent to markets for agricultural inputs. There is little difference across the Burkina Faso and Niger program areas in access, but the "other" livelihood groups tends to have greater access, perhaps because of the reliance on petty commerce, which often takes place in organized markets, as a source of many households' livelihoods. According to the qualitative data, men in the Burkina Faso program area participate more in market activities than do women, while in the Niger program area participation is more equal. In both areas women's freedom of mobility is an issue.

Access to infrastructure (e.g., cell phone service, paved roads, piped water and electricity) and basic services (schools, health centres and financial services) differs little across the RISE program areas, although households in the Niger area have greater access to paved roads. Pastoralist-focused households tend to live in areas with lower access to infrastructure, most particularly to paved road and piped water for drinking.

### **Human Capital and Access to information**

Human capital, measured here using literacy, education levels, and trainings received, endows people with the ability to use information and other resources to cope with shocks and stressors. Access to information allows people to put such human capital to use. Human capital is equally very low across the two RISE program areas and is particularly low among pastoralism-focused households. Access to information shows no overall difference across the program areas or livelihood groups. According to FGDs, trainings on such subjects as agro-ecological techniques, setting up savings groups, and child feeding are highly valued, and some have transformed communities.

### **Safety Nets and Disaster Risk Reduction**

The most highly available formal safety net is food assistance. Informal safety nets at the village level, such as women's groups, credit or micro-finance groups, savings groups, mutual help groups and religious groups, tend to be more widely available than the formal safety nets other than food assistance, but not universal. There is little difference in access to safety nets across the RISE program areas or livelihood groups. FGDs point to food distribution to vulnerable households in the aftermath of a shock as critical to avoiding extreme suffering and famine.

Disaster preparedness and mitigation is very low in the RISE program area. Availability of other elements of disaster risk reduction (hazard insurance and conflict mitigation support) is higher but far from universal. The only apparent difference across the program areas is that households in the Niger area are much more likely to live in a village with a disaster planning group. Pastoralism-focused households have lower access to these groups, but greater access to institutions providing conflict mitigation. According to the qualitative data, formal early warning systems are not in place in the RISE program area except in places where the RISE project itself has started to set up systems. Households rely on local shamans to interpret environmental signs to predict when the rainy season will start or end.

### **Aspirations and Confidence to Adapt**

Aspirations and confidence to adapt are psychosocial capabilities that are thought to give people greater resilience in the face of shocks. They are examined in this report using three indicators – absence of fatalism, belief in individual power to enact change, and exposure to alternatives to the status quo – combined into an overall index. According to the index, this aspect of resilience capacity is slightly higher in the Burkina Faso area than the Niger area due to somewhat lower fatalism and stronger belief in individual power to enact change in the Burkina Faso area; there is very little difference across the livelihood groups, except for more exposure to alternatives to the status quo in the “other” livelihood group compared to the agriculture livelihood group.

### **Economic Sources of Resilience Capacity**

An important economic source of resilience capacity is diversity of livelihood sources which allows flexibility, thereby reducing households' vulnerability in the face of shocks. In general, livelihood diversity is quite low in the RISE program area, with the average household engaging in 2.6 out of a total of 18 activities. It is slightly higher for households in the Burkina Faso area and tends to be slightly lower among those falling into the pastoralist livelihood group. FGDs in both program areas reveal that people recognize that being able to diversify into economic activities that are not climate sensitive – especially gold mining in Burkina Faso and seasonal migration to urban areas in Niger – improves their capacity to manage shocks. Respondents in both areas also pointed to livestock rearing, which provides wealth and savings, and off-season and irrigated vegetable gardening as an important manner in which to diversify one's livelihood. In Burkina Faso the most resilient households were identified by FGDs to be those that diversify livelihoods by growing staple crops, cash crops, rearing livestock, gold mining and engaging in off-farm activities such as commerce or skilled-based employment. In the Niger area the most resilient households were identified to be those who engage in both rain-fed and irrigated agriculture, rearing animals, relying on remittances, and accumulated savings.

Other economic sources of resilience capacity examined using the quantitative data were ownership of assets and access to financial resources (credit and savings). Asset ownership is slightly higher among households in the Burkina Faso program area and among the pastoralism-dominant livelihood group, the latter due to greater animal ownership. Access to credit, but not savings support, is more widely available in the Burkina Faso area. Few differences were found in access to financial resources across the livelihood groups.

### Household Resilience Capacity

Differences across program areas and livelihood groups are not strong. For the former, absorptive capacity is somewhat higher in Burkina Faso than Niger. Pastoralism-focused households have somewhat greater absorptive capacity than the other groups, and households falling into the “other” group have moderately greater adaptive and transformative capacity (refer to Table 1). The overall index of resilience capacity indicates that the “other” group has somewhat greater resilience than those under pastoralism and agriculture. The underlying sources of this greater resilience are the group’s stronger linking social capital, more diverse livelihoods, greater access to infrastructure and financial services, and greater human capital.

**Table 1. Indexes of absorptive, adaptive and transformative capacity**

Indicator	All	Program area		Predominant livelihood			RISE intervention group	
		Burkina Faso	Niger	Pastoralism	Agriculture	Other	Low exposure	High exposure
Absorptive capacity	66.0	69.0 <sup>a</sup>	61.9 <sup>a</sup>	71.5 <sup>ab</sup>	65.9 <sup>a</sup>	64.0 <sup>b</sup>	64.3 <sup>a</sup>	67.7 <sup>a</sup>
Adaptive capacity	40.8	41.1	40.4	40.3 <sup>a</sup>	39.0 <sup>b</sup>	46.4 <sup>ab</sup>	37.5 <sup>a</sup>	44.3 <sup>a</sup>
Transformative capacity	38.8	38.9	38.7	39.1	36.7 <sup>a</sup>	45.2 <sup>a</sup>	35.3	42.5
<b>Household resilience capacity</b>	<b>46.5</b>	<b>47.6</b>	<b>44.9</b>	<b>48.2</b>	<b>44.9<sup>a</sup></b>	<b>50.4<sup>a</sup></b>	<b>43.2<sup>a</sup></b>	<b>49.8<sup>a</sup></b>

<sup>a,b</sup> Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

### Community Resilience Capacity

A defining feature of community resilience is community capacity for collective action as well as for collective problem solving and building consensus in order to negotiate coordinated response. Community resilience is measured using data on five possible types of collective action: (1) communal natural resource management; (2) disaster risk reduction; (3) social protection; (4) managing and maintaining public goods; and (5) conflict management. The only difference across the RISE program areas in these five types of collective action are that there is a higher presence of disaster planning groups in the Niger area and social protection is somewhat greater in villages in the Burkina Faso area. Overall, an index of community resilience capacity shows no significant difference across the program areas. FGD participants in both the Burkina Faso and Niger areas generally spoke positively about the leaders and governance institutions in their villages, with some exceptions linked to coerced participation and family conflicts with leaders. FGDs also raised numerous examples of collective action to deal with shocks, some supported by RISE project interventions. Note however, that some villages in Niger reported no tradition of recurrent, collective community actions in the face of shocks such as drought and flooding.

## Session 2.2b: RISE Regression Analysis Findings

Participants in this session will be provided the results of the multivariate regression analysis and with guidance from the facilitator, interpret the resilience findings.

### How to interpret regression tables\*

Before beginning the small group discussion in this session, it is important that participants understand how to read the results from the regression analyses in this session (see Table 2 to Table 7)

The numbers presented in the body of the tables are the regression coefficients. The regression coefficient provides the expected change in the dependent variable for a one-unit increase in the independent variable. When considering the regression coefficient, the most important elements to consider is the sign; that is, is it positive or negative? A positive coefficient indicates a positive relationship. As the independent variable (e.g., food security, hunger, dietary diversity) increases, the dependent variable (e.g., shock exposure, resilience capacity, etc.) increases. A negative coefficient indicates a negative relationship. As the independent variable increases, the dependent variable decreases. Keep in mind that although the coefficient can provide the reader with a direction (positive or negative) of the relationship between the dependent and independent variable, it cannot be used to measure the importance or size of an effect. However, in RISE data, the indexes used for each subcomponents of resilience capacity (absorptive, adaptive, and transformative) are measured on a similar scale (from 0 to 100) and thus comparison of their coefficients can give an indication of their relative strengths of impact. This, however, is not true for the other independent variables in the regression analysis.

The asterisks in the regression tables correspond with the legend at the bottom of the table. Asterisks indicate the level of statistical significance of a regression coefficient. In our case, one asterisk (\*) represents statistical significance at the 10% level, two asterisks represent statistical significance at the 5% level, and three asterisks (\*\*\*) represent statistical significance at the 1% level. Statistical significance can also be referred to as the 'p-value' A p-value of 0.1 (or 10%) or less indicates that the relationship between the dependant and independent variable is statistically significant. The lower the p-value, the more confidence we have in that relationship.

In the Annex 1 tables, you may also come across an 'R-squared' value. This is a statistical measure of how close the data are to the fitted regression model. In general, the higher the R-squared, the better the model (or analysis) fits your data.

\*Information provided from the following link: <http://svmillier.com/blog/2014/08/reading-a-regression-table-a-guide-for-students/>



## Multivariate Regression Results

**Small Group Discussion:** Follow the prompts and instructions by the facilitators. Participants will be divided into groups and each will be assigned one of the forthcoming questions. Groups will be responsible to answer them using the results from the RISE regression analysis. The results are presented as data tables in Annex 1. Participants will be asked to present their interpretation of the data in plenary.

1. How is household food security affected by household shock exposure? (*Refer to Table 2*)
2. How is food security affected by household and community resilience capacities? (*Refer to Table 3 and*
3. *Table 4*)
4. How was households' perceived ability to recover from the shocks experienced in the year prior to the baseline survey influenced by their own and their communities' resilience capacities? (*Refer to In the previous tables, household resilience capacity and food security are looked at in-depth. However, it is important to also examine whether household resilience capacity actually helps households to recover from shocks, that is, bolster their resilience to shocks. The regression results reported in Table 5 look at this relationship by comparing household resilience capacity and their perceived ability to recover from shocks, an experiential measure of their resilience. Here, resilience is measured using households' own reports of their ability to recover from the shocks they experienced, which allows construction of an experiential measure of resilience. Regarding each shock experienced, survey respondents were asked to answer the question: "To what extent were you and your household able to recover?" The following were the possible responses:*
  1. Did not recover;
  2. Recovered some, but worse off than before;
  3. Recovered to same level as before;
  4. Recovered and better off; and
  5. Not affected.

A household is classified as having recovered from the shock if the chosen answer to the question was #3, #4 or #5 above.

5. *Table 5)*

The facilitator will provide a recap of the findings from the RISE analysis for questions 1, 2, and 3 (above). In addition, facilitators will also include summary of the findings for the Question 4 and 5 (below) which will not be included in the participant exercise.

6. What contributing factors of the three dimensions of household resilience capacity (absorptive, adaptive, and transformative) contribute to their ability to recover from shocks? (*Refer to Table 6*)

7. Does greater household resilience capacity reduce the negative impact of shocks on food security? (*Refer to Table 7*)

## RISE Regression Analysis Tables

**Table 2: Regression analysis of the relationship between shock exposure and household food security: Perceptions based measures of shock exposure.**

	Overall index of shock exposure					Index of drought shock exposure						
	Food security		Hunger		Dietary diversity	Food security		Hunger		Dietary diversity		
Shock exposure	-0.078	***	0.012	***	0.018	-0.165	***	0.025	***	0.026	*	
Adult equivalents	-0.479	***	0.032	*	-0.032	-0.478	***	0.032	*	-0.031		
AE-squared	0.020	***	-0.002	**	0.003	*	0.021	***	-0.002	**	0.003	
Percent females 0-16 <sup>a/</sup>												
Females 16-30	-0.001		0.000		-0.001		-0.001		0.000		0.000	
Females 30 plus	0.011		-0.004		0.002		0.010		-0.003		0.002	
Males 0-16	0.000		-0.001		-0.006	**	0.000		-0.001		-0.006	**
Males 16-30	0.015	*	-0.002		-0.004		0.018	**	-0.002		-0.004	
Males 30 plus	0.000		0.002		-0.001		0.000		0.002		-0.002	
Education: None <sup>a/</sup>												
Primary	0.293		-0.011		0.187		0.274		-0.010		0.183	
Secondary	0.638	*	-0.140	**	0.251	*	0.572	*	-0.134	**	0.246	*
Female-adult-only hh	-1.647	***	0.209	*	-0.178		-1.531	***	0.197		-0.152	
Livelihood: Other <sup>a/</sup>												
Agriculture	-0.484		0.000		-0.290	**	-0.416		-0.011		-0.300	**
Pastoralism	-0.670		0.121		-0.264		-0.513		0.095		-0.285	
Asset index	0.154	***	-0.015	***	0.059	***	0.155	***	-0.015	***	0.059	***
Other shocks												
Insect invasion							0.594		-0.080		-0.073	
Economic stressor <sup>b/</sup>							-0.225		0.011		0.118	
Illness							0.445		-0.057		0.137	
Death							-1.062	**	0.115		-0.210	
Emigration							-0.965		0.057		-0.310	
Number of observations	2,492		2,492		2,492		2,492		2,492		2,492	
R-squared	0.345		0.238		0.373		0.353		0.242		0.375	

**NOTES:** Village fixed-effects regression. *t*-statistics are robust to heteroscedasticity.

Asterisks represent statistical significance at the 10 (\*), 5(\*\*) and 1 (\*\*\*) percent levels.

<sup>a/</sup> Reference category.

<sup>b/</sup> Economic stressors include: Debt repayment, job loss by a household member, long-term unemployment, abrupt end of assistance from outside of the household, unavailability of productive inputs, and drop in demand for products sold.

**Table 3: Regression analysis of the relationship between food security and household resilience capacity**

	Overall shock exposure (Perceptions-based)						Drought-shock exposure (Perceptions-based)						Drought shock exposure (Months of agricultural drought) <sup>al</sup>					
	Food security		Hunger		Dietary diversity		Food security		Hunger		Dietary diversity		Food security		Hunger		Dietary diversity	
<b>Resilience capacity</b>	<b>0.131</b>	<b>***</b>	<b>-0.319</b>	<b>***</b>	<b>0.030</b>	<b>***</b>	<b>0.129</b>	<b>***</b>	<b>-0.312</b>	<b>***</b>	<b>0.030</b>	<b>***</b>	<b>0.083</b>	<b>***</b>	<b>-0.168</b>	<b>*</b>	<b>0.015</b>	<b>**</b>
Shock exposure	-0.076	***	0.489	***	0.019		-0.159	***	0.968	***	0.027	*	-0.398	**	1.621	**	-0.078	
Adult equivalents	-0.458	***	0.571		-0.027		-0.457	***	0.562		-0.026		-0.511	***	0.486		-0.037	
AE-squared	0.018	***	-0.030	*	0.003		0.019	***	-0.032	*	0.003		0.018	***	-0.027		0.002	
Percent females 0-16 <sup>b/</sup>																		
Females 16-30	-0.008		-0.024		-0.002		-0.008		-0.024		-0.002		-0.012		-0.015		0.003	
Females 30 plus	0.010		-0.049		0.001		0.008		-0.040		0.002		0.012		-0.052		0.005	
Males 0-16	0.002		-0.040		-0.006	**	0.002		-0.040		-0.006	**	0.010		-0.067		-0.003	
Males 16-30	0.012		-0.053		-0.005		0.015	*	-0.065		-0.005		0.018	*	-0.074		0.001	
Males 30 plus	-0.003		0.031		-0.002		-0.003		0.028		-0.002		-0.003		0.025		0.003	
Education: None <sup>b/</sup>																		
Primary	-0.112		0.498		0.095		-0.128		0.548		0.090		-0.443		1.831		0.281	**
Secondary	-0.319		-0.597		0.033		-0.377		-0.372		0.026		-0.214		-2.522		0.368	*
Female-adult-only household	-1.329	**	2.863		-0.106		-1.210	**	2.485		-0.077		-2.672	***	6.141		-0.200	
Livelihood: Other <sup>b/</sup>																		
Agriculture	-0.421		-1.047		-0.276	**	-0.354		-1.476		-0.285	**	-0.567		-2.079		-0.440	***
Pastoralism	-0.702	*	4.101		-0.271		-0.550		3.126		-0.294		-0.630		4.618		-0.542	***
Asset index	0.073	**	-0.290	*	0.040	***	0.074	**	-0.293	*	0.040	***	0.110	***	-0.377	**	0.062	***
Other shocks																		
Insect invasion							0.707	*	-3.202		-0.046		0.981	**	-3.366		0.336	*
Economic stressor <sup>c/</sup>							-0.159		0.308		0.134		0.276		-1.208		0.158	
Illness							0.370		-1.587		0.120		-0.296		-0.580		0.189	
Death							-1.055	**	3.742		-0.209		-0.675		2.480		-0.093	
Emigration							-0.944		3.795		-0.305		-0.165		-3.222		-0.478	
Country: Niger																		
													1.060	*	1.073		-1.878	***
Number of observations	2,492		2,492		2,492		2,492		2,492		2,492		2,492		2,492		2,492	
R-squared	0.369		0.201		0.380		0.376		0.207		0.382		0.136		0.038		0.234	

**NOTES:** Asterisks represent statistical significance at the 10 (\*), 5(\*\*) and 1 (\*\*\*) percent levels. Underlying *t*-statistics are robust to heteroskedasticity. The regression equations including the perceptions-based measures of shock exposure control for village of residence.

<sup>a/</sup> Province-level AFDM measure. <sup>b/</sup> Reference category. <sup>c/</sup> Economic stressors include: Debt repayment, job loss by a household member, long-term unemployment, abrupt end of assistance from outside of the household, unavailability of productive inputs, or a drop in demand for products sold

**Table 4: Regression analysis of the relationship between food security and absorptive, adaptive, transformative, and community resilience capacities**

	Overall shock exposure (Perceptions-based)						Drought-shock exposure (Perceptions-based)						Drought shock exposure (Months of agricultural drought) <sup>a/</sup>					
	Food security		Hunger		Dietary diversity		Food security		Hunger		Dietary diversity		Food security		Hunger		Dietary diversity	
<b>Household resilience capacity</b>																		
<b>Overall index</b>	<b>0.131</b>	<b>***</b>	<b>-0.319</b>	<b>***</b>	<b>0.030</b>	<b>***</b>	<b>0.129</b>	<b>***</b>	<b>-0.312</b>	<b>***</b>	<b>0.030</b>	<b>***</b>	<b>0.083</b>	<b>***</b>	<b>-0.168</b>	<b>*</b>	<b>0.015</b>	<b>**</b>
Absorptive	0.077	***	-0.140	*	0.012	**	0.078	***	-0.145	*	0.012	**	0.106	***	-0.279	***	0.014	***
Adaptive	0.070	***	-0.219	***	0.023	***	0.067	***	-0.203	***	0.023	***	0.073	***	-0.142		0.015	***
Transformative	0.248	***	-0.601	***	0.049	***	0.251	***	-0.620	***	0.049	***	0.040	***	-0.063		0.007	
<b>Community resilience capacity</b>																		
<b>Overall index</b>	<b>-0.006</b>		<b>0.029</b>		<b>-0.006</b>	<b>*</b>	<b>-0.005</b>		<b>0.024</b>		<b>-0.006</b>	<b>**</b>	<b>0.111</b>		<b>-0.034</b>		<b>-0.003</b>	

**NOTES:** Asterisks represent statistical significance at the 10 (\*), 5(\*\*) and 1 (\*\*\*) percent levels. Underlying *t*-statistics are robust to heteroscedasticity. The household resilience capacity regression equations including the perceptions-based measures of shock exposure control for village of residence. That including the number of months of agricultural drought controls for country of residence. The community resilience capacity regression equations including the perceptions-based measures control for province of residence. That including the number of months of agricultural drought controls for country of residence. The other independent variables controlled for are those listed in Table 3.

<sup>a/</sup> Province-level AFDM measure.

**Note:** The results for Table 3 and Table 4 examine the relationship between household food security and resilience capacity. They are presented for three measures of shock exposure: (1) overall shock exposure, including climate, conflict, economic, and other shocks; (2) drought-specific shock exposure, which includes exposure to drought itself and its downstream impacts; and (3) drought shock exposure as measured using satellite data from the African Flood and Drought Monitor (AFDM) on the number of months of agricultural drought. The results are presented for three measures of food security as well: the food security index, the household hunger index, and the dietary diversity score. Household demographic characteristics, education, livelihood group, and asset ownership are included as independent variables. For the first measure of shock exposure the village of residence is also controlled for, for the second measure, village of residence and non-drought related shocks, and for the third, non-drought related shocks and country of residence.<sup>24</sup>

<sup>24</sup> The reader should keep in mind that some of the difference in the regression results between those for the perceptions-based measures and those for the months of agricultural drought will be driven by the fact that *village* of residence is controlled for in the regressions for the former while *country* of residence is controlled for in the latter (because the shock exposure measure is calculated at the province level).

In the previous tables, household resilience capacity and food security are looked at in-depth. However, it is important to also examine whether household resilience capacity actually helps households to recover from shocks, that is, bolster their resilience to shocks. The regression results reported in Table 5 look at this relationship by comparing household resilience capacity and their perceived ability to recover from shocks, an experiential measure of their resilience.<sup>25</sup> Here, resilience is measured using households' own reports of their ability to recover from the shocks they experienced, which allows construction of an experiential measure of resilience. Regarding each shock experienced, survey respondents were asked to answer the question: "To what extent were you and your household able to recover?" The following were the possible responses:

6. Did not recover;
7. Recovered some, but worse off than before;
8. Recovered to same level as before;
9. Recovered and better off; and
10. Not affected.

A household is classified as having recovered from the shock if the chosen answer to the question was #3, #4 or #5 above.

**Table 5: Regression analysis of the relationship between households' perceived ability to recover from shocks and resilience capacity**

	Overall shock exposure (Perceptions-based)	Drought shock exposure (Perceptions-based)	Drought shock exposure (Months of agricultural drought) a/
(Dependent variable: Index of households' perceived ability to recover from shocks)			
<b>Household resilience capacity</b>			
<b>Overall index</b>	<b>0.010</b> ***	<b>0.009</b> ***	<b>0.005</b> **
The three capacities (separate regressions) b/			
Absorptive capacity	0.005 **	0.005 **	0.004 *
Adaptive capacity	0.007 ***	0.006 ***	0.006 ***
Transformative capacity	0.016 ***	0.014 ***	0.002
<b>Community resilience capacity</b>			
<b>Overall index</b>	<b>0.002</b>	<b>0.002</b>	<b>0.001</b>

**NOTES:** Asterisks represent statistical significance at the 10 (\*), 5 (\*\*), and 1 (\*\*\*) percent levels. Underlying *t*-statistics are robust to heteroscedasticity. The notes for Table 4 regarding controls for village, province and country of residence as well as the other independent variables controlled for apply here.

a/ Province-level AFDM measure.

b/ Indexes of the three types of resilience capacity are included individually in separate regressions. Doing so allows us to examine each individually, without concern that those with relatively strong correlations with the others and relatively high variation in the sample will statistically dominate the others.

<sup>25</sup> As for the food security regressions, the reader should keep in mind that some of the difference in the regression results between those for the perceptions-based measures and those for the months of agricultural drought will be driven by the fact that *village* of residence is controlled for in the regressions for the former while *country* of residence is controlled for in the latter (because the shock exposure measure is calculated at the province level).

*Participants are asked not to read ahead*

**1. How is household food security affected by household shock exposure?**  
(Refer to Table 2)

Given the multiple shocks to which households are exposed, the large majority of households in the RISE program area, a full 76.4 percent, were food insecure at the time of the baseline survey. Regression analysis of the relationship between shock exposure and food security indicates that shock exposure has a soundly negative impact on food security. Thirteen percent suffered from hunger, the most severe form of food insecurity. The low quality of households' diets is also an issue. Strong differences in the food security indicators across the Burkina Faso and Niger program areas and the livelihood groups are not apparent. The percent of households that are food insecure, however, is somewhat higher among households in the Burkina Faso program area and yet dietary quality tends to be higher than in the Niger program area.

**2. How is food security affected by household and community resilience capacities?** (Refer to Table 3 and Table 4)

Overall, the regression results confirm that greater household resilience capacity—including absorptive, adaptive and transformative capacity—is associated with better food security overall, reduced hunger, and increased dietary diversity. The results are robust to the measure of shock exposure. Community resilience capacity, on the other hand, was not found to have a statistically significant relationship with households' food security. Finally all three aspects of household resilience capacity bolster their resilience in the face of shocks, including drought shocks.

Other results from the regression analysis in Table 3 show that asset ownership as a proxy for economic status or income is strongly statistically significant and has a positive relationship with food security. This suggests that impact of resilience capacity goes *above and beyond* households' economic status and confirms the independent identity of resilience capacity from general economic welfare. Results also show that female-adult-only households tend to have lower food security than other households; households whose predominant livelihood is agriculture tend to have lower dietary diversity than households in the "other" livelihood group; and households in Niger program area tend to have lower dietary diversity than those in Burkina Faso program area.

**4. How was households' perceived ability to recover from the shocks experienced in the year prior to the baseline survey influenced by their own and their communities' resilience capacities?** (Refer to In the previous tables, household resilience capacity and food security are looked at in-depth. However, it is important to also examine whether household resilience capacity actually helps households to recover from shocks, that is, bolster their resilience to shocks. The regression results reported in Table 5 look at this relationship by comparing household resilience capacity and their perceived ability to recover from shocks, an experiential measure of their resilience. Here, resilience is measured using households' own reports of their ability to recover from the shocks they experienced, which allows construction of an experiential measure of resilience. Regarding each



shock experienced, survey respondents were asked to answer the question: “To what extent were you and your household able to recover?” The following were the possible responses:

11. Did not recover;
12. Recovered some, but worse off than before;
13. Recovered to same level as before;
14. Recovered and better off; and
15. Not affected.

A household is classified as having recovered from the shock if the chosen answer to the question was #3, #4 or #5 above.

## 5. Table 5)

The results indicate that all three aspects of household resilience capacity—absorptive capacity, adaptive capacity, and transformative capacity—bolster their resilience in the face of shocks, including drought shocks. Note, however, that when the AFDM measure of drought exposure is employed as the shock measure, only adaptive capacity, the ability to take pro-active decisions to respond to shocks, shows a statistically significant association at least at the 5 percent level.

The facilitator will at this time discuss the other results from the RISE regression analysis as seen in Table 6 and Table 7 (below).

## 6. What contributing factors of the three dimensions of household resilience capacity (absorptive, adaptive, and transformative) contribute to their ability to recover from shocks? (Refer to Table 6)

In Table 6, the first column lists the indexes of resilience capacity in addition to the factors contributing to each. The boxes with a dotted-line border signify that, for a particular shock exposure measure, the regression coefficient of the resilience-capacity factor of interest is *positive* statistically significant at least at the 5% level. The boxes with a triple-lined border signify that the regression coefficient is *negative* and statistically significant at least at the 5% level.

**Table 6: Regression analysis of the relationship between the resilience capacity index subcomponents and households' ability to recover from shocks**

Shock measure:	Overall shock exposure (Perceptions-based)			Drought shock exposure (Perceptions-based)			Drought shock exposure (Months of agricultural drought)		
	All	Burkina Faso	Niger	All	Burkina Faso	Niger	All	Burkina Faso	Niger
<b>Absorptive capacity</b>									
Bonding social capital	0.003			0.003					
Holdings of savings			-0.271			-0.292			
Access to informal safety nets									
Hazard insurance									
Disaster preparedness & mitigation	0.111			0.117			0.121		
Conflict mitigation			0.285			0.314			
<b>Adaptive capacity</b>									
Bridging social capital	0.002			0.002			0.003		
Linking social capital		0.023			0.019				
Aspirations/confidence to adapt	0.004			0.004			0.005		
Livelihood diversity			-0.096			-0.102			
Access to financial resources									0.138
Human capital	0.002			0.002			0.003		
Exposure to information			-0.047			-0.043			
<b>Transformative capacity</b>									
Bridging social capital	0.002			0.002			0.003		
Linking social capital		0.023			0.019				
Access to ....markets									
....basic services									
....infrastructure		0.129	-0.205		0.019	-0.220		0.140	
....communal natural resources									
....formal safety nets						0.169	0.084		

Note: Numbers in boxes are regression coefficients, reported only for those that are statistically significant at least at the 5% level. A dotted-line border highlights positive coefficients while a triple-lined border highlights negative coefficients.

It should be noted that one of the index components, asset ownership, is not included in the table. This is because assets contribute to households' ability to recover from shocks (and well-being outcomes in general) through other means than households' resilience capacities. Thus, it is not possible to single out their specific role through the pathway of bolstering households' resilience capacities.

The results in Table 6 indicate that two aspects of households' absorptive capacity (bonding social capital and disaster preparedness and mitigation)<sup>26</sup> appear to support households' ability to recover from the shocks. The data also indicate that the availability of a conflict mitigation group played a role in Niger.

Under adaptive capacity, bridging social capital, aspirations and confidence to adapt, and human capital appear to have supported their ability to recover.<sup>27</sup> Linking social capital may have also played a role in Burkina Faso, and access to financial resources in Niger.

Bridging social capital is the component of transformative capacity that appears to have supported households' ability to recover.<sup>28</sup> There is evidence that linking social capital and access to infrastructure boosted households' ability to recover in Burkina Faso. Access to formal safety nets may have also helped households recover from exposure to drought, with the evidence on this factor being strongest for households in Niger.

No statistically significant relationship between households' ability to recover and community resilience capacity was found.

**NOTE:** Although access to markets was not found to be significantly associated with a household's ability to recover, it may be important to still consider for future RISE programming. This will be discussed in more detail in Session 3.3b.

## **7. Does greater household resilience capacity reduce the negative impact of shocks on food security? (Refer to Table 7 and Figure 6)**

Data on drought shock exposure from AFDM indicate that greater household resilience capacity reduces the negative impact of agricultural drought on food security, which is further confirmation of its protective role in the face of climate shock, the most commonly experienced type of shock in the RISE program area. Further, Figure 6

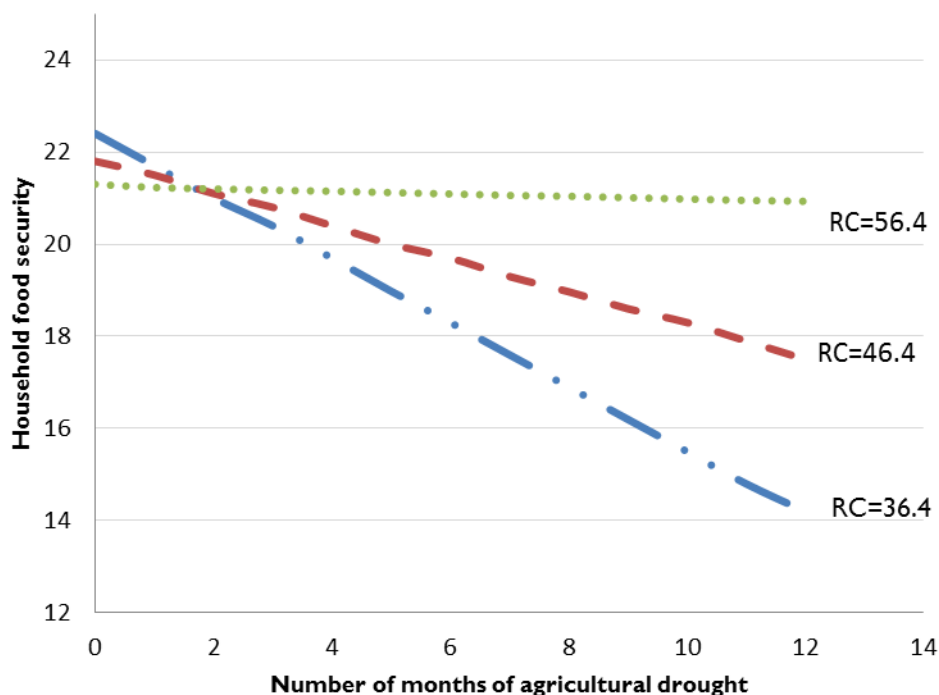
**Figure 6: Resilience capacity (RC)-mediated relationship between drought exposure (months of agricultural drought) and food security**

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<sup>26</sup> These results hold even when all of the absorptive capacity index sub-components are entered together in the regression equation, rather than only individually.

<sup>27</sup> These results hold even when all of the adaptive capacity index sub-components are entered together in the regression equation, rather than only individually.

<sup>28</sup> These results hold even when all of the transformative capacity index sub-components are entered together in the regression equation, rather than only individually.



Source: USAID Feed the Future. 2016, draft. Resilience in the Sahel-Enhanced (RISE) Project Impact Evaluation Volume 1. Baseline Survey. Resilience Analysis. April.

shows the implied impact of drought exposure on food security at three values of resilience capacity index. The negative slope of the line is steeper the lower the level of resilience capacity. Thus, the higher level of food security the higher is resilience capacity.

The estimated impact of *drought\_exp* on food security is thus:

$$\frac{\partial foodsec}{\partial drought\_exp} = -1.89 + 0.033 * RC.$$

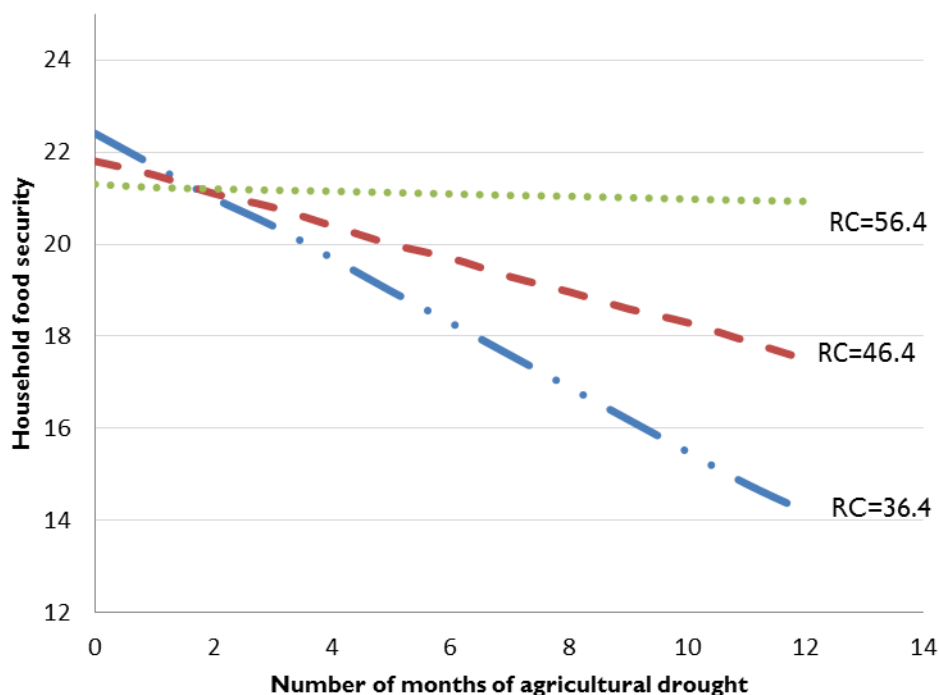
**Table 7: Regression analysis – Does greater resilience capacity reduce the negative impact of shocks on food security?**

	Food security <sup>a/</sup>
Household resilience capacity	-0.058 **
Shock exposure	-1.894 ***
<b>Resilience capacity*shock exposure</b>	<b>0.033 ***</b>
Number of observations	2,492
R-squared	0.163

**NOTES:** The dependent variable is the food security index. Asterisks represent statistical significance at the 10 (\*), 5(\*\*) and 1(\*\*\*) percent levels. Underlying t-statistics are robust to heteroskedasticity.

<sup>a/</sup> Drought shock exposure (Months of agricultural drought), province-level AFDM measure.

**Figure 6: Resilience capacity (RC)-mediated relationship between drought exposure (months of agricultural drought) and food security**



Source: USAID Feed the Future. 2016, draft. Resilience in the Sahel-Enhanced (RISE) Project Impact Evaluation Volume 1. Baseline Survey. Resilience Analysis. April.

**NOTE:** Figure 6 shows the implied impact of drought exposure on food security, as implied by the regression results in Table 7 at three values of the resilience capacity index: the mean (with an RC of 46.4), the mean minus ten points (with an RC of 36.4), and the mean plus ten points (with an RC of 56.4). Resilience capacity is measured using the household resilience capacity index. The number of months of agricultural drought is from the AFDM. Food security is measured using the *inverse* of HFIAS.

### Session 2.3a: Resilience Implication from RISE Findings

RISE baseline findings have prompted other questions that will need further investigation. Using existing baseline data, the following questions should be explored in order to add to the growing research on resilience:

- What livelihood strategies were used by households that recovered from shocks?<sup>29</sup>
- What are the consequences of engaging in negative coping strategies on future resilience?
- How does the educational level of the household head or the household in general affect a households' resilience to shocks?

Using these questions above as an example, participants in this session will apply what they have learned from the RISE baseline findings to develop their own questions about resilience. This will help participants think about the greater work of resilience research and how the RISE evaluation should be mapped to capture some of this information.

<sup>29</sup> Data analysis for this question is currently underway. Results are preliminary and will be presented, if available, by the facilitator.

**Small Group Discussion:** Follow the instructions and prompts of the facilitator. In small groups discuss the follow question:

- *What are the implications of the RISE baseline for an appropriate evaluation of RISE and further research on resilience to build adaptive management of programming?*

Participants will come back to this question again at the end of Session 2.3b in order to expand on this discussion having been provided with information conducted on several resilience meta-analyses.

## **Session 2.3b: Resilience Implications from Resilience Meta-Analyses for Future Research Programming and RISE**

TANGO International in collaboration with the International Livestock Research Institute (ILRI) recently published a series of papers from resilience meta-analyses. The four topics included:

1. Shocks and responses over time: Ethiopia, Kenya, Uganda<sup>30</sup>
2. Social capital: Ethiopia, Kenya, Uganda, Niger and Burkina Faso<sup>31</sup> )
3. Livelihood diversity: Ethiopia, Kenya, Uganda<sup>32</sup>
4. Subjective and psycho-social factors: Ethiopia, plus Ghana-Fiji-Vietnam-Sri-Lanka dataset<sup>33</sup>

Participants will be provided with a brief snapshot of the key findings. A more comprehensive summary can be found in Annex 1.

### **1. Shocks and responses over time:**

- All three types of resilience capacity are positively related to household recovery from different types of shocks, particularly drought and food price shocks.
- Ongoing monitoring is critical to track emerging issues and changing conditions. It can capture how people's ability to respond to shocks changes over time (and in different seasons as downstream effects emerge) and can indicate if a threshold level is reached.
- Shocks measurement needs to include both objective and subjective measures. Because subjective data reflects perceptions, it may not accurately reflect environmental conditions and can distort the data. Using objective data can avoid such distortion. Using subjective data can capture valuable information about how people respond to conditions the way they do.

### **2. Social capital:**

- Social capital has a positive effect on food security, helps households recover from shocks, and mitigates the effect of shocks. Thus, social capital can be said to be critical to resilience.

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<sup>30</sup> Bower, T. et al. 2016.

<sup>31</sup> Woodson, L. et al. 2016.

<sup>32</sup> Nelson, S. et al. 2016.

<sup>33</sup> Béné, C. et al. 2016.

- Wealthier households have greater levels of social capital and are better able to both receive and give assistance (in the form of food or money) than those of poorer households.
- Increases in social capital in programs are not always tracked nor are the activities that lead to greater social capital. Understanding these additional functions and monitoring them could be a key aspect of resilience measurement that enables programmers to strengthen social capital in the future. Although social capital appears essential to a household's ability to cope with shocks, it is not an infinite source. Findings (from the Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion-PRIME project RMS<sup>34</sup>) show that bonding social capital is used first, then bridging and finally linking social capital. Strengthening social capital only is not enough to build resilience.
- The findings of this meta-analysis point to several issues that need to be further investigated, including a better set of indicators to capture linking social capital, and further research to determine how households use social capital over time and if linking social capital is beginning to replace bonding and bridging social capital where food and cash transfers have been carried out over a number of years.

### **3. Livelihood diversity:**

- Results indicate that the context in which a program is implemented is important to understand if livelihood diversification, in itself, should be used as a strategy for households to better cope with shocks and stresses. Context in this case includes the environment, accessibility of livelihood opportunities, and/or market access.
- Livelihood diversification can work where there are opportunities to engage in high return activities and in areas where significant non-climate sensitive options exist. Livelihood diversification in areas where such opportunities do not exist will not necessarily lead to better adaptation.
- Based on these findings, further research should be conducted on livelihood return thresholds to determine whether a certain level of remuneration associated with a type of livelihood is necessary to make a difference in adapting to and recovering from shocks.

### **4. Subjective and psycho-social factors:**

- The higher the sense of control people have over their lives and the more positive the perception about their own ability to handle (future) shocks/stressors, the lower the likelihood that these households will engage in detrimental short term responses.
- Households which are characterized by higher than average subjective resilience levels have also a higher likelihood to engage in transformative strategies such as migration or diversification outside the fishery sector.
- The empirical data also supports the assumption that subjective resilience and self-efficacy influences the household's actual ability handle shocks/stressors. This suggests that in both cases the perception that people have of their level of control over their own lives – a strongly subjective element – influences positively their ability to recover from shocks/stressors.
- Households' subjective resilience level was strongly determined by how households had managed the same shocks or stressors in the past, as well as by a series of

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<sup>34</sup> USAID Feed the Future. 2015. Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) Project Impact Evaluation

characteristics of these shocks/stressors, such as their level of severity and predictability.

- The subjective dimension of resilience is often an overlooked element of the overall resilience equation, and as such, needs to be more systematically considered in future research. In particular, better insights are needed around the perceptions, subjective motivations, and cognitive elements of individuals and households' decision making processes.

### **Psycho-social factors: How is it measured and is it an appropriate measure?**

The aspirations index and a respondent's confidence to adapt were developed based on indicators of three underlying concepts:

- **Absence of Fatalism.** The absence of the sense of being powerless to enact change and that one has no control over life's events.
- **Sense of Individual Power.** A sense of having power to enact change as an individual rather than being subject to the decisions of more powerful people.
- **Exposure to Alternatives to the Status Quo.** The degree to which a person has been exposed to alternative ways of life than one's own.

The concepts are measured using the answers to both subjective and objective questions asked of household survey respondents that fall into three categories:

1. Yes/no questions regarding whether or not people agree with certain viewpoints or engage in certain behaviors;
2. Questions about the number of times in the previous month the respondent engaged in various behaviors; and
3. A series of statements about which respondents were asked to tell whether they "strongly agree," "disagree," "slightly disagree," "slightly agree," "agree" or "strongly disagree." Responses to these statements can be put on a 6-point agreement scale.

The responses are used to calculate indexes, one for each of the three concepts.

The **absence of fatalism** index is based on four variables: two yes/no questions, one regarding the degree to which respondents agree that each person is responsible for his/her own success or failure in life and another regarding the degree to which a person can rely on luck rather than hard work to be successful. The second two correspond to the following 6-point agreement scale statements:

- My experience in my life has been that what is going to happen will happen.
- It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.

The **individual power** index is based on five variables: two yes/no questions, the first regarding whether a person is willing to move somewhere else to improve his/her life and the other on whether the respondent agrees that one should always follow the advice of



elders, and the remaining three based on binary variables constructed from the 6-point agreement scale statements:

- I can mostly determine what will happen in my life.
- When I get what I want, it is usually because I worked hard for it.
- My life is determined by my own actions.

The **exposure to alternatives** index is based on three questions. Two are yes/no questions regarding communications with people outside of one's community and engagement in economic activities with members of other clans. The remaining question is based on the answer to the question "How many times in the past month have you stayed more than two days outside this village?"

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. In plenary, discuss the following:

- *Although under RISE findings (Session 2.2a) it was found that aspirations and confidence to adapt under adaptive capacity is both significant and positively associated with a household's ability to recover, are the questions in the index appropriate to use in the RISE context?*
- *Should these questions be altered so that they are culturally specific? How? (Take into consideration religious beliefs, traditions, cultural influences, gender roles, social networks, etc.)*

**Small Group Discussion (continued):** Follow the instructions and prompts of the facilitator. Using what you have learned from the meta-analyses above, participants will divide back into groups and revisit the question previously asked in Session 2.2a:

- *What are the implications of the RISE baseline findings for further research on resilience and evaluation of RISE?*

It is expected that participants will be able to expand on their previous answers.

## Session 2.4: Wrap-up

This session allows time for the facilitator and participants to summarize the key objectives and discussion points of the module. This also includes recap of key questions from the training TOR that have been covered in this module, specifically review of:

- *How are the top line well-being outcome indicators affected by household shock recovery?*
- *How are top line well-being outcome indicators affected by household or community resilience capacities?*
- *To what extent does greater resilience capacity reduce the negative impact of shocks on well-being?*

## Module 2 References:

- USAID Feed the Future. 2016, draft. Resilience in the Sahel-Enhanced (RISE) Project Impact Evaluation Volume 1. Baseline Survey. Resilience Analysis. April. Prepared by Lisa Smith, Tim Frankenberger, Sabrina Aguiari, and Carrie Presnall for the Feed the Future FEEDBACK project. [Not available online/Full document provided in English in Supplementary Annex]
- USAID. 2015. Resilience in the Sahel-Enhanced (Rise) Initiative Impact Evaluation (IE) Protocol. Revised. 25 July. Prepared by Mark Langworthy and Tim Frankenberger, TANGO International. [Not available online/in press]
- Béné, C., T. Frankenberger, M. Langworthy, M. Mueller and S. Martin. 2016. The influence of subjective and psycho-social factors on people's resilience: conceptual framework and empirical evidence. Report prepared by the Technical Consortium, a project of the CGIAR. Technical Report Series No. 2: Strengthening the Evidence Base for Resilience in the Horn of Africa. Nairobi, Kenya: A joint ILRI and TANGO publication. [Not available online/in press]
- Bower, T., C. Presnall, T. Frankenberger, L. Smith, V. Brown and M. Langworthy. 2016. Shocks, resilience capacities and response trajectories over time. Report prepared by the Technical Consortium, a project of the CGIAR. Technical Report Series No 2: Strengthening the Evidence Base for Resilience in the Horn of Africa. Nairobi, Kenya: A joint ILRI and TANGO publication. [Not available online/in press]
- Nelson, S., T. Frankenberger, M. Langworthy, T. Finan and T. Bower. 2016. The effects of livelihood diversity on recovery and shock impact on resilience in Ethiopia, Kenya and Uganda. Report prepared by the Technical Consortium, a project of the CGIAR. Technical Report Series No 2: Strengthening the Evidence Base for Resilience in the Horn of Africa. Nairobi, Kenya: An ILRI and TANGO publication. [Not available online/in press]
- Woodson, L., T. Frankenberger, L. Smith, M. Langworthy and C. Presnall. 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 Base for Resilience in the Horn of Africa. Nairobi, Kenya: An ILRI and TANGO publication. [Not available online/in press]

## **MODULE 3: Analytic Deep Dives of RISE baseline and resilience findings**

*Participants will delve into robust discussion of extracted RISE baseline findings for programming needs. There will be careful facilitation to create a space which enables learning and questions to arise organically and for participants to feed off each other's dialogue.*

### **Session 3.1: Recap of RISE Baseline Findings**

From the data presented in Module 2, participants will be asked to recap some of the findings in the RISE baseline through a small group discussion.

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. Discuss the following question:

- What do the RISE findings tell us about the resilience capacities and well-being of RISE target communities at baseline?

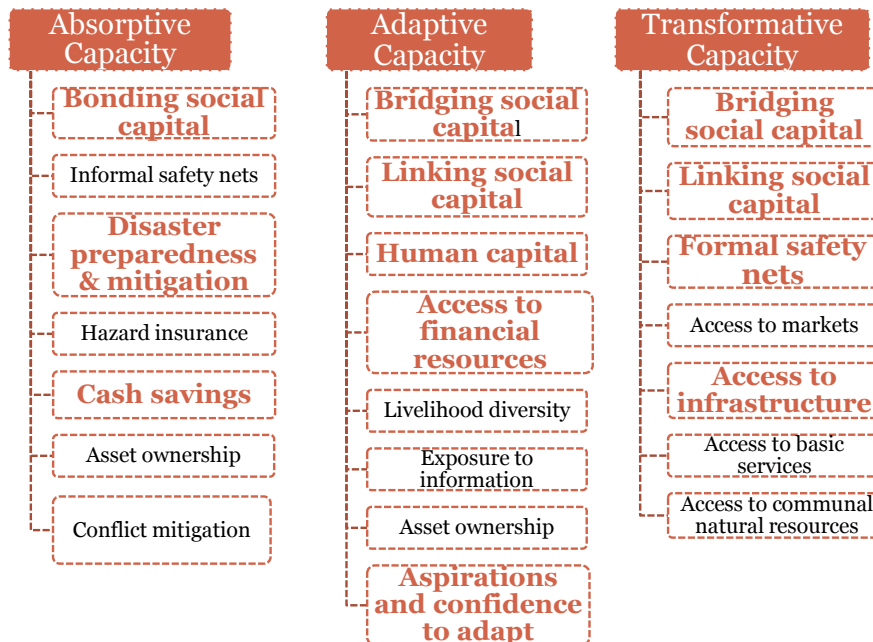
### Session 3.2a: Program Implication of RISE Findings - Resilience Capacity Subcomponents

**Small Group Discussion:** Follow the instructions and prompts of the facilitator. Break into 3-4 groups. Using *Error! Reference source not found.* Figure 7 as a guide, groups will be asked to discuss the following:

*What are the implications of the RISE baseline findings for an appropriate evaluation of RISE and further research on resilience and evaluation of RISE?*

Boxes with bolded text in Figure 7 are select subcomponents of resilience capacity that were significantly associated with household's ability to recover in the RISE data (Refer to Table 6).

**Figure 7. Subcomponents of resilience capacity**



*Participants are asked not to read ahead.*

Below is a list of resilience capacity subcomponents in RISE that appear to be linked to a households' ability to recover from shocks. These areas should be considered for increased focus in RISE programming.

**Bonding, bridging, and linking social capital:** All three were found to be important in enabling households to recover from shocks. Households in both Burkina Faso and Niger RISE program areas indicate that sharing resources among extended family members and friends (bonding), receiving money from children and relatives living elsewhere (bridging), and receiving public aid and services (linking) were all important. Linking was more important in Burkina than in Niger. This would be an important area to investigate.

- *Implications:* The program should focus on strengthening social capital through the formation of women's groups, credit and micro finance groups, savings groups, and other mutual help groups. The program could then track how groups formed for one function actually take on other collective action functions and what factors encourage this change.

**Availability of disaster preparedness and mitigation support:** The evidence for the role of disaster preparedness and mitigation in assisting households to recover from exposure to drought is particularly strong.

- *Implications:* Opportunities exist for expanding these types of interventions in Burkina Faso since more villages in Niger seem to have disaster plans in place.

**Aspirations and confidence to adapt:** This also appears to have a positive influence on household's ability to recover.

- *Implications:* More work could be done by the RISE program to determine how it is supporting these psycho-social dimensions through its programming efforts.

**Savings and access to financial services:** Access to financial services was found to have a positive influence on the ability to recover in Niger. However, households in Burkina Faso are more likely to be in a village where microfinance institutions exist (70 percent). Savings was also cited in the qualitative interviews as an important means of managing shocks. Households in Burkina Faso were much more likely to hold cash savings at the time of the baseline (53.5 percent) as compared to households in Niger (13.6 percent). This could explain the negative association found between holding savings and the ability to recover in Niger in the regression analysis. In addition, 80 percent of the households in Burkina Faso held their savings in cash at home rather than in a community savings group like they do in Niger.

- *Implications:* Access to microfinance institutions is worth exploring further in Niger. Also access to savings support and holdings of savings is an important factor to take into account in future programming.

**Access to infrastructure:** There is evidence that access to infrastructure boosted households' ability to recover in Burkina Faso.

- *Implications:* The program should focus on infrastructure improvements as it had a positive impact on transformative capacity.

**Human capital:** As would be expected, access to human capital has a positive relationship with recovery. Unfortunately only one third of the households have a literate adult in their family. Only one fourth of pastoralist-focused households have a literate adult.

- *Implications:* This has serious implications for information transfer and livelihood diversification into off-farm income generating activities.

**Access to formal safety nets:** Access to formal safety nets may have helped households recover from exposure to droughts. This is especially the case for households in Niger.

- *Implications:* This finding supports the notion that timely social protection is critical to recovery from shocks and needs to be part of overall resilience programming strategies.

**Access to markets:** Although access to markets was not found significantly associated with a household's ability to recover from shocks, it should be considered in future programming implications. It was found in the descriptive analysis that only 53 percent of the villages have access to a livestock market, 60 percent to an agriculture products market and 43 percent to an agricultural inputs market; thus, market access was not universal and could explain why access to markets did not have an effect on recovery. Much more could be done on strengthening market access. Given that cell phone use is extensive, market information could be easily shared in the region.

### **Session 3.2b: Program Implication of RISE Findings**

The results captured in the RISE baseline report point to a number of areas where more attention should be given for programming, as summarized below.

*Shock measures and trigger indicators for recurrent monitoring:* It is important to take into account shocks that were captured in the qualitative data but were not gathered in the quantitative survey, for example attacks by grain-eating birds. In addition, the downstream effects of drought, such as food price increases, animal disease, and conflict between herders and farmers and between villages, will be critical to track over time through recurrent monitoring. Further, as shocks unfold it is important to track the changes in coping strategies that households employ to deal with changing conditions. Doing so will pick up on different patterns across geographical areas such as that found here that households in the Niger RISE program area turned to more coping strategies because they were experiencing more downstream shocks than Burkina Faso households. Trigger indicators that indicate that things are getting worse could include: reductions in food consumption, increased borrowing from money lenders, and consumption of seed stock. Although the Famine Early Warning Systems Network (FEWS Net) is collecting and analyzing data on conditions in the RISE program area, localized early warning systems could be improved in both program areas.

*Gender differences in shock impacts:* The baseline data from Burkina Faso indicate that women may be more affected by recurrent droughts than men. Because droughts often create water shortages, women are taking more time to fetch water which has an effect on time allocated to other domestic work. This can create additional tension in the household leading to greater domestic violence. Improving access to water can mitigate these issues.

The Niger data indicate that when men migrate for work to cope with shocks, the work burden of women left behind is increased. Further, women's opportunities to seek alternative income sources to make up for the resulting production shortfalls are affected by their restricted social mobility. This is another program area to give attention to.

*Strengthening institutions to manage water and natural resources:* Although community institutions exist to maintain and manage water and natural resource use, more can be done to improve their functioning. For example, in the Sahel Region in Burkina Faso, the qualitative data indicate that water user groups may not be collecting enough from each household on an annual basis to keep the water points functioning with sufficient capacity. In addition, increased regulation of natural resources and inappropriate fines levied by municipal monitors (*pisteurs*) is increasing intra-village conflict between herders and farmers.

*Access to veterinary services:* One area where significant improvements in service delivery are needed is access to veterinary services. Currently only 27 percent of households have access to veterinarians. This would be an important service to improve considering the fact that two thirds of the households sell livestock to manage shocks. Livestock are also an important aspect of livelihood diversification.

*Access to conflict mitigation groups:* Competition over limited resources due to drought is leading to more conflicts in the region. Currently roughly 10 percent of the households are experiencing conflict as an important shock. The data analysis of this report showed that access to a conflict mitigation group did make a difference in recovery from shocks in Niger. To help avoid future conflicts arising in the RISE program areas, this factor should be given more attention.

*Livelihood diversification:* In the qualitative interviews, livelihood diversification was identified by most focus groups as an important way to deal with shocks in both Burkina Faso and Niger. Diversification into livestock rearing was considered important as well as off-season and irrigated vegetable gardening. In villages in Burkina Faso, FGD participants stated that vegetable gardening was great because it took advantage of wet lands in the non-agricultural season when labor was more readily available. This has implications for the timing of training for vegetable gardening.

Livelihood diversification may not always be associated with better recovery. The regression analysis of which factors supporting households' resilience capacities helped them to recover from shocks showed that, for Niger, livelihood diversification has had a *negative* association with ability to recover. This result could be explained by the fact that poorer households who pursue multiple activities with relatively low remuneration would tend to have lower-than-usual recovery rates. A research area for further investigation is a comparison of the diversification strategies of those households that were able to recover from shocks with those who were not. Do the strategies of these groups differ?

### **Session 3.3: RISE Strategic Planning (Analysis and Programming)**

The output from this session should be 3-5 key strategic questions to analytically explore the RISE data that will directly inform programming (and hence enable adaptive management of RISE).

**Small Group Discussion:** Follow the instructions and prompts of the facilitator. Break into 3-4 “resilience capacity” groups and reference the handout (**Error! Reference source not found.** Exercise 3.3) “Sample Indicators for Resilience – Strategic Analysis and Programming” on the following page. As a group discuss:

- *How can we better measure resilience in RISE: absorptive capacities and response, adaptive capacities and response, transformative capacities and response?*
- *What level of disaggregation is needed for existing resilience indicators (e.g., intra-household; sex of HH head; age of respondent)?*
- *What new indicators are needed?*



### Exercise 3.3 Sample Indicators for Resilience – Strategic Analysis and Programming

Sample Indicators for Resilience Capacities and Resilience Response		
Absorptive Capacity	Adaptive Capacity	Transformative Capacity
<ul style="list-style-type: none"> <li>– Household perceived ability to recover from shocks</li> <li>– Social capital (bonding)</li> <li>– Access to community safety nets</li> <li>– Asset ownership</li> <li>– Cash savings</li> <li>– Availability of hazard insurance</li> <li>– Availability of a disaster preparedness and mitigation program</li> </ul>	<ul style="list-style-type: none"> <li>– Exposure to information</li> <li>– Human capital ( knowledge, skills)</li> <li>– Livelihood diversity</li> <li>– Access to financial resources</li> <li>– Asset ownership</li> <li>– Social capital (bridging and linking)</li> </ul>	<ul style="list-style-type: none"> <li>– Availability of formal safety nets in communities</li> <li>– Access to markets</li> <li>– Access to infrastructure</li> <li>– Access to basic services</li> <li>– Access to livestock services</li> <li>– Access to communal natural resources</li> <li>– Social capital (bridging and linking)</li> <li>– Inclusivity of institutions</li> </ul>
Absorptive Response	Adaptive Response	Transformative Response
<ul style="list-style-type: none"> <li>– Coping strategy index</li> <li>– Use of savings to absorb shocks</li> <li>– Use of remittances to absorb shocks</li> <li>– Use of hazard insurance</li> <li>– Use of bonding social capital to absorb shock</li> </ul>	<ul style="list-style-type: none"> <li>– Application of information</li> <li>– Adoption of improved agricultural practices</li> <li>– Use of savings for adaptation</li> <li>– Use of remittances for adaptation</li> <li>– Use of bridging social capital</li> <li>– Household aspirations and confidence to adapt</li> </ul>	<ul style="list-style-type: none"> <li>– Active participation in decision- making bodies</li> <li>– Participation in collective action</li> <li>– Gender equitable decision making index</li> <li>– Use of formal safety nets</li> </ul>

**General conditions that need to be in place to support each resilience capacity**

Absorptive Capacity	Adaptive Capacity	Transformative Capacity
<ul style="list-style-type: none"> <li>○ Supportive economic factors (assets holdings, cash savings, and hazard insurance)</li> <li>○ Bonding social capital</li> <li>○ Access to safety nets (formal and informal)</li> <li>○ Disaster preparedness and mitigation plans/ programs</li> </ul>	<ul style="list-style-type: none"> <li>○ Exposure to and use of information; human capital</li> <li>○ Social capital (bridging and linking)</li> <li>○ Economic factors: livelihood and risk diversification, access to financial resources, asset ownership and quality of assets</li> </ul>	<ul style="list-style-type: none"> <li>○ Enabling environments: governance mechanisms; policies/ regulations; equitable cultural &amp; gendered norms</li> <li>○ Access to key resources that are part of the wider system in which households communities are embedded (e.g., markets, infrastructure, basic services, communal natural resources)</li> <li>○ Institutional inclusivity: men, women, disadvantaged groups</li> <li>○ Social capital that draws on relationships with entities outside of households' own group (bridging / linking).</li> </ul>

Factors influencing resilience response: Sense of individual power/ agency/ absence of fatalism; aspiration and motivation to adapt in the face of change; power dynamics; political willingness; perceived risk/ opportunity cost

**Common interventions for strengthening resilience capacities**

Absorptive Capacity	Adaptive Capacity	Transformative Capacity
<ul style="list-style-type: none"> <li>○ Cash or in-kind transfers</li> <li>○ Risk-financing mechanisms (e.g., crisis-modifiers)</li> <li>○ Improving access to informal safety nets</li> <li>○ DRR/DRM approaches</li> </ul>	<ul style="list-style-type: none"> <li>○ Strengthening human capital (e.g., skills building, health and nutrition education; improved ag. practices)</li> <li>○ Promoting climate change adaptation, climate-smart agriculture</li> <li>○ Encouraging livelihoods diversification and asset accumulation and diversification</li> <li>○ Improving access to financial services</li> </ul>	<ul style="list-style-type: none"> <li>○ Investments in good governance; advocacy for pro-poor policy/regulation</li> <li>○ Basic service delivery (e.g., health, education, sanitation, water)</li> <li>○ Infrastructure investments (e.g., markets, roads, communications systems)</li> <li>○ Improving access to formal social protection mechanisms</li> </ul>

### **Session 3.4: Wrap-up**

This session allows time for the facilitator and participants to summarize the key objectives and discussion points of the module related to the RISE baseline findings and implications for future research and programming.

- *What are the key considerations for the future of resilience research and programming?*
- *Which specific data would inform RISE programming? What type of analysis is needed?*
- *What additional type of data would inform specific types of programming? Which among this can complement our current monitoring system?*
- *Which of these analyses should we prioritize? What resources would be necessary? What would be an estimated timeline/process for completing them?*

## MODULE 4: RESILIENCE RECURRENT MONITORING AND KNOWLEDGE MANAGEMENT IN RISE CONTEXT

*Participants will briefly learn about the use of Recurrent Monitoring Surveys (RMS) to measure resilience in real time and will be presented with findings from the first RMS conducted in Ethiopia.<sup>35</sup> Participants will learn about RMS planning and analysis as it is related to shocks, triggers, and data sources. The second half of the of the module will include working with the facilitators to determine what the recurrent monitoring should look like in the Sahel and in the region, and identify next steps on making that vision come to fruition. The primary output will include a consensus on what triggers will be used for RISE, a process for monitoring (who, how often, etc.) and agreed-upon next steps (including a timeline) for proceeding.*

### Session 4.1: Recurrent Monitoring Surveys

*PRIME Ethiopia Recurrent Monitoring Surveys (RMS) methods and findings from 2014-2015:*

**Background:** The PRIME project, funded under the United States government’s Feed the Future initiative, was launched in October 2012 in one of the most shock-prone areas of the world, the drylands of Ethiopia. A key objective of the project is to enhance the resilience of households to shocks.

The PRIME IE was launched with a baseline survey undertaken in two zones of the project area, Borena and Jijiga zones, in November/December 2013. In addition to the baseline and endline surveys, two IMS were planned in order to capture real-time household and community responses to any actual shocks that might occur during the project’s five-year implementation period. This innovative feature of the IE would be launched after “trigger indicators” being monitored on the ground, for example, livestock body conditions, reached shock levels.

**Objective of RMS for resilience measurement:** Providing real-time data collected during an actual shock in progression, the RMS data present a unique opportunity to understand how, in a time of increasing climatic variability throughout East Africa, droughts affect households, their responses, and whether their resilience capacities can help them recover. The following are additional reasons for the need for high frequency data:

- Sensitivity to resilience dynamics, to map out the trajectory of well-being over time.
- Reveals path dependencies of well-being states with special reference to shock exposure.
- Observations of a consistent upward trajectory may reflect a resilience pathway even in cases where acceptable levels of food security or poverty have not been reached.

**Methods:** As it were, March 2014 marked the beginning of a protracted period of drought in the PRIME IE area, as detected by the PRIME trigger indicators. In response, the first PRIME RMS was launched in October 2014. A quantitative questionnaire was administered to a representative sample of over 400 households in 17 *kebeles* (communities) over a period

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<sup>35</sup> USAID Feed the Future. 2015. Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion (PRIME) Project Impact Evaluation.

of six months (through March 2015) for a total of six rounds. It was administered to a panel of households selected from among the baseline households. Qualitative data collection, including FGDs and KIIs, also took place in each round.

### **PRIME Research questions**

1. What downstream impacts of the drought did households experience and how did the incidence of these impacts evolve over the IMS period?
2. What coping strategies did households employ to deal with the drought?
3. How did households' food security change over the drought period? Which types of households were able to maintain their food security in the face of the drought, i.e., which were resilient to its impacts?
4. How did the severity of exposure to the drought affect households' ability to recover from it?
5. Did households' resilience capacities before the onset of the drought help protect them from its negative impacts?
6. Did households' resilience capacities before the onset of the drought prevent them from using negative coping strategies that undermine their resilience to future shocks?

### **PRIME RMS Findings**

**Evolution of the drought, analysis with external data:** External data sources were used to map out the progression of the 2014-15 drought in the two PRIME IE areas. The data sources include FEWS Net Food Security Outlook publications, PRIME trigger indicator data, rainfall classifications provided by the Ethiopian government, and satellite remote sensing data from AFDM. In both geographic areas, Borena and Jijiga, the drought unfolded in two waves roughly corresponding to March-September 2014 (between the PRIME baseline survey and RMS Round 1) and October 2014-April 2015 (between RMS Rounds 1 and 6). The regions both experienced relatively good rainfall in 2013, the year leading up to the PRIME baseline survey. However, during the initial wave of the drought, the first rains (Ganna, or long rains, in Borena, Diraa, or short rains, in Jijiga) failed in the regions, leading to abnormal precipitous drops in soil moisture and vegetation coverage. Critical water and pasture shortages ensued, followed by unusual mobility patterns among pastoralists, a deterioration of livestock body conditions, and crop failures. Cereals prices sharply increased and livestock prices fell, leading to a livestock-to-cereal terms of trade far below normal in markets, to the detriment of pastoralists. Many areas in both regions were elevated to Priority 1 Nutrition Hotspot status by the Ethiopian government as malnutrition cases increased.

The second wave of the drought evolved differently in Borena than Jijiga. In Borena, the second rains, the Hagaya rains, failed. Thus the region experienced two successive below-average rainy seasons. The lack of water and pasture reached critical levels, desperate livestock movements both within Ethiopia and cross-border ensued, and local crop production failed, necessitating cereal imports from other areas in Ethiopia. Many households were dependent on humanitarian assistance to meet their food needs, and malnutrition continued to rise. In Jijiga the second rainy season, the Karan rains, followed a

near-normal pattern, improving water and pasture availability. FEWS Net and the PRIME trigger indicators reported that water and pasture availability had returned to normal, there was a normal harvest, and households' access to food was stabilizing. However, satellite remote sensing data show that these favorable conditions were only the beginning of a sharp drop-off in soil moisture and vegetable coverage below the norm over the post-Karan dry season. While remote sensing data confirm that, overall, Borena faced more severe drought conditions over the two drought waves; this additional climate shock put Jijiga households under further stress.

**Household drought exposure, evidence from the RMS data:** RMS 2014-15 household survey data confirmed that households indeed experienced drought conditions in the period between the PRIME baseline survey and the first round of RMS 2014-15 (October 2014). In both Borena and Jijiga reports of drought or “too little rain” increased dramatically over the period. The data also confirmed continued drought conditions between RMS Rounds 1 and 6, the second wave of the drought. Over 90 percent of households participating in the quantitative survey reported experiencing drought in both of those rounds. The qualitative data collected during FGDs and KIIs also pointed to drought as the key shock households were currently experiencing across the six months of the RMS data collection.

With respect to downstream drought impacts, the quantitative data reveal that those most commonly felt by households in Borena, where pastoralism predominates, were livestock or crop disease, food price inflation, and increases in the prices of inputs. Those most commonly felt in Jijiga, where agro-pastoralism and non-pastoralism are more common, were livestock or crop disease, food price inflation, and “very bad harvest.” The RMS data confirm that the downstream effect of the drought on prices was very strong in both areas. After food price inflation, the most common economic shocks experienced were: increases in the prices of livestock or agricultural inputs, drops in the prices of products sold, and lack of demand for products sold. There was a noticeable increase in conflict-related shocks since the baseline, including theft of crops and livestock, and in deaths of household members, the ultimate negative impact. The qualitative data provide a rich source of detailed information on how households experienced these downstream impacts as well as others, including reduced access to fodder and water, cattle raids, and illness due to exposure to polluted water.

Overall summary measures of shock exposure constructed from the RMS quantitative data allowed understanding of which population groups were most exposed to the drought and how their drought exposure evolved over the RMS period (the second drought wave). Two such measures were constructed. The first is a perceptions-based index based on data on the types of shocks experienced and their perceived severity as reported by survey respondents. The second is an index based on the percent of households in each of the 17 sampled *kebeles* reporting a series of drought conditions, downstream drought impacts, and drought coping strategies. This measure was constructed in order to provide an “exogenous” measure of shock exposure based on indicators of area-wide drought conditions. The perceptions-based measure indicates that drought exposure was roughly the same in Borena and Jijiga. By contrast, consistent with the AFDM remote sensing data, the *kebele*-based measure indicated that drought exposure was much greater for Borena. The different pictures given by the measures points to the fact that they are measuring different phenomena, but may also point to a limitation of the perceptions-based measure in accurately representing differences across population groups in actual drought exposure. Keeping this caveat in

mind, the measure indicated that shock exposure was greatest for pastoralists, followed by agro-pastoralists and non-pastoralists.

**Household responses, coping strategies for dealing with the drought:** The RMS data indicated that households were using both positive and negative coping responses. Reducing food consumption, a negative coping strategy, was used by almost all households—a strong indication that the drought and its downstream impacts were exacerbating food insecurity in both regions. Widespread use of the strategy can explain why 50 percent of households planned to rely on some type of humanitarian assistance (food aid or cash) at some time over the RMS period. The use of other negative coping strategies that undermine future resilience to shocks, for example, taking children out of school and selling productive assets, increased in the last two rounds of the RMS when drought conditions were plummeting.

A very common positive coping strategy was to rely on assistance from friends and relatives, including receiving money for food and borrowing money. The qualitative data concurred that people's reliance on social capital to get them through the drought period was critical. However it was only a reliable coping strategy in the early months of the survey, because over time social capital was eroded. As the downstream impacts of the drought began to accumulate, there was a steady erosion of social support, with resource constraints making it harder for better-off households and community leaders to support those in need.

As the food security situation deteriorated over time, more households in Borena were taking children out of school either to migrate with the animals, to work to support the family, or to live with relatives. This response can negatively affect the long-term human capital of a household and degrade its opportunities to escape from poverty and food insecurity in the future. Also in Borena, the governance systems in communities were starting to be negatively affected because community leaders were migrating to distant locations in search of water and pasture, making it more difficult to hold clan meetings. It is at these meetings that support is mobilized for the poor. Other traditional ritual ceremonies where food redistribution takes place were also neglected.

In Jijiga, indications that coping abilities were becoming strained as the drought progressed were reports of quarrels between spouses over food shortages, sometimes leading to divorces, and at the community level, the breakdown of mutual support mechanisms. Patterns of migration where household males leave for long periods of time seeking water and pasture for livestock can lead to stressful conditions for families. Children, women and the elderly are often more negatively affected by the drought and its downstream impacts because they are the ones who remain behind in the villages.

**Results on household food security and resilience in the face of the drought:** Trends were examined in household food security over the RMS rounds compared to the baseline and exploration of how resilient households were to the drought. Resilience to the drought was measured using two indicators: (1) the change in food security over the drought period; and (2) an indicator of whether households were able to maintain or increase their food security over the period. The underlying measure of food security relied on is an index calculated as the inverse of HFIAS. This scale is also used to classify households into four groups: food secure, mildly food insecure, moderately food insecure, and severely food insecure.

The RMS data showed that changes in food security over time differed for Borena and Jijiga. In Borena, food security was lower in all RMS rounds than it was at baseline, indicating a decline in the average households' food security over the first wave of the drought. Further, it showed a downward trend over the six-month monitoring period. Overall, the percentage of food secure households fell from just over one-quarter of households at baseline to one percent by RMS Round 6. That is, there were practically no food secure households by the end of the RMS period, one year after the onset of the drought. In Jijiga, the food security index was higher in all RMS rounds compared to the baseline. While the percent of food secure households fell between the baseline and Round 1, the percent of severely food insecure households was significantly lower in Round 1 than the baseline, and fell from 36 percent to 28 percent over the rounds, indicating a greater resilience to both waves of the drought in Jijiga than Borena.

The qualitative data from both regions on households' experiences of food and livelihood security during the second drought wave highlighted common conditions of economic hardship and simply not having enough food to eat. With reductions in crop production, households were forced to buy the food they would normally produce themselves yet faced rising food prices. Similarly, households unable to sell their livestock due to reduced demand and low prices found themselves in a situation where "we do not have enough money for food consumption." Children and women felt special burdens. Children were taken out of school due to the need to use funds to buy foods that previously were used for schooling expenses. Children, the main consumers of milk, also saw a reduction or complete stoppage in their milk consumption. Women were finding it difficult to feed children and other family members and perform their domestic chores due to the disruption caused by the drought. Further, their income generating activities, such as retail sales, were disrupted, reducing their incomes and money available for food.

Overall, only about one-third of households were resilient to the first wave of the drought, 26 percent in Borena and 48 percent in Jijiga. Pastoralists were less likely to be resilient than agro-pastoralists, and agro-pastoralists less likely to be resilient than non-pastoralists.

**Relationship between household resilience, drought exposure, and pre-drought resilience capacity:** The relationships between household resilience to the drought, the degree of their exposure to the drought, and their pre-drought resilience capacity were explored using regression analysis. The analysis focused on the first wave of the drought spanning the time between the baseline (December 2013) and the first round of the RMS data collection (October 2014). Resilience capacity was measured using indicators of its three dimensions—absorptive capacity, adaptive capacity, and transformative capacity.

The regression analysis confirmed that the more severely a household was exposed to the drought, the less likely it was to recover from it, that is, the less resilient it was. It suggests that households' absorptive capacity had a positive impact on their resilience to the drought in Borena. This result is strongly robust to the measure of shock exposure employed, whether it is based on agro-climatic conditions or households' own perceptions of their exposure to the drought. It found no impact of absorptive capacity on resilience to the drought in Jijiga, perhaps due to the combination of lower drought exposure and low pre-drought absorptive capacity in the region. While the evidence was not as strong for adaptive capacity and transformative capacity, the analysis was suggestive that they play a role in supporting households' resilience to shocks as well. Finally, the factors contributing to



resilience capacity that were found to have made a difference for households' resilience to the drought (in at least one of the regions) were: bonding social capital, bridging social capital, access to informal safety nets, households' holdings of savings, their human capital, access to financial resources, access to markets, and access to communal natural resources.

**Does resilience capacity help prevent the use of negative coping strategies?** Four types of coping strategies were focused on: reducing food consumption, selling or consuming productive assets, employing negative financial strategies (taking out a loan from a money lender or purchasing food on credit), and employing negative strategies related to the care of children (taking children out of school and/or sending them to work for money).

When looking at use of the coping strategies immediately following the drought (in RMS Round 1), the results differed for Borena and Jijiga. For Borena, the regression analysis indicated that all three dimensions of resilience capacities helped to prevent households from reducing their food consumption as a response to the drought. Additionally, adaptive and transformative capacity helped to prevent them from depleting their productive assets. And transformative capacity helped prevent them from undermining the human capital of their children by taking them out of school or sending them to work for money. However, there is some evidence that households with greater absorptive capacity were more likely to use these strategies involving children.

The analysis suggested that resilience capacity had less of a preventative effect in Jijiga than Borena at the time of RMS Round 1, again perhaps because all three dimensions of resilience capacity were much lower in that region at the onset of the drought. While absorptive capacity was found to reduce asset depletion in the region, both adaptive and transformative capacity were found to increase it, perhaps because households with greater adaptive and transformative capacity start out with greater asset bases.

When looking at the use of coping strategies over the entire six-month RMS period (when the second drought wave was in full progress), there was strong evidence that adaptive and transformative capacity helped to prevent households from either taking their children out of school and/or sending them to work for money in both regions. Additionally, absorptive capacity helped to prevent Borena households from employing negative financial strategies, and adaptive capacity helped to prevent Jijiga households from reducing their food consumption.

### **PRIME RMS Conclusions**

The majority of households in the PRIME IE area were not able to maintain their food security in the face of the drought, that is, they were not resilient. Their absorptive, adaptive and transformative capacities did buffer them from the shock. But for most households, these capacities were not enough to maintain their food security and prevent them from employing negative coping strategies that undermine their ability to manage future shocks and stressors. Any future interventions should be focused on both strengthening resilience capacities to manage shocks and timely social protection. With regard to the latter, social protection should be provided over a long enough period and appropriately targeted to protect households from the most severe drought impacts—such as food insecurity, conflict, and death—as well as enable them to maintain their asset and human capital bases.

**Small Group Discussion:** Follow the instructions and prompts of the facilitator. In small groups discuss the following question:

- *What external data sources could be used to map out the progression of shocks in the RISE context? Based on PRIME results, what should data managers look for as the information comes in, and what kinds of patterns or trends would likely appear?*

## **Session 4.2: RMS in the RISE Context**

**Research methods and study design for RISE recurrent monitoring:** Recurrent surveys can begin after the baseline survey and following a shock, most likely a drought. Information about the onset of shocks will be come from trigger indicators collected by REGIS implementing partners.

Trigger indicators will be similar to PRIME, monitored with satellite imagery for the 100 target villages through data from the AFDM system and FEWS Net.

**The AFDM** is a real-time, satellite-based, drought monitoring and seasonal forecast system for sub-Saharan Africa. Current conditions are compared to an historical, multi-decadal reconstruction of the terrestrial water cycle using data from 1950-2008. The AFDM allows Geographical Information System (GIS) coordinates to be employed to download data from the internet for localized geographical areas with 0.250 spatial resolution<sup>36</sup>.

For this analysis, month-by-month AFDM data on measures of rainfall and vegetation coverage deviations from the norm are monitored, accessed using baseline GIS coordinates for each of the 100 sample villages. The specific measures employed are (1) the one-month Standardized Precipitation Index (SPI), which is the number of standard deviations that observed one-month cumulative precipitation deviates from the climatological average; and (2) the Normalized Difference Vegetation Index (NDVI) percentile, which measures the percentile of the norm of current vegetation coverage (the 50th percentile is the norm). The SPI is used to detect what are known as meteorological droughts, defined by rainfall deficiency over an extended period of time. Meteorological droughts can turn into agricultural droughts, which can be measured using vegetation indices such as the NDVI percentile. Agricultural droughts are characterized by soil-water deficiency and subsequent plant water stress and reduced crop production.<sup>37</sup>

These measures were analyzed for the year prior to the RISE baseline survey (May 2014-May 2015).<sup>38</sup>

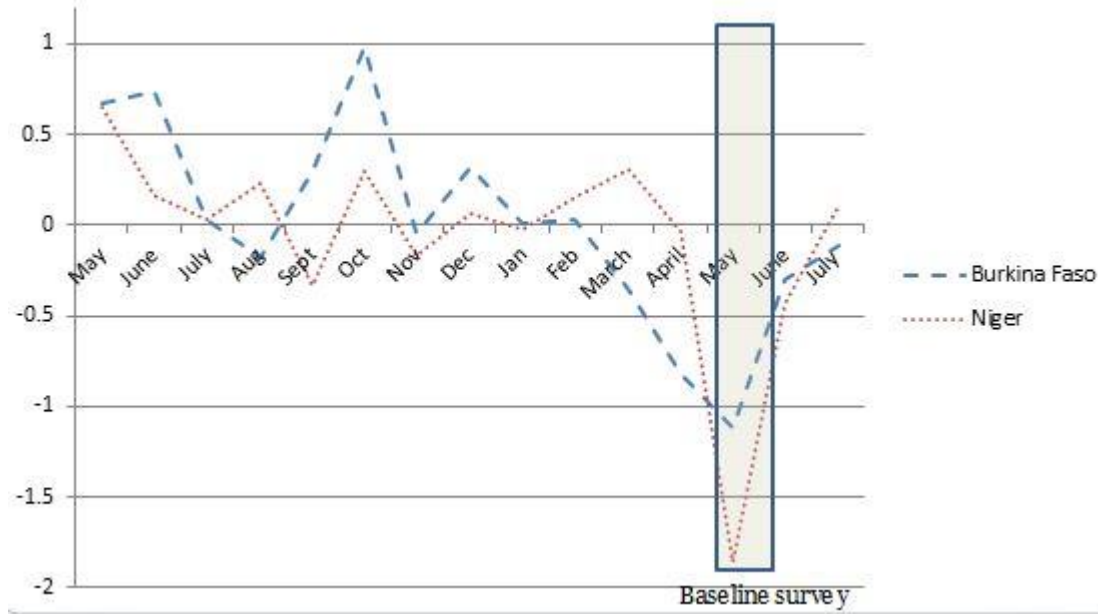
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<sup>36</sup> AFDM, 2015; Sheffield et. al. 2014.

<sup>37</sup> UN-SPIDER. 2016.

<sup>38</sup> The full results can be found in the RISE IE baseline report.

**Figure 8. Rainfall deviation from norm in RISE program areas, May 2014-July 2015**

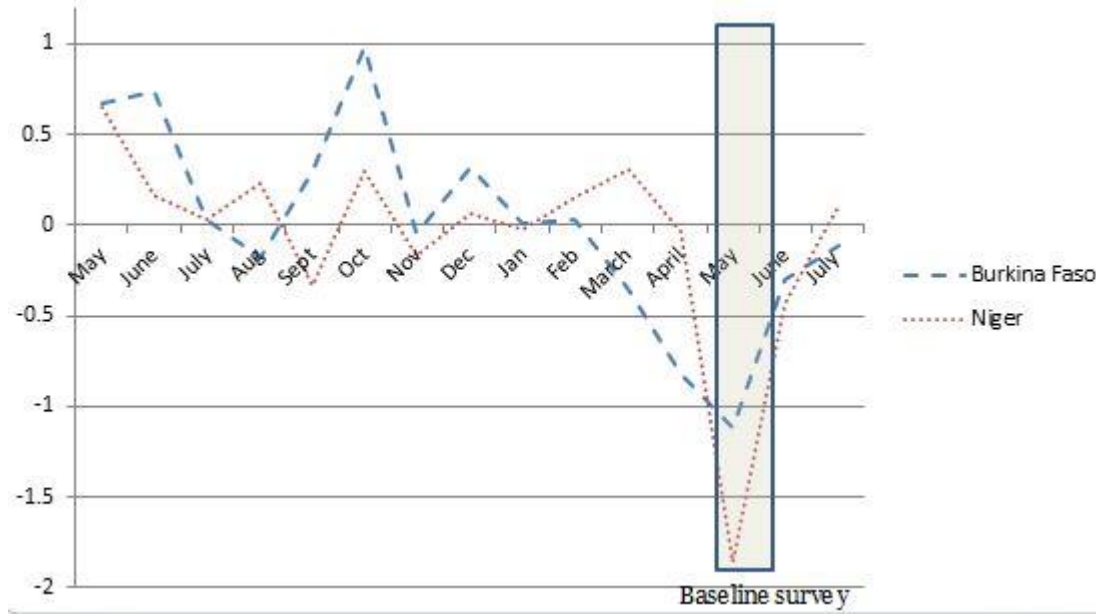


Source: Source: African Flood and Drought Monitor, 2015. Rainfall deviation is measured as the one-month Standardized Precipitation Index, which is the number of standard deviations that observed 1-month cumulative precipitation deviates from the climatological average, as cited in USAID Feed the Future. 2016, draft.

and Figure 9 track the 1-month SPI and the NDVI percentile, respectively in the year prior to the baseline survey for Burkina Faso and Niger program areas. SPI values lying between -0.5 and -0.7 indicate “abnormally dry” conditions, and those below -0.8 indicate drought conditions.<sup>39</sup> Note that both program areas have a single rainy season.

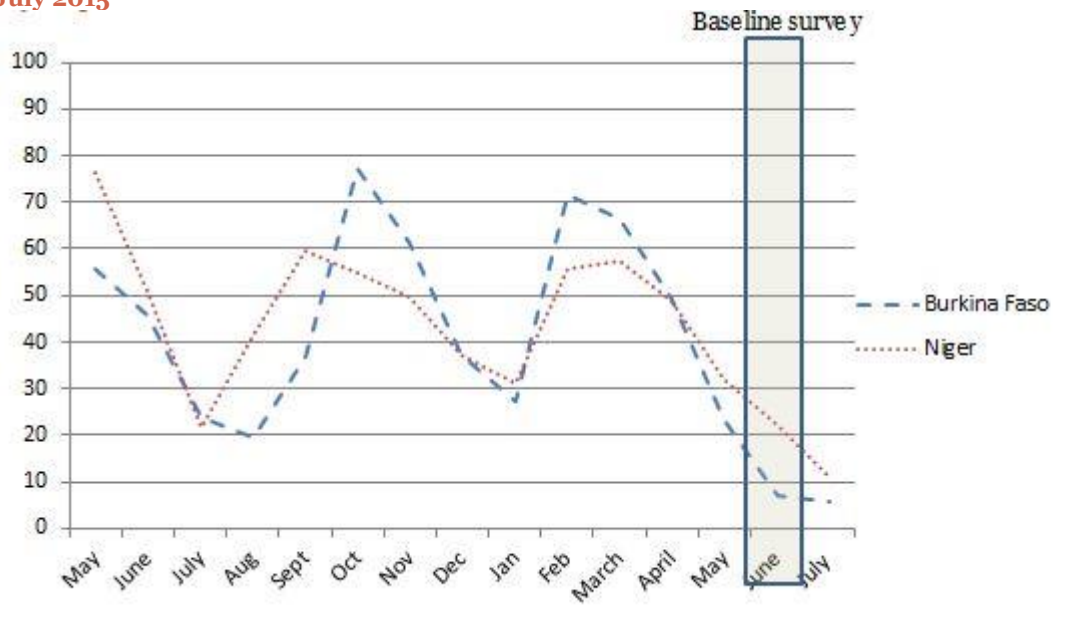
<sup>39</sup> Values between -0.8 and -1.2 indicate moderate drought; Those between -1.3 and -1.5 indicate severe drought; those between -1.6 and -1.9 indicate extreme drought; and those -2.0 or less indicate exceptional drought (National Drought Mitigation Center, 2016).

**Figure 8. Rainfall deviation from norm in RISE program areas, May 2014-July 2015**



Source: Source: African Flood and Drought Monitor, 2015. Rainfall deviation is measured as the one-month Standardized Precipitation Index, which is the number of standard deviations that observed 1-month cumulative precipitation deviates from the climatological average, as cited in USAID Feed the Future. 2016, draft.

**Figure 9. Normalized difference vegetation index percentile in RISE program areas, May 2014-July 2015**



Source: USAID Feed the Future. 2016, draft.

**FEWS Net** is another important source for shock monitoring. For instance, this source of information helped corroborate and explain RISE baseline findings on food insecurity.

FEWS NET Food Security Outlook reports<sup>40</sup> confirmed that while the 2015 rainy season began on time or even early in some parts of the RISE area, and total seasonal rainfall did not fall substantially below the norm, unusually-timed dry spells and periods of erratic rainfall occurred. These irregularities necessitated crop replanting or caused complete crop failures in some areas. Pasture deficits meant that animals were in unusually poor physical condition, leading to abnormally low livestock prices in markets and limited availability of milk.

Once trigger indicators show the occurrence of shock, recurrent surveys will take place every two months over a one-year period. The start-up of these recurrent rounds cannot be known for certain a priori, since their implementation will depend on the occurrence of a shock in project areas over the life of the project.

In addition to the baseline stratification by high and low intensity areas, the recurrent sample will also be stratified by community resilience capacities measured in the baseline study. This stratification is necessary to adequately capture how the variation in community resilience capacities affects household responses to shocks, thus addressing Research Question 3. The sample will consist of enumeration areas and households that were interviewed in the baseline. The final number of communities will be large enough to represent the diversity of livelihoods (ways of making a living) and exposure to risk, but bounded by available time, logistics, and budget.

The recurrent surveys will include approximately 400 households in a livelihood area affected by the shock (see sampling description that follows). The surveys will use a subset of modules from the baseline questionnaire.

The recurrent survey takes approximately 15 minutes to complete.<sup>41</sup> It includes the following modules:

1. Shocks and recovery
2. Shock response coping strategies
3. Fodder and water availability
4. Household hunger scale and dietary diversity
5. Food security coping strategies

For the RISE recurrent monitoring, the REGIS baseline sample of 2,500 households located in 100 enumeration areas (EAs) serves as the sampling frame. Sample selection is based on a stratified random selection of the EAs. This sample permits detection of the following changes in the key outcome indicators: 40 percent in the HHS, a 20 percent change in the HFIAS, and an eight percent change in the Household Diet Diversity Scale (HDDS), over the six-month survey period with 90 percent confidence and 80 percent power. For household level questions, enumerators interview the household member who self identifies as the most knowledgeable about the topic within each module. For example, household nutrition and hunger modules are asked of the women in the household who prepares food.

The target number of households to include in each stratum (high and low program intensity) in Niger and Burkina Faso is 100 ( $100 \times 4=400$ ). To ensure this number of households throughout the monitoring period, it is necessary to add a 10 percent mark-up

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<sup>40</sup> FEWS Net, 2015

<sup>41</sup>Similar surveys in the PRIME Ethiopia recurrent monitoring surveys were, on average, less than 10 minutes long.

for non-response and a 5 percent mark-up for sample attrition, for a total of a 15 percent mark-up. Thus, the necessary number of households in each country per strata is 115, for a total of 460. For the RISE recurrent monitoring, 15 households per EA are selected from among those 25 households in the sampling frame. In each stratum eight EAs are selected. Selecting 15 households in eight EAs will achieve a sample of 120 households per stratum, which is above the 115 required per stratum.

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. In plenary discuss the following related to RISE RMS and developing RISE trigger indicators.

- *What do PRIME RMS findings and learnings tell us about recurrent monitoring in the RISE context? How can PRIME RMS findings and learning help shape RISE recurrent monitoring?*

### Session 4.3: Recurrent Monitoring in the Sahel (RISE Trigger Indicators and Study Design)

Participants will identify next steps to establish recurrent monitoring for RISE.

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. In plenary discuss

- What triggers should be used for RISE? What process should be put in place for monitoring those triggers? (including at household and community levels) How should the data be collected? (including a timeline for proceeding with the data collection using the Exercise 4.3 below as a guide).

Once all ideas have been discussed at length, participants will come to a consensus on the triggers that will be used for the RISE recurrent monitoring.

#### Exercise 4.3: RISE Recurrent Monitoring Planning Tool

Trigger	How will you monitor this trigger?	Provide a timeline in which data will be collected once the trigger has been reached?	How will the data be collected?

## Session 4.4: Wrap-up

This session allows time for the facilitator and participants to summarize the key objectives and discussion points of the module, related to:

- *What are the key challenges and opportunities for coordinating a recurrent monitoring survey for RISE?*

### Module 4 References:

- [USAID Feed the Future. 2015. Ethiopia Pastoralist Areas Resilience Improvement and Market Expansion \(PRIME\) Project Impact Evaluation. Report of the Interim Monitoring Survey 2014-2015. Prepared by Tim Frankenberger and Lisa Smith, TANGO International. Washington, D.C. November.](#)
- [African Flood and Drought Monitor \(AFDM\). 2015. Department of Civil and Environmental Engineering of Princeton University.](#)
- [FEWS Net. 2015. Burkina Faso Food Security Outlook and Niger Food Security Outlook reports: April 2014-July 2015. USAID.](#)
- [Sheffield, J., E.F. Wood, N. Chaney, K. Guan, S. Sadri, X. Yuan, L. Olang, A. Amani, A. Ali, S. Demuth, and L. Ogallo. 2014. A drought monitoring and forecasting system for Sub-Saharan African water resources and food security. \*Bulletin of the American Meteorological Society\* 95, 861–882.](#)
- [UN-SPIDER \(The United Nations Platform for Space-based Information for Disaster Management and Emergency Response\). 2016. Data application of the month: drought monitoring. United Nations Office for Outer Space Affairs. Knowledge Portal. Accessed 20 January 2016.](#)

## **MODULE 5: FINAL DEBRIEF, RMS AND RESILIENCE- FOCUSED KNOWLEDGE MANAGEMENT WITHIN THE RISE CONTEXT FOR ACTION PLANNING AND NEXT STEPS**

*USAID agencies and partners will finalize RMS planning and will also explore and discuss how best to utilize the knowledge-management systems and initiatives in place (e.g., through the Sahel Resilience Learning (SAREL) project Knowledge-Management platform, global available platforms etc.) as well as possibly identify what is missing. An informal debrief session will be incorporated in the final day of the workshop as well as an action plan moving forward.*

### **Session 5.1a: Knowledge Management (KM) in RISE**

*(Guest presentation by SAREL representative)*

Addressing recurrent and large-scale humanitarian emergencies in the Sahel (and the Horn of Africa) acutely has not shown to have long-term, sustainable impacts. Thus, there is a recognized need to better integrate existing and new USAID humanitarian and development assistance efforts. To accomplish this, a Collaborative, Learning, and Adapting (CLA) approach is utilized to improve results and accelerate impact in the RISE. This includes:

1. Strengthening the capacity of key stakeholders (especially RISE partners and government) to engage in adaptive, evidence-based collaborative learning and decision making that optimize project investments and results;
2. Improving collaboration and coordination, and establish robust systems to assess and learn systematically and continuously from what works and doesn't work in humanitarian and development interventions; and
3. Facilitating a paradigm shift from a silo approach to a more integrated, multi-sectorial, collaborative, coordinated, and converging intervention that increase impact and sustainability of investment in the Sahel.

By progressively integrating monitoring and evaluation (M&E) with a KM CLA approach, this ensures that best practices for resilience programming are evidence-based. The idea is that this will lead to accelerated adoption of proven resilience-enhancing technologies and innovations; catalyzed widespread adoption of new models that integrate humanitarian and development assistance; and greater ownership, capacity building of nation and regional institutions and coordination among interventions. KM database will be created such that the baseline assessment, ongoing monitoring data, and impact evaluation of REGIS-ER and REGIS-AG can be housed together.

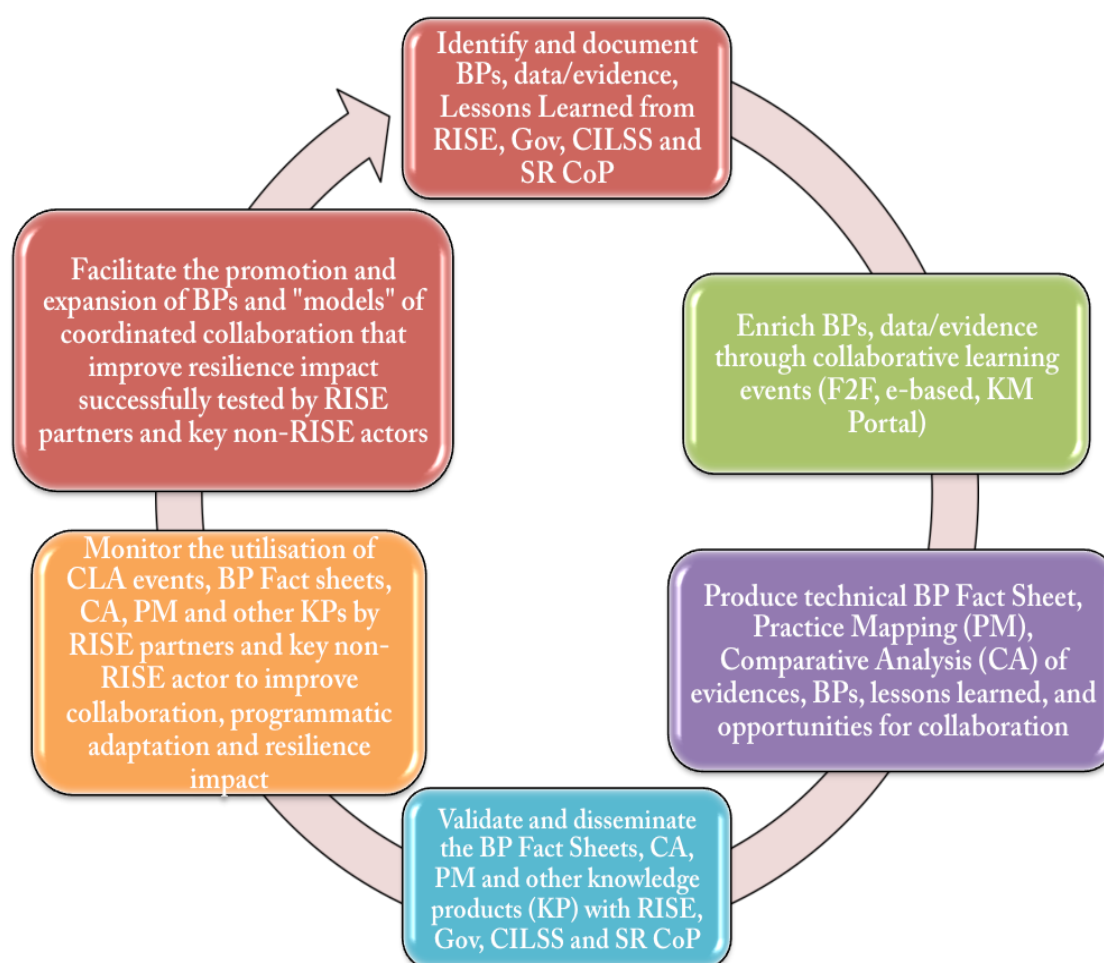
The SAREL's CLA Approach for 2015-2017 has several steps. Refer to



**Figure 10. SAREL's CLA Approach, 2015-2017**

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Figure 10. SAREL's CLA Approach, 2015-2017



Source: USAID. 2016. Linking KM and M&E to expand/scale-up evidence-based resilience best practices in the RISE zone: SAREL's CLA Approach in Niger and Burkina Faso. SAREL. Presentation. Draft.

Since April 2014, much has been implemented of the CLA approach. SAREL has identified specific CLA needs in consultation with key stakeholders, has organized and facilitated CLA forums and workshops, and has developed (or is currently in development of) CLA tools, systems and facilitation mechanisms. For the later, this includes an email-based system of the Sahel Resilience Community of Practice (SR CoP); a web-based portal with knowledge management functions and features for the SR community based on specific needs of RISE partners, government, and USAID; e-discussion on thematic issues and good/best practices or experiences within resilience; workshops; templates to document projects; and resilience project fact sheets. Data have been collected, to date, on 12 projects in Niger and 10 in Burkina Faso. The M&E-CLA integration has also been useful in identifying a set of 67 indicator-based resilience best practice selection criteria that are in line with the RISE objectives.

There are three main challenges for the M&E-CLA integration that have been identified. First, the size of the team is insufficient to cover both counties and the 27 RISE partners. Currently there are three technical staff and the Chief of Party (COP). Second, there is a need to research, understand and analyze resilience thinking beyond CLA tools, mechanisms, and systems in order to better meet the programmatic and strategic needs of

USAID, RISE partners, and government. Third, resources are not yet available to integrate CLA within program areas although there is growing interest.

To address these challenges, more collaboration with RISE partner to share CLA tasks are currently underway, along with the recruitment of one senior resilience specialist to conduct regular review and analysis of compiled knowledge/data/evidence. RISE partners are also advocating to USAID to be more flexible in program design to allow for resources for project-level CLA activities and faster programmatic and financial approval processes when adopting proven resilience best practices or to adjust their program to emerging experience, knowledge and evidences. Moving forward, SAREL is setting up formal Resilience Collaboration and Coordination frameworks for COPs, coordinators, and M&E specialist of RISE partners. They are also launching the KM portal, and will be providing more workshops and training.

### Session 5.1b: Knowledge Management (KM) in RISE

*(Guest presentation by Karine Garnier, KM and Learning Advisor, USAID Center for Resilience)*

This session will aim at presenting KM platforms and learning initiatives available at global level as well as regional level. The Center for Resilience will focus on the global level platforms for KM (Agrilinks, Food Security and Nutrition – FSN-Network, Learning Labs, Global Lab) which are utilized by USAID and its partners, as well as give an overview of the introduction to resilience Primer on line training and plans for future online training developments. The session will also provide the opportunity to hear from participants on their needs in terms of KM and learning.

### Session 5.2: RISE/RMS Planning

**Plenary Discussion:** Follow the instructions and prompts of the facilitator. In plenary participants will use the information they learned in the previous sessions to answer the following questions:

1. What findings from the RISE baseline (and the resilience meta-analysis) are important to future research and programming? Use the worksheet below as a guide.
  - a. Where there any indicators that were not measured in the RISE baseline that should receive further focus?

#### Exercise 5.2a: RISE Resilience Capacities and Key Findings

Resilience Capacity	Key Findings	Key Indicators
Absorptive Capacity		
Adaptive Capacity		

Transformative Capacity		

2. How do we apply what was identified in Question 1 (above) to future research and programming? Identify objectives that can be applied to RISE programming.
3. How do we proceed to measure what was identified in Question 1 (above) in future evaluations?
4. Having come to a consensus on what triggers to use for recurrent monitoring, what are the next steps?
  - a. How do we set up a way to monitor for these triggers?
5. How do we integrate what we have identified in from the RISE baseline and from what we have learned about recurrent monitoring into the program cycle for RISE?

**Exercise 5.2b: Resilience-focused Action Planning**

Objectives	Actions	Indicators	Timeframe	Responsibility

## Session 5.3: Wrap up and Final Debriefing

This session allows time for the facilitator and participants to summarize the key objectives and discussion points of the module and training as a whole.

- *What are the key challenges and opportunities to implementing what we have laid out in our next steps when integrating resilience-focused knowledge management in RISE programming? For recurrent monitoring?*

### **Module 5 References:**

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## Acronyms

AFDM	Africa Flood and Drought Monitoring
ARMET	Advanced Resilience Monitoring and Evaluation Training
BRACED	Building Resilience and Adaptation to Climate Extremes and Disasters programme
CCA	Climate Change Adaption
CLA	Collaborative, Learning, and Adapting
CRC	Community resilience capacities
CSI	Coping Strategy Index
DA	Development assistance
DRM	Disaster risk management
DRR	Disaster Risk Reduction
EA	Enumeration areas
FANTA	Food and Nutrition Technical Assistance project
FASO	Families Achieving Sustainable Outcomes project
FEWS	Famine Early Warning Systems Network
NET	
FFP	Office of Food for Peace, USAID
FGD	Focus Group Discussions
FSIN	Food Security Information Network
FTF	Feed the Future, USAID
GAM	Global Acute Malnutrition
GIS	Geographical Information System
GIS	Geographical Information System
HA	Humanitarian assistance
HDDS	Household Diet Diversity Scale
HFIAS	Household Food Insecurity and Access Scale
HHS	Household Hunger Scale
HI	High Intensity
HRC	Household resilience capacities
IE	Impact Evaluation
ILRI	International Livestock Research Institute
IR	Intermediate Results
IRB	Institutional Review Board
KII	Key Informant Interviews
KM	Knowledge Management
LAHIA	Livelihoods, Agriculture and Health Interventions in Africa
LI	Low Intensity
MVR	Multivariate regression
NDVI	Normalized Difference Vegetation Index
NRM	Natural Resource Management
OFDA	United States Office of Foreign Disaster Assistance
PCA	Principal Component Analysis
PMP	Performance Monitoring Plan
PPS	Probability Proportional to Size
PRIME	Pastoralist Areas Resilience Improvement and Market Expansion
REGIS-AG	Resilience and Economic Growth in the Sahel – Accelerated Growth
REGIS-ER	Resilience and Economic Growth in the Sahel – Enhanced Resilience
RISE	Resilience in the Sahel-Enhanced Project
RMS	Recurrent Monitoring Survey
RM-TWG	Resilience Measurement Technical Working Group

SAREL	Sahel Resilience Learning project
SE	Shock exposure
SPI	Standardized Precipitation Index
TOPS	Technical and Operational Performance Support
USAID	United States Agency for International Development
USG	United States Government
VIM	Victory Against Malnutrition project
ZOI	Zone of influence



## Annex 1: Findings Summary of ILRI Resilience Meta-Analyses

TANGO International in collaboration with the International Livestock Research Institute (ILRI) recently published a series of papers from resilience meta-analyses. The four topics included:

1. Shocks and responses over time: Ethiopia, Kenya, Uganda<sup>42</sup>
2. Social capital: Ethiopia, Kenya, Uganda, Niger and Burkina Faso<sup>43</sup>
3. Livelihood diversity: Ethiopia, Kenya, Uganda<sup>44</sup>
4. Subjective and psycho-social factors: Ethiopia, plus Ghana-Fiji-Vietnam-Sri-Lanka dataset<sup>45</sup>

**1. Shocks and responses over time:** Results from the PRIME and from the Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) program baseline surveys showed that all three types of resilience capacity – absorptive, adaptive, and transformative – are positively related to household recovery from different types of shocks, particularly drought and food price shocks. These results provide empirical support that the resilience capacities, as measured by the indexes used for these studies, do in fact capture household’s abilities to recover from different types of shocks.

Results from regression analysis and interim monitoring data illustrated the importance of resilience measurement principles. First, all three capacities of resilience help households respond to shocks. Second, ongoing monitoring was critical to track emerging issues and changing conditions. Without interim monitoring, practitioners might have concluded that households in Borena, Ethiopia, had high levels of resilience and did not need further assistance. Interim monitoring, however, tracked changing conditions and their coping strategies, indicating that further assistance was indeed needed.

This study highlights in particular a few key points for resilience research and programming:

*Ongoing monitoring is critical for resilience programming.* Following an initial shock event, downstream shocks/stressors may manifest over time and may be undetected in a single round of monitoring. Downstream impacts following a drought could include decreased terms of trade, increased livestock disease, or increased conflict as people migrate to find suitable pasture. Moreover, people’s ability to respond to shocks changes over time and in different seasons as downstream effects emerge. For example, pastoralists in Borena rotate seasonally between wetland and dryland grazing resources, allowing vegetative regrowth in the off- season. During a drought, however, increased utilization of grazing land could lead to cascading shocks such as land-use conflict, degraded pastureland, and livestock disease. Ongoing monitoring would capture such changes and indicate if a threshold level is reached.

RMS (discussed in detail in Module 4) provides two examples of conditions to that indicate a shock-impact threshold had been reached. First, when clan leaders left the villages to find grazing land for their livestock, the social safety net broke down. Without community

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<sup>42</sup> Bower, T. et al., 2016

<sup>43</sup> Woodson, L. et al., 2016

<sup>44</sup> Nelson, S. et al., 2016

<sup>45</sup> Béné, C. et al., 2016

meetings, identification of households in need and distribution of informal aid to those households stopped. Second, villages were able to take care of community members in the first months, but over time people used up marginal resources and social capital. People began to resort to negative coping strategies such as incurring debt, reducing food consumption and pulling children out of school which have long term negative effects on resilience and wellbeing. These critical events should be monitored to know when to start a social protection program and to what extent the program should be implemented (i.e., how many people to target) and what type of aid should be delivered (e.g., cash transfer, fodder, food for work) and for how long.

*Shocks measurement needs to include both objective and subjective measures.* Objective data tells whether a shock has occurred. Subjective data reflects perceptions and importantly identifies in real time what people perceive as the biggest shock/stressor and the coping strategies they are using. However, individual perceptions may not accurately reflect environmental conditions. Data distortion can stem from varied sources such as individuals habituated to drought conditions that may under-report the severity of a drought, whereas individuals completely unprepared for a new or unusual type of shock may overstate its impact. Individuals may also over-report the severity of shocks to secure more aid.

Using objective data can avoid such distortion. Based on the datasets assessed in interim monitoring, soil moisture deficit and cumulative soil moisture deficit were the preferred measures for drought. Other types of satellite imagery (e.g., NDVI) show vegetation conditions which can include irrigated crops and are thus misleading. NDVI also does not accurately show the amount of available water, which is indicated by soil moisture measures. Precipitation indices are also of limited utility because rainfall may flow off site or evaporate and thus not be available for use in a given area.

Thus, objective data should be used in conjunction with subjective and qualitative data. Objective data does not capture why people respond to conditions the way they do, such as diminishing social capital, strained social relationships, and reduced access to informal loans due to prolonged shocks. The PRIME baseline survey collected only subjective data about the severity of shocks, whereas the IMS collected both subjective and objective data. On-the-ground subjective/qualitative assessment was especially helpful in this case to assess and validate perceived impacts, which differed from objective measures. Qualitative data captured details about how households were experiencing the drought and its downstream effects.

**2. Social capital:** Based on the meta-analysis of PRIME, BRACED and RISE baselines, social capital has a positive effect on food security, helps households recover from shocks, and mitigates the effect of shocks across the different data sets. Thus, it can be said that social capital is critical to resilience. All four hypotheses tested in this analysis, as follows, appear to hold true.

1. Households with greater level of social capital achieve greater levels of food security than those with less social capital, all else equal.
2. Households with greater levels of social capital are able to recover better than those with less social capital, all else equal.
3. For a given level of exposure to shocks, households with more social capital report fewer negative impacts of shocks than households with less social capital, all else equal.

4. Wealthier households have greater levels of social capital and are better able to both receive and give assistance (in the form of food or money) than those of poorer households.

The last hypothesis can be explained by the fact that households that have more assets are more likely to engage in reciprocal exchanges whereas the poorer households have less to exchange.

Projects that create community groups to carry out a specific function (i.e. savings groups, marketing groups, natural resource management groups) rarely track the other collection action functions that such group might take on. Thus, the increases in social capital are not always tracked nor are the activities that lead to greater social capital. Understanding these additional functions and monitoring them could be a key aspect of resilience measurement that enables programmers to strengthen social capital in the future.

Although social capital appears essential to a household's ability to cope with shocks, it is not an infinite source. As seen in the PRIME RMS data, social capital can be used up in the early phases of a prolonged covariate shock and its downstream effect. In Borena, the initial round of RMS data show that households' absorptive capacity had a positive impact on their ability to recover from drought, despite having a higher shock exposure than Jijiga. Bonding social capital is thought to have contributed to these households' absorptive capacity. However, over the six rounds of RMS data collection, social capital started to erode. In face of such a large covariate shock, better-off households were not able to support the poorer households with redistribution of food and animals as they do in normal times (to be discussed further in Module 4). Thus, only strengthening social capital is not enough to build resilience. We still need to strengthen other capacities that enable households and communities to manage shocks and stresses.

The findings of this meta-analysis point to several issues that need to be further investigated, including:

*A better set of indicators need to be developed to capture linking social capital.* The indicators used in this study led to confounding results and could be improved to capture how linking social capital can be used by households and communities to recover. For example, in Wajir, Kenya under the BRACED program, it was found that linking social capital has a negative relationship to food security and recovery. This may be explained by the fact that the most vulnerable food insecure households that have difficulties to recover in Wajir are living in places where food distributions take place and these areas often have good access to basic services, which is one the measures used in linking social capital. Deviations such like this, however, are not captured in the data analysis, and thus, need more consideration when developing these types of measures.

*Further research is needed to determine how households use social capital over time.* Based on the PRIME recurrent monitoring data, it appears that bonding social capital is used first, then bridging and finally linking social capital. This needs to be tested empirically.

*It is important to determine if linking social capital is beginning to replace bonding and bridging social capital* where food and cash transfers have been carried out over a number of years. Findings from Jijiga, Ethiopia and Wajir, Kenya give some indication that this could be taking place. More research is needed on this.

**3. Livelihood diversity:** An analysis of livelihood diversity on recovery and shock impact used data from both the PRIME and BRACED baselines. Specifically, the multivariate regression analysis compared livelihood diversity with a household's ability to recover (PRIME) and household food consumption (BRACED) during times of drought.

It was found that in PRIME, increased livelihood activities or livelihood diversification in Jijiga has no effect on recovery. This is largely due to Jijiga having limited availability of viable livelihood options that are non-climate sensitive; overall, Jijiga lacks opportunities outside of livestock and farming. Borena, in contrast, showed a significant association between recovery and increased livelihoods. Borena has a greater number of households that engage in market-sensitive livelihoods, especially in casual wage labor. Borena households also report receiving more remittances and gifts/assistance.

BRACED data, similarly, are context driven. In Karamoja, household food consumption was not associated with increased livelihood activities, although they were more likely to engage in diverse livelihood options compared to Wajir. The declining number of livestock-based livelihoods in Karamoja as a result of Ugandan policies that aim to eradicate pastoralism in this region as a means to modernize and promote agricultural commercialism have pushed households into other activities. A large portion of households in Karamoja compared to Wajir, across wealth terciles, make their livelihoods by working as casual wage laborers, are self-employed, sell bush/wild products (mostly charcoal) or receive gifts/assistance. Although these households appear more diversified, many of these activities have low returns – especially the sale of charcoal, an activity in which more than 10 times the number of households in Karamoja are engaged than in Wajir. Thus, this type of diversification, as in the case of Karamoja, is not enough to reduce shock impact. Conversely, Wajir data indicate that households with greater number of livelihood activities are better equipped to withstand the impact of droughts on household food consumption.

The results indicate that the context in which a program is implemented is important to understand if livelihood diversification, in itself, should be used as a strategy for households to better cope with shocks and stresses. Context in this case includes the environment, accessibility of livelihood opportunities, and/or market access. Overall, diversification can work where there are opportunities to engage in high return activities and in areas where significant non-climate sensitive options exist. Livelihood diversification in areas where such opportunities do not exist will not necessarily lead to better adaptation.

Based on the findings of this report, further research should be conducted on livelihood return thresholds to determine whether a certain level of remuneration associated with a type of livelihood is necessary to make a difference in adapting to and recovering from shocks.

**4. Subjective and psycho-social factors:** Research from a study on fishing communities in Ghana, Fiji, Vietnam and Sri Lanka and from rural households in two regions of Ethiopia (PRIME), were used to test the following hypotheses:

1. Subjective resilience does influence households' response to shocks and stressors. Subjective resilience, in this case, is defined as the perceived ability of households to manage future shocks.

2. Psych-social factors such as risk aversion, self-confidence or degree of fatalism influence the ability of people to recover from shocks.

The empirical data show that for Ghana-Fiji-Vietnam-Sri-Lanka and Jijiga, there is a negative correlation between households' level of subjective resilience (or their self-efficacy score) and the propensity of those households to engage in coping strategies. The higher the sense of control people have over their lives and the more positive the perception about their own ability to handle (future) shocks/stressors, the lower the likelihood that these households will engage in detrimental short term responses. The Ghana-Fiji-Vietnam-Sri-Lanka dataset also clearly demonstrated that households which are characterized by higher than average subjective resilience levels have also a higher likelihood to engage in transformative strategies such as migration or diversification outside the fishery sector.

The empirical data again supports the assumption that subjective resilience and self-efficacy influences the household's actual ability handle shocks/stressors. In the case of the Ghana-Fiji-Vietnam-Sri-Lanka dataset, the correlation between the level of subjective resilience and the household's resilience index was significant and positive, while in the Ethiopian case, the data shows a positive correlation between the self-efficacy score and the recovery index for both Jijiga and Borena. This suggests that in both cases the perception that people have of their level of control over their own lives – a strongly subjective element – influences positively their ability to recover from shocks/stressors.

The determinants of subjective resilience were also investigated in this report. Household's subjective resilience is expected to be influenced by psycho-social factors such as self-confidence, risk aversion, societal values and norms, but also to reflect other more concrete elements such as the household's past experience in relation to similar shocks or the household socio-economic situation. The results from the Ghana-Fiji-Vietnam-Sri-Lanka data analysis show that households' subjective resilience level was strongly determined by how households had managed the same shocks or stressors in the past, as well as by a series of characteristics of these shocks/stressors, such as their level of severity and predictability. None of the household demographic characteristics had any influence on subjective resilience with the exception of the level of assets.

When viewed collectively, these different results provide strong empirical evidence that the subjective dimension of resilience is an overlooked element of the overall resilience equation, and as such, needs to be more systematically considered in future research. In particular, better insights are needed not only in the social, institutional and economic mechanisms that influence individual and collective capacity to respond to shocks and stressors, but also around the perceptions, subjective motivations, and cognitive elements of individuals and households' decision making processes, in order to unpack and better understand the factors that influence behavior and decisions around resilience. This may present a challenge to researchers as the information on psycho-social and subjective factors, such as risk perception, self-efficacy and the importance of household perceptions about their own capacity to manage shocks and stressors, are difficult to capture. However, as this report has demonstrated, they are indispensable to future research on resilience.

## Annex 2: Gender and Resilience

Gender equality, or women's empowerment, are key desired outcomes for many humanitarian and development programs. In the TANGO resilience measurement framework, gender equality may be identified as one of the key well-being outcomes. Many studies and papers discuss the dynamics of gender in strengthening resilience, and this session draws directly from a workshop on this topic developed for a TOPS learning and knowledge event<sup>46</sup> (see reference list at the end of this module).

*“Despite the fact that women often face a range of unique challenges in areas of recurrent crisis – and often bear the heaviest burden of shocks and stresses – they also possess enormous individual and collective capacity to help themselves, their families, and their communities.” (USAID, 2012)*

It is important to understand the gender-differentiated impacts of shocks/stresses and the barriers to strengthened resilience capacity. Some of these impacts and barriers that disproportionately and negatively affect females are a result of cultural norms, for instance, such norms that affect participation of women in decision-making at household and community levels. It is important to note that gender equality is not binary, thus, empowering women does not equate to disempowering men. As gender norms and roles are upheld at every level of society and in all aspects of life (e.g., economic, political, social, environmental), building resilience capacities that empower women necessitates gender integration at all levels. Thus, building capacities alone are not enough, but it is the effective use of capacities (response) by people in all levels of society. For instance, enhancing assets alone is not sufficient if households do not use the assets effectively to respond to shocks in ways that do not compromise their future wellbeing.

What influences whether individuals, households or other levels of society put resilience capacities to effective use and that should be considered with a gender lens?

- Sense of individual power/ agency/ absence of fatalism (individual/HH level)
- Aspiration/ motivation to adapt in the face of change (individual/HH level)
- Exposure to alternatives to the status quo (individual/HH level)
- Power dynamics (community and other layers of society)
- Political willingness (community and other layers of society)
- Perceived risk/ opportunity cost (all)

**Absorptive capacity:** How might gender norms and roles influence absorptive capacities and response to shocks and stresses? (The following are a few ideas and examples)

- **Asset ownership and informal safety nets/savings:** For women: Women may have low rates of ownership and/or control over assets and resources, including equipment/ machines and land. Male/Female differences in post-shock asset divestiture. The type and intensity of shock affect men's and women's assets differently. For instance, a study in Bangladesh showed death has a higher impact on men's assets while illness-related shocks have a higher impact on women's assets; in

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<sup>46</sup> This session draws heavily on the research and presentations developed by Laurie Starr (TANGO) and Kristi Tabai (TOPS), “Gender Equality and the Resilience Agenda: Moving Towards Transformative Change” (November 2015). Questions: laurie@tangointernational.com; and ktabaj@savechildren.org

Uganda, drought-related shocks affect women's but not men's assets.<sup>47</sup> (For Men: Men potentially have less access to informal safety nets than women due to the prevalence of female-centered village savings and loans groups, etc.

- **Exposure to shocks and stresses:** For Women: Women disproportionately vulnerable to environmental risks due to outmigration of men. In addition, Women have more difficulty reaching safe places in times of floods or cyclones, and there are higher death rates among women.<sup>48</sup> For Men: Men have higher prevalence of short-term migration as coping strategy to reduce their exposure to shocks; yet, men more often are the last to evacuate when a shock hits.<sup>49</sup>
- **Shock impact/risk mitigation and preparedness:** For Women: Higher mortality for women due to gender differences in service access after disaster shows inability to mitigate the impacts/risks of a shock.<sup>50</sup> Additionally, drought /deforestation have increased the burden on women as they are more likely to be responsible for fetching water and firewood. Inequity in intra-household food distribution means women and children may have decreased ability to absorb a health or food security shock/ stressor. For Men: Men have potentially less knowledge about caregiving needs post-shock (illness/ elders/ nutrition). Based on norms, men may choose to deal with stressors in unhealthy ways (drinking, sex, violence).<sup>51</sup>

*“Climate change has been shown to have significant health burdens on women through higher mortality in places of residence in natural disasters, through differences in wealth, and through gender differences in access to services following disasters.” (Chindarkar, 2012)*

**Adaptive capacity:** How might gender norms and roles influence adaptive capacities and response? (The following are a few ideas and examples)

- **Exposure to information, such as to make informed livelihood decisions:** Access to information regarding job opportunities or support for promotions often occurs in gendered networks, hurting women trying to enter a male-dominated industry or vice versa. Overall, globalization and technological advances allowing greater access to information have influenced markets, formal institutions, and informal institutions to remove some of the constraints to gender equality.<sup>52,53</sup> Norms on women's physical mobility/ other restrictions limit exposure to information. Women may have limited direct access to market information and have

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<sup>47</sup> Quisumbing, 2015

<sup>48</sup> Chindarkar, 2012

<sup>49</sup> Oxfam, OCHA, 2014

<sup>50</sup> Smith, et al., 2014

<sup>51</sup> Oxfam, OCHA, 2014

<sup>52</sup> For instance, related to female farmers, the report states: Growth in traditional agricultural exports has benefited men more than women because women are less likely to work on commercial crops and are crowded out of traditionally female-intensive crops when these crops become commercial. In contrast, nontraditional and high-value-added exports have stimulated higher female employment in export production, although the impacts vary by country and product.

<sup>53</sup> World Bank, 2011

limited networks of potential buyers, as well as limited access to formal and informal institutions.

- **Diversity of livelihoods (activities in different risk categories):** Women's reproductive work/ time burden reduce their ability to adopt natural resource management or community-supported agriculture practices.<sup>54</sup> Gender stereotypes may inaccurately determine "suitability" of work for men and women.
- **Access to financial resources:** Women may have limited access to and use of credit, and limited ownership of and decision-making capacity for productive assets. Additionally, women may have limited decision-making power regarding use of tangible and intangible household assets (e.g., consumption needs, health needs, education, and shelter).
- **Aspirations and confidence to adapt:** Lower confidence level and limited aspiration may result in acceptance of current role.<sup>55</sup>
- **Social capital:** Strong bonding social capital may increase women's adaptation, while limited linking social capital may limit adaptation.
- **Human capital:** Education levels for women and men are a key aspect of human capital, and in many development contexts education rates are highly gender-differentiated. In addition, gendered norms regarding male long-term migration may result in positive or negative response for the household members left behind.

**Transformative capacity:** How might gender norms and roles influence transformative capacities and response? (The following are a few ideas and examples)

governance mechanisms, policies/regulations, infrastructure, community networks, and formal safety nets which are part of the wider system in which households and communities are embedded: formal safety nets, access to markets, access to infrastructure, access to basic services, access to livestock services, access to communal natural resources, bridging social capital, linking social capital

- **Governance mechanisms and policies:** Discriminatory regulations and policy at national level trap women in the role of the "diminished opposite" of men.<sup>56</sup>
- **Linking social capital:** Low institutional inclusivity in government and decision-making bodies: e.g., women in leadership not culturally-accepted, and women's self-esteem and confidence to participate may be low. Women are recognized as capable leaders only in their gender-normative sectors, such as health and nutrition.
- **Access to services and infrastructure:** Women's limited mobility influences their access to basic services and infrastructure; and for migrating males, they may experience limited access to formal safety nets in destination communities.

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<sup>54</sup> Ringler, et al., 2014

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