KNOWLEDGE-BASED INTEGRATED SUSTAINABLE AGRICULTURE AND NUTRITION (KISAN) PROJECT

GUIDANCE FOR ASSESSING RESILIENCE IN MARKET SYSTEMS

SEPTEMBER 2019

CONTENTS

ACRONYMS

CAS   complex adaptive systems
CGI   corrugated galvanized iron
CRS   Catholic Relief Services
DFSAs   Development Food Security Activities
FFP   Food for Peace
FTF   Feed the Future
GFSS   Global Food Security Strategy
M&E   monitoring and evaluation
MSR   market systems resilience
OFDA   Office of U.S. Foreign Disaster Assistance
STRESS   Strategic Resilience Assessment
USAID   U.S. Agency for International Development

I. INTRODUCTION

1.1 BACKGROUND

Resilience is now firmly established as a high-level objective within the U.S. Agency for International Development (USAID) and, more broadly, within the U.S. Government Global Food Security Strategy (GFSS), which aims to contribute to global food security and many of the Sustainable Development Goals set by the United Nations (USG, 2016). In support of this approach, the Agency has developed numerous resources aimed at strengthening resilience analysis and integrating a resilience lens into the program cycle.[1]

Up to this point, most guidance has focused on supporting the resilience of households and communities. This has been an essential starting point because improving the well-being of vulnerable populations is the ultimate goal of resilience-building efforts. However, a market systems perspective emphasizes that population well-being is highly dependent on the sustained functioning of markets systems, including through shocks and stresses.[2] The market-based assistance approaches of the USAID Office of Food for Peace (FFP) and the USAID Office of U.S. Foreign Disaster Assistance (OFDA) are a demonstration of this fact. Additionally, the U.S. Government's global hunger and food security initiative, Feed the Future (FTF), has elevated resilience as a pillar of market systems development, alongside inclusiveness and competitiveness. According to the FFP 2016-2025 Food Assistance and Food Security Strategy, this prioritization of resilience should facilitate increased coordination and integration between FTF and FFP programs (USAID, 2016a).

PHOTO: FINTRAC, INC.

1.1 OVERVIEW OF GUIDANCE

It is important to understand what it means for a market system to be resilient, and to begin developing guidance for incorporating resilience into market systems analysis and programming. This guidance is an early step in this direction. Its purpose is to present an adaptable process for USAID missions and implementing partners to assess market systems resilience (MSR). While an understanding of MSR concepts is critical for all program staff within these organizations, individuals who may especially find the guidance useful include monitoring and evaluation (M&E) specialists and teams conducting scoping analyses that will feed into program design. Actors can use the guidance to build on other household or community resilience assessments, or as a stand-alone tool.

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[1] See the Resilience Measurement Practical Guidance Note series, available at: https://www.fsnnetwork.org/resilience-measurement-practical-guidance-series-overview

[2] There is different risk terminology used in various fields. In this guidance, "shocks" or "disturbances" indicate what other sectors refer to "hazards."

This guidance is based on well-established resilience concepts, in addition to more emerging research in the area of market systems, and is organized as follows. First, this document defines market system resilience and discusses its importance (Section Two). Next, it describes a process for assessing the resilience capacity of a market system before a disturbance (i.e. a shock or major stress) occurs by analyzing its resilience capacities (Section Three). The guidance closes by highlighting the need for field-testing and refinement of the assessment approach (Section Four). Thus, readers should consider this current edition to be one step in an iterative process that will allow this guidance to evolve.

It is useful to state up-front what topics this guidance does *not* cover. This document focuses specifically on the assessment stage of program development, and does not address other stages such as design, implementation, measurement, or monitoring. Nor does it address the evaluation of MSR capacity-building programs, or the related question of how to evaluate whether a given level of MSR is "sufficient" in a given case. Additionally, this document does not discuss in detail the synergies and trade-offs involved in building MSR, including its costs to market systems actors or programming, and its potential trade-offs with inclusiveness or competitiveness. Although it is beyond the current scope to discuss these critical questions, this guidance lays some foundation for addressing these themes in the future.

II. THE CONCEPT OF MARKET SYSTEMS RESILIENCE

2.1 THE MARKET SYSTEMS APPROACH

"A market system is a dynamic space—incorporating resources, roles, relationships, rules, and results—in which private and public actors collaborate, coordinate, and compete for the production, distribution and consumption of goods and services" (Campbell, 2014; p. 2). Any given market system contains within itself multiple levels, each of which is itself a sub-system of the larger whole. Below are three levels that are especially useful as entry points for resilience analysis (Tendall et al., 2015).

- **INDIVIDUAL MARKET ACTORS** include farms and firms. These are the smallest sub-systems of the broader market system.

- **VALUE CHAINS** are the set of sequenced value-creation activities that convert raw materials to final products, as well as the institutions (e.g., farmer organizations, contracts, or spot markets) that link these different value-addition nodes.

- **REGIONAL SUB-SYSTEMS** encompass multiple value chains that serve particular geographic areas. For example, a regional food system might include the value chains for multiple crops/foods that are essential for regional food security.

A market system is itself embedded within, or coupled with, other large systems such as ecological, socio-cultural, and political systems. Systems thinking has a number of important implications for the analysis of market systems generally, and for MSR in particular, reflected throughout this document.

There exist already multiple field-tested tools that provide guidance on analyzing market systems in development and humanitarian contexts.[3] Most analysis tools fall into two groups. Among the first group (e.g., *Emergency Market Mapping and Analysis Toolkit*, *Pre-Crisis Market Analysis*), the objective is to assess market system functionality (both pre- and post-shock) with a larger goal of informing response analysis (e.g., whether assistance should be in-kind or market-based, and to what extent existing market channels can be used). The objective of the second group of tools (e.g., *Making Markets Work for the Poor*, value chain approaches) is to inform the design of market systems development programming. While the first group of tools explicitly incorporates disturbances into its framework, the focus is to understand how those disturbances have affected the market system in order to utilize the market system as a means to delivering assistance in the short-term. In contrast, the second group makes the long-term development of the market system itself the central objective. However, its framework fails to explicitly acknowledge that many contexts are wrought with disturbances that threaten development gains. What is needed is a lens that draws together the complementarities of each framework.[4]

2.2 MARKET SYSTEMS RESILIENCE

The concept of market systems resilience is intended to address this gap in current market systems practice. Market systems resilience can be understood as the ability of a market system to respond to disturbance (shocks and stresses) in a way that allows consistency and sustainability in the market system's functioning, or that leads to improvement in its functioning.

It is important to keep in mind that MSR is one of several dimensions that describes how a "healthy" market system performs. Other market system performance dimensions include competitiveness and inclusiveness. However, MSR is also unique in the sense that it is focused on sustaining some specific market systems outcome that is desired. Thus, building MSR can advance other dimensions. For example, promoting broad participation in a market system can advance both MSR and inclusiveness. However, simultaneously enhancing the resilience of all desired outcomes is not possible (Biggs et al., 2015). Further, there are also important trade-offs to eventually consider. For instance, resource redundancy can, but will not necessarily strengthen competitiveness. The nature of these synergies and trade-offs depends largely on what exactly MSR is aiming to sustain.

> *Market systems resilience can be understood as the ability of a market system to respond to disturbance in a way that allows consistency and sustainability, or that leads to improvement, in the market system's functioning.*
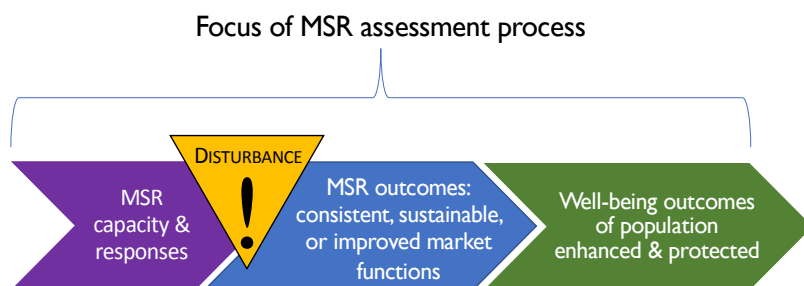
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[3] See Appendix A for a list of resources.
[4] Section Two's discussion of MSR assessment data needs will further elaborate on the complementarity and limitations of these two market assessment paradigms.

Section 3.2.4 highlights some of MSR's interactions with other performance dimensions, but better understanding of these complex relationships is an important knowledge gap.

Figure 1 presents a logical framework that summarizes the MSR concept and how it operates. It is based on the logical framework presented in the USAID Resilience Measurement Practical Guidance Note Series (Pícon, 2018), but is adapted for a market systems focus and for the scope of this guidance.

FIGURE 1: MARKET SYSTEMS RESILIENCE LOGICAL FRAMEWORK

Focus of MSR assessment process

MSR capacity & responses → DISTURBANCE ! → MSR outcomes: consistent, sustainable, or improved market functions → Well-being outcomes of population enhanced & protected

ADAPTED FROM: PÍCON (2018)

As stated at the far right-hand side of Figure 1 (green arrow), MSR should have as its goal the protection or enhancement of population well-being. There is an emergent "market systems for resilience" literature showing that population resilience and other development outcomes are dependent on the consistent and sustainable functioning of a market system (USAID, 2017a; 2017b). Additionally, market-based humanitarian assistance is potentially more cost-effective than traditional humanitarian assistance approaches (Irwin and Campbell, 2015). It also avoids displacing market actors and distorting commercial incentives, which ultimately increase the vulnerability of market actors (Ibid.). However, in order for market systems to support development outcomes and humanitarian approaches, they must be able to continue functioning through periods of shocks and stresses.

> *Market systems resilience should have as its goal the protection or enhancement of population well-being.*

MSR outcomes (blue arrow) refer to the consistency and sustainability of the market system functions that matter to population well-being, particularly in the face of disturbances (yellow triangle). A core feature of the resilience paradigm that sets it apart from conventional practice is the strong emphasis on understanding and analyzing potential disturbances, and their effects on a system, before they occur. This includes the analysis of recurring disturbances. It also includes consideration of other potential disturbances that are difficult to characterize and quantify ex ante. This explicit recognition of uncertainty is an important contribution to market systems analysis, given the difficulty of predicting many shocks and the limited statistical information about disturbances in many development contexts. Further, while conventional paradigms tend to view disturbances as externalities that originate from outside the focal market, the MSR approach explicitly recognizes that many disturbances are influenced by the market system itself, through slow and fast-moving variables and feedback loops (see section 3.2.4 for more discussion). One benefit of these insights is that they can help development practitioners to develop a more nuanced understanding of the motivations and decision-making of market actors

operating in complex and highly uncertain environments— situations in which profit-maximization or risk management perspectives alone may have limited explanatory power.

Resilient market systems are able to maintain their functions through such disturbances by employing response strategies that draw on multiple capacities (purple arrow). There is some overlap in resilience capacities and the set of capacities that are valued by conventional market systems practice, such as connectivity in the form of regional markets that are well-integrated through roads, information systems, and other infrastructure. However, resilience theory does introduce some new capacities and principles that are otherwise not typically considered. One example is resource redundancy, which is wasteful from a pure efficiency perspective (assuming that there are no externalities). Further, in many cases, building MSR will require valuing capacities differently than in conventional practice, which implies the existence of potential trade-offs.

The next section draws on this logical framework to outline a process for assessing MSR. The objective of a resilience assessment is to develop deep systems-understanding and situational awareness of resilience in a given context, by building a storyline that incorporates all aspects of the resilience logical framework. Although a resilience assessment is an inherently qualitative and participatory process, it lays an important foundation for the more quantitative work of measuring disturbances and resilience outcomes in a rigorous and repeatable way. Future guidance will define a process for operationalizing such measures for monitoring MSR on an ongoing basis.

III. PROCESS FOR ASSESSING MARKET SYSTEMS RESILIENCE

3.1 OVERVIEW OF PROCESS

This section outlines an analytical process for qualitatively assessing the resilience of a market system. It draws from guidance for assessing resilience in different social-ecological systems as well as from a few recent tools that focus on MSR assessment.[5] In addition to informing MSR measurement and monitoring, an assessment lays the groundwork for developing theories of change for a given context and thus naturally leads to program design. Thus, the MSR assessment process should ideally be undertaken prior to activities/programming. Additionally, assessing past and present resilience can help to predict a market system's ability to respond to a future disturbance. In areas prone to sudden- and slow-onset humanitarian shocks, an MSR assessment should be conducted in the preparedness phase, rather than in the immediate aftermath of a disturbance during which an emergency market assessment is more appropriate. Ideally, assessment results are updated following events that could affect resilience capacity, such as after a major shock, or as part of a program's midterm evaluation following a period of stress.

Figure 2 presents an overview of the MSR assessment process. The four parts of the assessment are designed to provide answers to the five guiding questions outlined by the Mercy Corps Strategic

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[5] See the references section for an annotated bibliography of these resources.

Resilience Assessment (STRESS) framework (Levine et al., 2017), which also frame the USAID Risk and Resilience Assessments process (Vaughn and Henly-Shepard, 2018). Each part builds on the knowledge generated in previous parts, while progressively refining the scope of the assessment. It is important for assessment teams to keep the logical sequence of the assessment in mind.[6] However, there may be situations in which an assessment is prompted and initially driven by some programmatic choices that have already been made. For example, an assessment team might begin the process having already selected a priority market system (such as the maize market system in Malawi—see case study #3) or with the intent of responding to a significant disturbance (such as a hurricane or ongoing conflict—see case studies #1 and #2). Even in these situations, it is recommended to start the assessment process at part one, as this will provide an opportunity for the team to validate assumptions and reveal important issues and knowledge that may have been previously overlooked.

FIGURE 2: MARKET SYSTEMS RESILIENCE ASSESSMENT PROCESS

Part one:
MSR for whom?
MSR to what end?

Identify **target population** and **focal well-being outcomes**.

Part two:
MSR of what?

Identify **critical market functions** and **supporting value chain systems** that are important for protecting and promoting well-being outcomes.

Part three:
MSR to what?

Identify **major disturbances** that threaten critical market systems.

Part four:
MSR through what?

Identify **specific resilience capabilities** that address major disturbances.

Refined assessment scope

Because resilience is highly contextualized, each part is illustrated with examples of three types of disturbance: a hurricane, conflict, and government intervention in food markets. The discussion in these case studies goes into the most detail in parts three and four, as the analyses in these parts will be most unfamiliar to readers but are at the heart of the resilience assessment.

For each part of the assessment, the guidance recommends relevant secondary sources that assessment teams can consult. However, due to the complex nature of resilience, and because market systems resilience is unlikely to be well-documented in most contexts, fresh qualitative and participatory inquiry should be a part of the assessment process. Depending on resources, this can take a number of forms. One option is to conduct interactive informant or focus group interviews using semi-structured surveys. Another option is to conduct a short workshop with representatives from a market system, although this requires a minimal level of trust and organization among market actors (e.g., see Vroegindewey and

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[6] Vaughn and Henly-Shepard (2018) recommend that a resilience assessment be led by a small, locally-based assessment team of program staff from various relevant disciplines.

Hodbob, 2018). See USAID (2018a) and GOAL (2019) for sample questions that can be adapted for both approaches. Adopting a participatory approach is not only important for obtaining valid results, but it can also serve to build MSR capacity, by contributing to collaboration, learning, and complex adaptive systems thinking among the stakeholders of a market system (see Section 3.2.4 below).

3.2 ASSESSMENT PROCESS

3.2.1 PART ONE: MSR FOR WHOM? MSR TO WHAT END?

Overview

Because the purpose of MSR is to protect and support population well-being, boundary-setting should begin with the identification of the targeted population and the well-being outcomes of most concern. This guidance assumes that these choices have already been made, based on assessments and programming priorities. The key outputs from part one are (i) an identification and description of the **target population** (resilience for whom?) and (ii) a prioritized list of the **focal well-being outcomes** (resilience to what end?).

Identify and describe the target population and well-being outcomes

First, define the target population(s) that your program seeks to benefit. If there are multiple populations (or sub-populations) that are targeted, distinguish each from the others. Make sure that you have an understanding of the following dimensions, which in later steps will help to further define the MSR assessment scope.

PHOTO: MORGANA WINGARD, ONE

- **Socioeconomic and geographic identifiers**: What are the key socioeconomic identifiers of the population, e.g. gender, age, wealth level? Where do they live?

- **Livelihoods**: What primary activities does the population engage in to access food and to earn income for meeting basic needs? What is the level of physical access to local and regional markets, infrastructure, and urban centers?

- **Vulnerability and resilience to disturbances**: Was vulnerability to some particular disturbance a criterion for selection of the target population (for example, see Case Studies 1 and 2 below)? If so, take note. There will be an opportunity to explore disturbances later in part three. Also, are there any known variables associated with household or community vulnerability or resilience to these disturbances?

Second, identify the focal well-being outcomes that the program seeks to protect or advance for the target population. Examples include protecting or improving nutritional statuses, empowering women, or reducing the prevalence and depth of poverty. To the extent possible, prioritize the outcomes. This will be helpful in the eventuality that an intervention that builds markets systems resilience for one

specific outcome has trade-offs for another. Also, make sure that you have some working theory of change that identifies the factors or conditions that should lead to these outcomes.

Data Sources

To complete this step, assessment teams can draw from existing program documents and indicator frameworks, household data collected on the population, and existing population studies (e.g., vulnerability, livelihoods, and resilience assessments, such as FEWS NET livelihood baseline assessments).

INTRODUCTION TO CASE STUDIES: "MSR FOR WHOM AND TO WHAT END?"

For each part of the MSR assessment, three case studies demonstrate the assessment process and how the five guiding questions might be analyzed. Below are introductions to each case, which highlight what a target population and development objectives could look like if defined by a rapid-onset emergency (Case Study 1), an ongoing regional crisis (Case Study 2), or a development program (Case Study 3). Please note that these analyses are illustrative.

CASE STUDY #1: HURRICANE MATTHEW IN HAITI

In late 2016, Hurricane Matthew, a Category 4 storm and the third-largest on record to hit Haiti, killed 900 people and left 750,000 in need of emergency assistance. In the hardest-hit communes of the southern Peninsula, Catholic Relief Services (CRS) targeted very poor and socially vulnerable groups with relief and recovery efforts, including assistance to rebuild more durable homes. Before the storm, most people had been living in substandard structures.

SOURCE: MARTIN AND WALTERS (2016)

CASE STUDY #2: CONFLICT IN NORTHEASTERN NIGERIA

According to the 2017 report on the State of Food Security and Nutrition in the World, conflict is on the rise across the globe, and is a key driver of food insecurity (OECD, 2018; FAO et al., 2017). Moreover, food insecurity is also an important contributor to fragility and conflict (Simmons, 2013).

The conflict in northeastern Nigeria is a case in point. In 2009, the terrorist group Boko Haram began an insurgency in that region of the country. The 2018 Humanitarian Response Plan called for improving food security outcomes of 3.7 million people in Adamawa, Borno, and Yobe states (OCHA, 2018). Emergency food assistance was targeted to households that are in the crisis and emergency phases of food and nutritional security, including vulnerable and crisis-affected groups (i.e., internally displaced persons, returnees, and female-headed households). Support for restoring productive assets, agricultural production, and incomes were targeted to areas where there was safe access to land.

CASE STUDY #3: GOVERNMENT MARKET INTERVENTION IN MALAWI

Malawi's National Resilience Strategy aims to advance inclusive growth, and food and nutritional security, by strengthening the country's resilience to economic and environmental shocks (GoM, 2018). Among the USAID programs that contribute to these goals are two FFP Development Food Security Activities (DFSAs). These programs seek to reduce child stunting, increase household incomes, increase farm productivity, and other outcomes among the poorest populations in several districts in southern Malawi. Implementing partners selected target populations and districts based on their high prevalence of stunting and acute malnutrition among children 6-59 months, high poverty levels, and high vulnerability to a range of shocks and stresses.

3.2.2 PART TWO: MSR OF WHAT?

Overview

In Section Two, a market system was described as having three key levels: (i) individual market actors (e.g., farms and firms), (ii) value chain systems, and (iii) regional systems. The objective of the second part of the assessment process is to define and understand the value chain system upon which the focal well-being outcomes for the target population depend most. Assessment teams start by analyzing the market system at the lowest of these levels, by describing how households in the target population transact directly with other market actors. Next, teams analyze select transactions at the value chain level. In some cases, assessment at the regional level may be appropriate. These concepts are depicted in Figure 2, and explained further below. The key outputs from this step are (i) an identification and description of the **critical market functions** (MSR of what?) that are essential for protecting and promoting the focal well-being outcomes of the target population, and (ii) a mapping of the **supporting value chain** system(s), i.e. the value chains that support those critical functions.

FIGURE 3: CRITICAL MARKET FUNCTIONS AND MARKET SYSTEM LEVELS
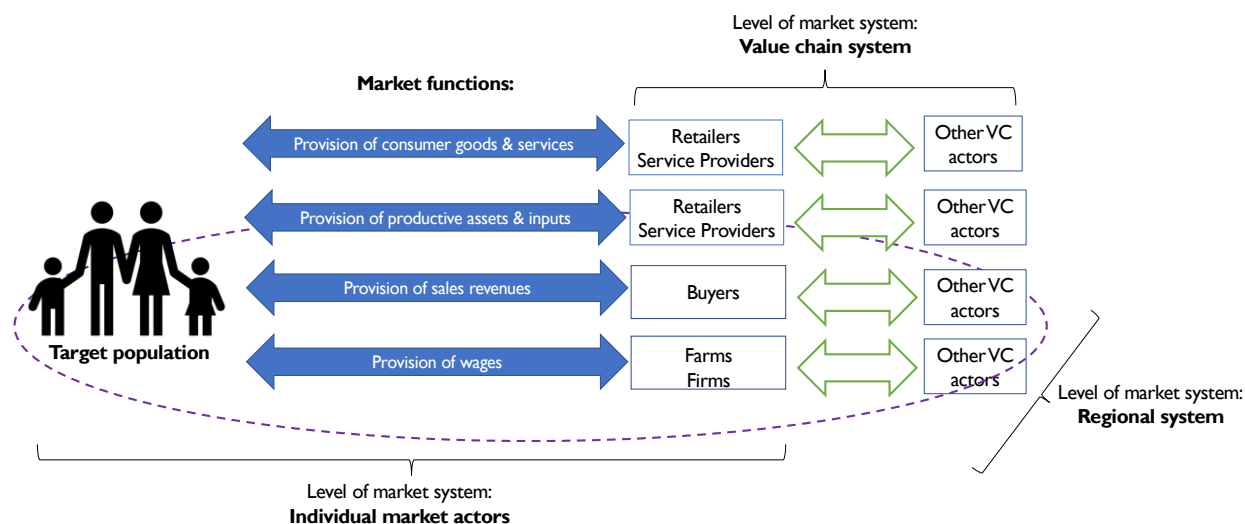
Identify critical market function(s)

Comprehensively list the market functions that would be necessary to protect and promote the well-being outcome, including during periods of disturbance. Market system functions are carried out through the transactions of products and services between the target population and market actors, and are identifiable by the following elements:

- the product or service that is transacted;

- the target population's role in the transaction;

- the location of the transaction and the other market actor immediately involved; and

- any key aspects of the transaction, including price, quality, frequency, credit, or contractual arrangements that govern the transactions, etc.

Below are the common types of market functions, and their associated transactions, to consider:

- Provision of consumption goods and services. As consumers, households purchase goods and services (e.g., specific food products, water, other basic goods, financial services) from market stalls or shops.

- Provision of productive inputs and assets. As business-owners or agricultural producers, households procure inputs, services, and productive assets (e.g., land, farm inputs, farm or business machinery, marketing services, financial services) from suppliers and service providers such as other producers, agro-dealers, or financial institutions.

- Provision of income from sales revenues and rental income. As business owners or agricultural producers, households sell commodities (e.g., millet, livestock products) and finished goods to buyers such as farmer organizations, local traders, or processors. They may also rent out productive assets, such as land, for income.

- Provision of income from wages. As workers, households supply their labor (e.g., farm or off-farm labor) to farms or businesses.

In the context of development programs, well-being outcomes are aspirational. Therefore, the current market system may not be at a state to provide all of the market functions that ensure those outcomes. For example, in northeastern Nigeria Mercy Corps (2017) found that financial services can help improve child nutrition, but are not yet sufficiently available to households. In your inventory of market functions, distinguish between the current state and ideal state.

Identify and analyze the supporting value chain system

Select a few critical market functions and map the broader value chain system(s) upon which these functions depend. In some cases, several critical functions can be mapped as part of the same value

PHOTO: CATHOLIC RELIEF SERVICES

chain. For example, in Southern Malawi—where maize sales and purchases have historically played an important food security role—households' purchase of maize inputs, sales of maize crops, and purchase of maize grain and meal for consumption are can all be analyzed as part of the maize value chain. Nevertheless, you will still likely need to narrow down the list of market functions in order to keep the assessment within a manageable scope, e.g. no more than three value chains. To do this, consider whether there are particular market functions that emerge as uniquely important determinants for achieving the well-being outcome(s). For example, corrugated galvanized iron was an essential material in the construction of Haitians homes. Next, consider other criteria for prioritizing value chain systems, including resource limitations, agency mandates, and security (Albu, 2010).

Once you have selected value chain systems, map them in the following way (Albu, 2010).

- Start by mapping the structure of the supporting value chain. This should include the value chain segments (representing production and other value addition activities) and linkages (representing the flow and transaction of goods and services). The target population should also be represented and highlighted on the map, depending on its role(s) within the market system, as well as the critical market functions.

- Add elements that support or influence the value chain, including providers of inputs and services, infrastructure, and key institutional issues.

- Incorporate quantitative overlays into the map, including the approximate number of actors at each segment, the prices of goods and services at key transaction points, and volumes of goods and services traded. Such information can be represented with numbers or visual clues.

You can incorporate other elements and information as appropriate. Appendix C provides an example mapping of the corrugated galvanized iron market system in Haiti (Case Study 1). See GOAL (2019) for guidance on mapping a market system from a resilience perspective.

In special cases, you may want to expand the analysis further, to encompass multiple value chains at a regional level. The advantage of analysis at this level is that it allows a more holistic assessment of the agro-ecological systems (e.g., pasturelands), market infrastructure (e.g., roads, markets), sectors (e.g. a retailing sector), and institutions (e.g., local market authorities, farmer organizations) that are present across the region. However, assessment at the regional level may only be appropriate where more resources are available, and where a global view is required, i.e. for government or where there is strong coordination of development partners. For example, in Case Study 2 multiple agencies coordinated to assess and improve the food security of populations in northeastern Nigeria.

Data Sources

Depending on the availability of existing studies, it may be possible to complete part two based on a review of secondary sources. Assessment teams may review existing population studies to identify the market functions that households depend on. Value chain assessments, pre-crisis market assessments, and emergency market assessments may also provide such information, in addition to providing information for mapping the supporting value chain system.

CASE STUDIES CONTINUED: "MSR OF WHAT?"

CASE STUDY #1: HURRICANE MATTHEW IN HAITI

For the construction and repair of homes, the target population of southern Haiti depends on markets in several ways. It purchases construction materials in hardware stores, and hires masons and carpenters from the labor market. To pay for goods and services, poor households typically earn income by selling agricultural products (e.g., maize, cassava, beans, bananas), fish, or charcoal; through trade; or from employment as unskilled laborers. Following the storm, some households also tried to access labor markets outside the region through migration. Limited liquidity highlighted a need for financial services.

Among these critical market system functions, CRS focused its market assessment on the value chain for

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corrugated galvanized iron (CGI), because it could address a pressing need that was also a priority reflected in government and donor plans—the supply of quality materials to reconstruct permanent shelters. CRS conducted a rapid assessment of the structure and conduct of the pre-hurricane CGI value chain, and then analyzed how it was disrupted by the storm (see Appendix C).

BASED ON: MARTIN AND WALTERS (2016)

CASE STUDY #2: CONFLICT IN NORTHEASTERN NIGERIA

Food security in northeastern Nigeria is highly dependent on the movement and trade of agricultural goods, inputs, and labor (FEWS, 2018b). Many households obtain incomes through crop or fish sales. Seasonal employment is also an important source of income and farm labor. Many also depend on markets for the purchase of food, especially cereals (maize, sorghum, millet, and rice), cowpeas, and animal-source foods. Although financial services have been chronically weak in this region, Mercy Corps (2017) found that household access to finance and other basic services is associated with the resilience of child nutrition to conflict. Thus, a comprehensive food security program for the northeastern region of Nigeria might identify the target market systems broadly, to include each of these products and services.

CASE STUDY #3: GOVERNMENT MARKET INTERVENTION IN MALAWI

In southern Malawi, food security is currently based on rainfed agriculture (FEWS, 2015). Staple foods include maize, sorghum, millet, legumes, chicken, and goat meat. Poor households source up to one-half of their food from weekly markets, and obtain income from crop or livestock sales, labor, or petty trade. Farmers typically sell their products to middlemen and acquire food through spot purchases at local weekly markets.

Populations in southern Malawi—as in the country as a whole—are especially dependent on maize, which makes up nearly 30% of agricultural gross domestic product (FEWS 2018a; Aragie et al., 2018). 90% of maize is grown in southern and central Malawi, and it is also the most purchased and consumed commodity in this area (Giertz et al., 2015; FEWS, 2018a). Critical maize market system functions include households' sales and purchases of maize grain and of milled maize flour, in addition to the purchase of inputs for growing maize. A key feature of the enabling environment is heavy government intervention in maize markets, which has included price controls, input subsidies, purchases and sales, and export bans (Edelman et al., 2016).

3.2.3 PART THREE: MSR TO WHAT?

Overview
The objective of part three of the assessment is to generate an awareness of the risk landscape in which the focal market sub-system operates, and to identify and characterize the disturbances that most threaten the critical functions.   Documenting the historical trends of disturbances that have occurred in a context is an important part of a resilience assessment because optimal responses can vary by disturbance. Given the complexity and varying effects of disturbances, it will be important to incorporate into this part of the assessment diverse perspectives and participatory methods. The key output is a well-defined list of past and possible disturbances that threaten the critical functions of the target market system, including an identification of the **major disturbances** (MSR to what?), which sets the stage for the final part of the assessment.

Identify and analyze major disturbances
First, list disturbances that have occurred over the past ten years, and that have affected the supporting value chain system(s) that you selected and mapped out in part two. You can draw from informant information, literature reviews, and first-hand knowledge.

Second, characterize each disturbance in terms of the following dimensions (Sagara, 2018; Choularton et al., 2015).

- **Type and duration:** Describe whether the disturbance is a shock or a stress, and its duration. A stress (e.g., degrading soil quality) is a longer-term trend, whereas a shock (e.g., drought) is a short-term deviation from a long-term trend. A shock can also be rapid-onset or slow-onset; however, these distinctions are not always clear. For example, recurring shocks—like violent attacks in a conflict environment or government intervention in a commodity market—can aggregate into a stress-like pattern (see Case Studies 2 and 3).

- **Intensity and impact**: Standardized objective measures (i.e., directly observable measures) of severity vary depending on the type of disturbance. Data on objective measures are available for many widespread disturbances. If possible, complement any available objective measures with subjective measures, which capture the perceptions and experiences of individuals regarding the severity of a disturbance. For example, to study the impacts of conflict intensity in Nigeria, Adelaja and George (2019) use objective measures of conflict events available through the ACLED database, while Mercy Corps (2017) uses subjective measures available through household surveys (see case study #2).

- **Scale:** The scale of a disturbance varies in terms of its impacts on different actors within the target market system. A small-scale (or highly idiosyncratic) disturbance will affect one or a few farms or firms (e.g., machine breakdowns or localized crime), while a larger scale (covariate) disturbance will affect multiple actors and/or scales of the market system (e.g., power outages or widespread conflict). Where a disturbance has broad scale, consider its duration and severity at different relevant levels of the market system (e.g., effects on farms, firms, and other segments of the value chain system, effects on supporting infrastructure or institutions).

- **Complex interactions between disturbances**: Shocks and stresses do not occur in isolation. Often, a given disturbance will coincide with others or come as part of a succession or cycle of disturbances. For example, the conflict in northeastern Nigeria demonstrates that conflict and food insecurity is each an outcome of the other. It is important to describe the connections between related disturbances. Further, root causes often do not emerge as a single source, but are the result of various dynamic forces (GOAL, 2017). Pay special consideration to the different systems (social, economic, political, ecological, etc.) that are involved in a disturbance situation. Also pay attention to situations in which certain components of the market system (e.g., a particular set of firms) magnify the intensity of a disturbance, perhaps in its attempt to adapt, for the larger market system. For example, unpredictable maize export bans in Malawi caused producers to reduce maize production, which placed an upward pressure on prices and contributed to market volatility.

- **Frequency and probability**: How often have the disturbances occurred? Is there a regular seasonal or other cyclical pattern? Is it possible to estimate a frequency or probability of occurrence in a given year?

Third, after identifying and describing historical disturbances, consider any other disturbances that could occur based on available evidence. For example, although large tropical cyclones were entirely unknown to Southern Africa prior to the early 1990s, climate research suggests that severe storms—such as cyclone Idai in 2019—could become more frequent (Schroeder, 2019). As another example, since 2013

there has been an expansion of extremist-related terrorism in West Africa (Reliefweb, 2019). Try to identify and characterize (using the above dimensions) such potential stresses and shocks. Given the lack of data and emergent nature of these disturbances, you will not be able to do this as completely as for historical disturbances. However, this exercise still has value insofar as it strengthens situational awareness. It also encourages an appreciation for uncertainty in a market system, i.e. that there may be completely novel and unknown disturbances that could affect the system in unpredictable ways.

Fourth, select a few major disturbances on the basis of their estimated frequency or probability, their impact on target market systems. Include any disturbances that played a role in defining the target population (in step one). Incorporate these major disturbances into the supporting value chain map, by flagging the segments, linkages and other elements that are affected by the disturbance (Albu, 2010). Such effects might include damage to assets, disruptions to business, blockages, losses of services, or institutional changes. You can analyze these disturbances using several techniques, including geographic mapping and profiling (Sagara, 2018; USAID, 2018); value chain and systems mapping (GOAL, 2017); or timelines (Vroegindewey and Hodbod, 2018).

Data Sources

There are a couple principles to keep in mind when collecting data to analyze disturbances (Sagara, 2018; Choularton et al., 2015). Because every disturbance is multidimensional and can vary across geographies and market system levels, it is also important to complement and triangulate data using multiple sources. Further, because an assessment takes a long-term and retrospective view, it is also important to triangulate any primary data collected through recall (e.g., from personal knowledge or informants) with secondary sources. In Appendix D, we provide a list of secondary sources for information on the historical occurrence of disturbances. Among these are three specific sources for analyses of the effects of disturbances on market systems (CaLP, SEEP, and EMMA). However, available studies may not cover the major disturbance or target market system of focus, in which case you may need to complement secondary data with interviews of farms, firms, and industry representatives.

CASE STUDIES CONTINUED: "MSR TO WHAT?"

CASE STUDY #1: HURRICANE MATTHEW IN HAITI

Hurricane Matthew was the latest of many disturbances that Haitian households and businesses had endured. For example, El Niño had recently caused a series of droughts and in 2010 the island experienced a large earthquake followed by cholera outbreak. Economic stresses included depreciating growth alongside inflation.

Focusing on the major disturbance of Hurricane Matthew and its effect on the CGI market system, this storm damaged 120,000 buildings and left more than half a million people seeking refuge with friends, family, or temporary shelter. Although Matthew created a surge in demand for CGI among households and businesses wishing to rebuild, it also disrupted value chains, resulting in supply shortages and price increases of 20%. Particular impacts included destroyed vendor businesses (infrastructure, stocks), limited liquidity all along the value chain and damaged or blocked roads. Haiti's low baseline capacity to manufacture CGI and its dependence on imports also contributed to supply bottlenecks of up to one month.

BASED ON: MARTIN AND WALTERS (2016)

CASE STUDY #2: CONFLICT IN NORTHEASTERN NIGERIA

The root causes of the conflict in northeastern Nigeria are complex; however, observers have pointed to unemployment and endemic food insecurity as key drivers (e.g., Adelaja and George, 2019). By greatly impairing critical market functions, conflict also worsened these outcomes for local populations.

From 2009 to 2016, Boko Haram launched 2,000 attacks on Nigerian soil, and came to fully or partially occupy many territories in the Northeast (Ibid.). Government intervention added an additional layer of complexity. For example, populations in garrison towns were only permitted to farm within a certain radius, and in some locations tall crops were banned so that Boko Haram could not use them as cover (Mercy Corps et al., 2017).

 Due to the prevailing insecurity in this region—characterized by bombings, assassinations, abductions, and the destruction of property—many people were cut off from or faced great risks in accessing their fields, transporting goods, patronizing banks and businesses, and transacting in commercial centers. By the end of 2018, there were 1.85 million internally-displaced persons (FEWS, 2018b). Boko Haram conflict events typically surged during the lean season (when agricultural labor is in demand) and at harvest (just before products would be marketed), and often occurred in or near markets (Van Den Hoek, 2017).

Consequently, only about one-third of markets in the region demonstrated normal activity, and food prices rose (Van Den Hoek, 2017). Conflict intensity in a given district reduced farm wages, employment, labor productivity, and output, especially for major staple crops (cassava, sorghum, rice, yam, soya) (Adelaja and George, 2019). There were similar output losses for livestock and fish, and producers across value chains had constrained access to inputs (Kimyeni et al., 2014).

CASE STUDY #3: GOVERNMENT MARKET INTERVENTION IN MALAWI

According to a 2015 risk assessment, the top three threats to the Malawian agricultural sector (in terms of probability of occurrence and impact) are drought, pests and disease, and price volatility and government intervention (Giertz et al., 2015).

The last of these major disturbances, market uncertainty, is especially pertinent to maize market system functions. The Malawian government imposed intermittent bans on maize exports from 2005 to 2011, and an uninterrupted ban from 2011 to 2017 (Aragie et al., 2018). These interventions were typically prompted by uncertainty around upcoming maize harvest and price trends, underlining their close relationship with other climatic, ecological, and market disturbances as well as political considerations (FEWS, 2018a; Edelman, 2016). However, lack of transparency and unpredictability in the implementation of the export ban added another layer of uncertainty. Empirical studies in Malawi and elsewhere show that export bans increase price volatility without significantly lowering domestic prices relative to regional prices (Edelman, 2016; Porteous, 2016).

3.2.4 PART FOUR: MSR THROUGH WHAT?

Overview
The objective of the fourth part of the MSR assessment is to analyze the specific resilience capacities that the target market system has accessed in the past—or could access—to respond to major disturbance. Specific resilience capacities can be identified from two conceptual frameworks that have developed through decades of research: (i) resilience capacities and (ii) resilience principles. Using these lenses, the key output from this step is a well-defined list of the **specific resilience capacities** (MSR through what?) that market systems have accessed or could access (if the capacity were built) to respond to major disturbances and to maintain consistent and sustained functionality of critical services.

Understand resilience capacities
Béné et al. (2012) introduced what is perhaps the most widely-used typology for identifying and organizing specific resilience capacities, of which there are three general types: absorption, adaptation,

and transformation. In this order, the three capacities refer to a system's ability to make changes of increasing magnitudes, in response to disturbances of increasing intensities (Ibid.).[7] One can also make a temporal distinction between the first two capacities, which operate at different moments relative to a disturbance (Henly-Shepard and Sagara, 2018).

- **ABSORPTION** refers to actions that market systems take in the midst of a disturbance in order to manage it. This includes coping mechanisms that entail no or very little change to the market system structure, and may provide sufficient resilience for withstanding disturbances that are predictable or relatively minor in intensity. Examples include a firm drawing from savings or accessing a line of credit in order to recover from a disturbance.

- **ADAPTATION** refers to proactive and informed actions that market systems take in anticipation of a disturbance to mitigate its effects. These consist of continual and incremental changes that a market system makes to its structure in order to manage significant uncertainty (i.e., disturbances that are difficult to identify and predict) and multiple disturbances of intermediate intensity. Examples include firms making investments in managerial capacity, or farms adopting drought-resistant seed varieties.

- **TRANSFORMATION** refers to fundamental shifts to the features of the market system that create and sustain change. It entails a market system recreating itself as a fundamentally new regime (i.e. a new structure delivering different market functions), in order to respond to major uncertainty and disturbance. Transformative capacity involves some combination of technological shifts, institutional reform, and changes in culture and preferences. An example of this at a large scale is structural transformation, during which an economy's share of growth and labor shifts away from agriculture and towards manufacturing and services.

Understand resilience principles

As a complementary framework for identifying specific resilience capacity, across multiple disciplines there is significant convergence around several principles that underpin capacities by describing how they work to actually improve the resilience of a system. Researchers from the Stockholm Resilience Center identified seven resilience-building principles from a comprehensive review of two decades of social-ecological systems research (Biggs et al., 2015). These are: maintaining diversity and redundancy, optimizing connectivity, managing slow variables and feedbacks, fostering complex adaptive systems (CAS) thinking, encouraging learning, broadening participation, and promoting polycentric governance

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[7] It is possible to draw a rough correspondence between the different types of resilience capacity and the structure-conduct-performance framework. Absorption consists of marginal changes in business strategy or conduct, while transformation consists of large structural changes in farms, firms, and markets. Adaptation bridges these two poles and includes changes that have major strategic implications for a business, which ultimately drive broader structural transformation. In a resilience paradigm, performance corresponds to the availability and quality of critical market functions described in the previous section.

systems. Other research has showed that these principles also apply to business and supply chain resilience as described in the management literature (Vroegindewey and Hodbod, 2018).[8]

Within the market systems development community, there are several emergent MSR frameworks that also incorporate most of these principles. See Appendix A for an annotated bibliography of these resources. As the terminology in these different frameworks suggest, resilience principles might also be expressed as MSR determinants (e.g., see GOAL, 2019; Ambrosino et al., 2018), or characteristics that define a particular resilient market system (e.g., see Downing et al., 2018). Definitions of the seven resilience-building principles, with examples pertaining to market systems, are defined below.

- **MAINTAINING REDUNDANCY AND DIVERSITY** of critical system components provides substitutes for losses in a market system. Of relevance are system components (including raw materials, technologies, or types of market system actors) that can perform the same function. Redundancy refers to multiple similar components that a system has, such that the loss of some components can be replaced by others. Diversity refers to multiple components that have different risk profiles, such that each reacts differently to a given disturbance. Examples of redundancy are buffer inventory or robust savings to draw upon when product or cash flows are disrupted. Redundancy at a larger scale might include planning for longer lead-times between value chain segments in order to allow for unforeseen delays. Diversity in a value chain might look like a lead firm sourcing inputs from multiple suppliers that are located in different regions (i.e. that have different geographic risk profiles) or that use different crop varieties (i.e. that have different agro-climatic risk profiles). At a larger scale, diversity might entail a market having many different types of retailers and products serving a similar purpose.

- **OPTIMIZING CONNECTIVITY** means maintaining the optimal structure, number and strength of linkages between components of a market system. Linkages can be physical (e.g., roads, cell phone connectivity) or social (e.g., trade networks). On one hand, connectivity increases the likelihood that a given system will quickly feel the adverse effects of any disturbance, such as during a widespread power outage. Thus, reducing direct exposure to disturbance (e.g., through infrastructural barriers) can enhance resilience. On the other hand, greater connectivity can also diffuse the effects of disturbances broadly throughout the larger system, thus lessening the effects on any given system sub-set, while also facilitating resource flows that can help with recovery. Increasing connectivity can also improve information flows and trust between actors, thus enhancing other resilience principles such as participation and polycentric governance. An important example of connectivity is market integration, which facilitates price transmission and the flow of supply from surplus to deficit markets.

- **MANAGING SLOW VARIABLES AND FEEDBACKS** aims to maintain the current market system regime when it functions in a desirable way (i.e., when its structure provides desirable market functions), or else to transform it into a more desirable regime. As this suggests, this principle is

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[8] The discussion of resilience principles in this section is drawn largely from Biggs et al. (2015). For a concise summary of this research, see Stockholm Resilience Center (n.d.): https://www.stockholmresilience.org/research/research-news/2015-02-19-applying-resilience-thinking.html

closely related to transformative capacity. Slow variables refer to the structural characteristics of a market system and behaviors of market actors that show less variability and response in a given timescale, compared to faster performance variables which change more quickly. It is particularly important to identify and monitor slow variables that can move the market system closer to an unwanted regime change, either by influencing the likelihood of a disturbance or reducing system resilience. Examples of slow variables include market concentration, technology, consumer preferences, or characteristics of the natural resource base. Fast variables include prices, traded volumes, and other flows. In a market system, feedbacks are the incentive mechanisms that influence whether changes in slow variables loop back to reinforce or dampen further change in that variable. Examples include taxes, subsidies, or sanctions that might encourage or discourage the adoption of more sustainable practices by farms, or anti-competitive behavior by firms. In most cases, dampening feedback loops help to counteract negative disturbance so that the system continues working in the same way. Operationalizing this resilience principle involves making investments to better understand and monitor the slow variables and feedbacks of a system; adding, removing, strengthening, or weakening feedbacks; or directly influencing the slow variable through other means.

- **FOSTERING CAS THINKING AND ENCOURAGING LEARNING** are both principles that indirectly influence the resilience of a market system, by driving an adaptive approach to its governance. Adaptive governance focuses on learning by doing–by continually testing out and evaluating alternative management approaches—and by sharing knowledge across systems, levels, and various organizations. For example, farmers might experiment with new agricultural practices on certain plots of land, share their experiences through local farmer field schools, and report the results to other value chain partners (e.g. input providers and buyers) to improve coordination. CAS thinking is a mental model that views systems as having many components that adapt to change, and which interact dynamically, non-linearly, and across multiple scales. By implication, CAS thinking expects a degree of uncertainty and unpredictability within a market system. It also seeks to understand the incentives and mental models of different actors and institutions, as well as the interdependencies between different components. Practical applications of CAS thinking include scenario-planning or the inclusion of contingencies in contracts.

- **BROADENING PARTICIPATION AND PROMOTING POLYCENTRIC GOVERNANCE** are both principles for structuring the governance of market systems. Broadening participation refers to the empowerment and engagement of diverse stakeholders in systems governance. The participation of two types of stakeholders is of concern. First, a market system should include the broad participation of individuals who have an active stake in the outcomes of the market system. Such participation can contribute diverse knowledge, technical or management ability, monitoring, funding, or legitimacy and political support to the governance of market systems. An example of broadening participation in a market system might be empowering youth to start new businesses, applying gender equity in employment practices, or the inclusion of all stakeholders in industry councils. Second, a market system should include broad participation by governing bodies. Specifically, polycentricity is a system of governance in which multiple governing bodies at different levels interact to make and enforce rules within a specific policy arena or geography. Such a system of governance is effective at empowering collective action to address various disturbances and advance positive change, because different challenges can be effectively addressed by the right institutions that "fit" the given problem. The polycentric governance of a given market system might look like a tapestry of well-coordinated farms and firms (which help to govern resources at a small scale), horizontal and vertical structures

such as farmer organizations or contract arrangements (which govern particular value chain transactions and relationships), and commodity associations and various government agencies (which govern entire value chains and sectors).

Identify past and potential resilience-building measures

After developing a familiarity with resilience capacities and principles, use these frameworks to identify specific capacities that are present in the market system that you are assessing. To facilitate this task, Table 1 provides a matrix tool—the resilience capacity matrix—in which each cell is indexed against a resilience capacity and principle. You can use this matrix as a guide for identifying specific resilience capacities that are present in the target market system. Provide as much detail as possible about the specific capacity, including the level or value chain segment at which it is present. For example, data from the case of northeastern Nigeria suggests that the total output of farms that diversified into small ruminant production was more conflict-resilient than the output of farms that specialized in staple crop production, an example of diversification and adaptive capacity. As an alternative variation of the resilience matrix tool, USAID (2018b) demonstrates how one can index specific capacities against five types of capital that market systems draw on for resilience (financial, human, natural, physical, and social). Analyzing the Nigeria example in this way might reveal the importance of natural capital for building this specific resilience capacity, in addition to financial and human capital.

Next, use the resilience capacity matrix to propose specific capacities that may not already be present but could be developed in order to strengthen the resilience of the system. In the Nigeria example, brainstorming about how CAS thinking could contribute to value chain absorption capacity might lead one to identify scenario-planning and the use of contract contingencies as measures that can build the resilience of firms. Implementing these measures effectively might also require developing managerial capacity (an adaptation) and the business enabling environment (a transformation).

In Table 1, we provide examples of specific resilience capacities. These examples are illustrative. Also, you will probably encounter some ambiguity in using the resilience capacity matrix. For instance, distinctions between the different types of resilience capacities and

PHOTO: FINTRAC, INC.

principles are sometimes blurry, with considerable overlap between concepts. As an example, one could classify savings as both an absorptive and adaptive capacity. Additionally, multiple principles often underpin a specific resilience capacity. For example, diversification and participation are both operative in a firm's decision to diversify its suppliers. In sum, assessment teams should approach these categories and the resilience capacity matrix as a flexible tool that sheds light on specific resilience capacities.

Once assessment teams have identified specific resilience capacities, they can develop indicators that capture the degree to which a given market system—or scale within the market system—possesses that capacity. For example, most of the available MSR assessment tools propose measurement approaches that use a five-point Likert scale (see USAID, 2018b; Downing et al., 2018; and GOAL, 2017) for examples of these approaches. These indicators can be used to define the baseline level of resilience of a market system and to lay the foundation for ongoing resilience monitoring.

Data Sources

Various market assessments will again be useful for part four; however, assessment teams should be aware of the limitations that they may encounter in relying on secondary sources. Although the conventional market systems development paradigm is focused on capacity-building, it usually assumes a relatively stable environment. Therefore, many assessments may overlook some MSR capacities, especially those with potential trade-offs to development goals (such as competitiveness or efficiency). Similarly, pre-crisis or emergency market assessments may focus on the short-term functioning of market systems, with limited scope to methodically diagnose why market systems do or do not function through disturbance. Nonetheless, these assessments can reveal resilience responses that market systems employ in the face of disturbance (especially absorptive responses), while highlighting market disruptions that future MSR capacity building should address. To complete part four, it will likely be necessary to complement secondary sources with primary data collection, either through informant interviews or a participatory workshop.

TABLE 1: MATRIX FOR IDENTIFYING SPECIFIC RESILIENCE CAPACITIES AND ILLUSTRATIVE EXAMPLES

	Resilience Capacities		
Resilience Principles	ABSORPTION	ADAPTATION	TRANSFORMATION
REDUNDANCY & DIVERSITY	Available savings and credit Disaster insurance	Buffered of savings, inventory, etc. Extended lead times in production and deliveries Diversified product mix, supply, buyers, etc.	Increased market competition Shifts from thin to "thick" markets
CONNECTIVITY	Protective physical structures (e.g. robust factories and warehouses, quality packaging) Market integration	Investments in information flows Relocation to less risky areas	Developed infrastructure e.g., roads, electricity, telecommunications Strengthened market integration
SLOW VARIABLES & FEEDBACKS	Safety nets that reduce negative coping mechanisms	Natural resource management, e.g. sustainable soil and pastureland management, integrated pest management	Taxes and sanctions (subsidies and other incentives) that discourage (encourage) different behaviors Removal of undesirable feedback mechanisms, e.g., crime and violence as a livelihood option Directly influencing slow variables, e.g., technology, consumer preferences, the natural resource base
CAS THINKING & LEARNING	Outputs from scenario-planning Contract contingencies to provision for uncertain events	Developed managerial capacity Investments in information access and flows within a business, supply chain, or market Ability to pilot new products and techniques on a small scale	Developed education systems Public investments in research
PARTICIPATION & POLYCENTRICITY	Trade networks	Diverse staff Multiple modes of coordinating transactions, e.g., spot markets, contracts, joint ventures, etc. Multiple vertical and horizontal organizations, e.g., farmer cooperatives, industry associations	Laws broadening political and economic participation of individuals, e.g., improved labor laws Policy support for decentralized decision-making, e.g. decentralization, contract law, cooperative law

CASE STUDY #1: HURRICANE MATTHEW IN HAITI

In southern Haiti, the market disruptions and responses observed in the wake of Hurricane Matthew suggest that diversity—in suppliers, logistics, clientele, product mix, and income sources—plays a key role in building absorptive capacity to recover from such a shock. For example, within the CGI value chain, there existed alternative source markets (e.g., one local manufacturer, different export countries) and corresponding market channels for procuring CGI. Ward (2018) reports several other instances of diversification. Although trucks were the preferred means of transporting CGI, some businesses resorted to motorcycles, donkeys, and manpower when roads were unpassable. On the demand side, businesses were generally quicker than households to purchase CGI and rebuild, suggesting that CGI retailers that served both types of clientele were better off than those only serving households. Hardware stores also diversified their product and service offerings (e.g., to include toilets and ceramics) in response to increases in consumer purchasing power from voucher and cash assistance (Ibid.). Finally, some business owners reinvested revenues in new businesses following the storm.

Connectivity (e.g., through business networks, via roads) is another capacity that underlies many of the recovery responses noted above. Also, business connectivity to financial services—whether in the form of savings, remittances, bank credit, or supplier credit—was an essential element in recovery.

The recovery period allowed humanitarian actors to pilot adaptations and transformations that could strengthen the resilience of the CGI market system. For example, CRS demonstrated to businesses that better record-keeping can facilitate adaptive management and learning (Ward, 2018). Successful cash and voucher interventions demonstrated to government how an institutionalized safety-net system could provide absorptive capacity for market systems facing demand shocks. By tying vouchers to high-quality CGI and providing "building back safer" training to the population, CRS also stimulated demand for higher-quality construction materials and services.

Finally, the recovery process revealed other opportunities for the government to introduce transformations, including the adoption and enforcement of better building and zoning standards and a quicker response to clearing secondary routes.

BASED ON: MARTIN AND WALTERS (2016), UNLESS OTHERWISE CITED

CASE STUDY #2: CONFLICT IN NORTHEASTERN NIGERIA

Notwithstanding the net losses incurred by agricultural producers and markets as a result of conflict in northeastern Nigeria, certain economic resources and activities appear to have withstood conflict fairly well, suggesting the important role of diversification and other factors in such contexts. For example, when holding other factors constant, local conflict intensity did not reduce the allocation of household labor to farm activities (in contrast to the case of hired labor). Nor did it reduce the output of certain crops (e.g., tomato, oilseeds, potatoes, peanuts, or beans, millet, or maize) (Adelaja and George, 2019). However, conflict did negatively affect the output of major crops (cassava, rice, sorghum, and soya); possibly due to perceived risks that Boko Haram would steal or destroy such staple crops (Ibid.). Processors also reported diversifying their suppliers in order to mitigate the effect of border closures (Kimyeni et al., 2014). As a redundancy measure, some households who evacuated their land reportedly hired agents to remain and manage their fields.

As an example of managing connectivity, having fields closer to one's home and being located farther from main roads also mitigates the effects of conflict (Adelaja and George, 2019). Households reported that small ruminant production was resilient to conflict because of its low input and labor requirements, and because animals could remain within or near household compounds (Kimyeni et al., 2014). Backyard or "micro" gardening and aquaculture (versus fishing) may also be conflict-resilient production options, although these may be less feasible in densely-populated areas, and the input-intensiveness of aquaculture could be a vulnerability in the presence of thin input markets (OCHA, 2018; Kimyeni et al., 2014).

Not least of all, analysis of the root causes of conflict in northeastern Nigeria point to transformations that should improve the region's resilience. Such structural changes include greater public investment in agriculture alongside diversification of the national economy, and reforms that restore the responsiveness of, and public

trust in, government institutions (Howard et al., 2019).

CASE STUDY #3: GOVERNMENT MARKET INTERVENTION IN MALAWI

In the long term, Malawian producers, traders, and processors respond to government intervention (and associated price volatility) in maize markets by reallocating their productive resources away from this crop (Aragie et al., 2018). Farmers—smallholders and large farms alike—produce only enough maize to meet subsistence objectives, in order to reduce dependence on maize markets for either food or income (Edelman et al., 2016). Although these strategies represent market actors' attempts to adapt to disturbance, they have contributed to reduced growth and to a low-level equilibrium of chronic food insecurity (Aragie et al., 2018; Edelman et al., 2016).

In order to strengthen the resilience of maize markets and overall food security, adaptation and transformation appear to be necessary. Better management of fast and slow variables, adaptive management, and enhanced governance may be key elements. For example, better drought-forecasting can empower the Malawian government and farmers to forestall potential supply shortages (e.g., through response farming programs or the use of improved seeds) (World Bank, 2015). Government can improve the transparency of interventions while restoring trust among market actors, by creating an intra-industry consultative platform, clearly stating the conditions that would trigger an export ban and improving the data collection and information flows around maize production, prices, and trade (Edelman and Baulch, 2016b).

The National Resilience Strategy calls for an even broader transformation: the diversification of smallholders away from maize altogether, and into other profitable or more nutritious foods (GoM, 2018). Given the capacity of large and medium-size farms to invest in climate resilience and to produce large marketable surpluses, Edelman et al. (2016) argue that incentivizing larger enterprises to engage in commercial maize production is key to enhancing maize market supply, prices, and resilience. As an example of adaptive management, the government can experiment with policy measures that allow traders and large farmers to export while creating mechanisms for them to sell directly to government in periods of anticipated shortages (Ibid.).

IV. CONCLUSION

Validation of the proposed MSR assessment approach will require broad stakeholder feedback, including through the field-testing of the approach in different contexts.

Additionally, the guidance should be updated as experience and conceptual understanding of MSR evolves. In particular, there are several important and related tasks for the market systems development community. First, it is important to harmonize the conceptualization of what MSR means and to articulate how it is different from, but related to, other outcomes (such as competitiveness and inclusiveness) and other concepts and processes (such as strategy or managerial decision-making). Second, the Stockholm Resilience Center (n.d., p. 3) states that "the multitude of suggested factors that enhance resilience has led to a somewhat dispersed and fragmented understanding of what is critical for building resilience and how an understanding of these factors can be applied." This challenge is no less true for the particular area of market systems resilience. There is a need to harmonize language describing the factors that might contribute to MSR, and to deepen understanding of how, where, and when to apply these factors, and how the different factors interact and depend on one another (Ibid.).

In sum, there is a critical need for the market systems development community to collaboratively increase dialogue and learning related to market systems resilience. The goal of this guidance has been to help provide a foundation for this ongoing collaboration.

REFERENCES

Adelaja, A., & George, J. (2019). Effects of conflict on agriculture: Evidence from the Boko Haram insurgency. World Development, 117, 184–195. https://doi.org/10.1016/j.worlddev.2019.01.010

Albu, M. (2010). Emergency Market Mapping and Analysis Toolkit. Oxfam GB. https://www.emma-toolkit.org/

Ambrosino, C., Wellstein, J.M., Barua, B.K., Ullah, M.H. Introducing and Operationalizing the Market System Resilience Index. Resilience Measurement, Evidence, and Learning Conference. New Orleans, 12-15 November, 2018.

Aragie, E., Pauw, K., & Pernechele, V. (2018). Achieving food security and industrial development in Malawi: Are export restrictions the solution? World Development, 108, 1–15. https://doi.org/10.1016/j.worlddev.2018.03.020

Biggs, R.; Schlüter, M.; Schoon, M.L (2015). Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems. Cambridge University Press: Cambridge, UK.

Béné, C., Wood, R. G., Newsham, A., & Davies, M. (2012). Resilience: New Utopia or New Tyranny? Reflection about the Potentials and Limits of the Concept of Resilience in Relation to Vulnerability Reduction Programmes. IDS Working Papers, 2012(405), 1–61. https://doi.org/10.1111/j.2040-0209.2012.00405.x

Campbell, R. (2014). A Framework for Inclusive Market Systems Development. USAID. https://www.marketlinks.org/library/framework-inclusive-market-system-development

Edelman, B. (2016). Discretionary maize policy interventions in Malawi: An impact analysis of export bans and minimum farm gate prices (Vol. 16). International Food Policy Research Institute. http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/130493/filename/130704.pdf

Edelman, B., and Baulch, B. (2016). Are Malawi's maize and soya trade restrictions causing more harm than good? A summary of evidence and practical alternatives (No. 25). International Food Policy Research Institute. http://www.ifpri.org/publication/are-malawis-maize-and-soya-trade-restrictions-causing-more-harm-good-summary-evidence

Edelman, B., Mabiso, A., Nyirenda, Z., & Kazembe, C. (2016). Have market policies turned Malawi's large-scale farmers into subsistence maize producers? (No. 24). International Food Policy Research Institute. http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/130376/filename/130587.pdf

FEWS NET. (2015). Malawi Vulnerability Assessment Committee: Livelihood Baselines: National Overview Report, 2015. Washington, DC: FEWS NET. http://fews.net/sites/default/files/documents/reports/MW_Livelihood_Baseline_Profiles.pdf

FEWS NET. (2018a). Malawi Enhanced Market Analysis. Washington, DC: FEWS NET. http://fews.net/sites/default/files/documents/reports/Malawi_EMA_Report_20180915_submitted_508compliant.pdf

FEWS NET (2018b). Revised Livelihood Zone Map and Descriptions for Nigeria. Washington, DC: FEWS NET. http://fews.net/sites/default/files/documents/reports/Nigeria_LH_zoning_report.pdf

Giertz, Å., Caballero, J., Galperin, D., Makoka, D., Olson, J., & German, G. (2015). Malawi Agricultural Sector Risk Assessment. World Bank Group Report Number 99941-MW. https://openknowledge.worldbank.org/handle/10986/23678

GOAL (2019). Resilience for Social Systems: R4S Toolkit, User Guidance Manual. http://resiliencenexus.org/wp-content/uploads/2019/05/2019-R4S-ToolkitD01-1.pdf

Government of Malawi (GoM). (2018). National Resilience Strategy (2018 – 2030). Department of Disaster Management Affairs, Office of the Vice-President. Lilongwe.

Henly-Shepard, S. and Sagara, B. (2018). Resilience Measurement Practical Guidance Note Series: An Overview. Produced by Mercy Corps as part of the Resilience Evaluation, Analysis and Learning (REAL) Associate Award.

Howard, J.; Simmons, E.; Flowers, K. (2019). Risk and Resilience: Advancing Food and Nutrition Security in Nigeria through Feed the Future. Center for Strategic and International Studies.

Kimenyi, M., Adibe, J., Djiré, M., & Jirgi, A. J. (2014). The impact of conflict and political instability on agricultural investments in Mali and Nigeria. Africa Growth Initiative, Working Paper No. 17. Brookings Institute. https://www.africaportal.org/publications/the-impact-of-conflict-and-political-instability-on-agricultural-investments-in-mali-and-nigeria/

Levine, E., Vaughan, E., & Nicholson, D. (2017). Strategic Resilience Assessment Guidelines. Portland, OR: Mercy Corps. https://www.mercycorps.org/sites/default/files/STRESS-Guidelines-Resilience-Mercy-Corps-2017.pdf

Martin, William and Walters, Edward (2016). Relying on Markets for Shelter Response to Hurricane Matthew in Haiti: An Analysis of the Iron Sheeting Market in South and Grand'Anse Departments. Catholic Relief Services. https://www.emma-toolkit.org/report/relying-markets-shelter-response-hurricane-matthew-haiti

Mercy Corps (2017). Research Brief: Resilience and Conflict in Nigeria: Analysis of dynamics and programming leverage points. https://www.mercycorps.org/sites/default/files/Mercy-Corps-Nigeria-Resilience-Conflict-April-2017.pdf

Mercy Corps et al. (2017). Northeast Nigeria Joint Livelihood and Market Recovery Assessment.

OCHA (2018). Nigeria: Humanitarian Response Plan: Nigeria. U.N. Office for the Coordination of Humanitarian Affairs. January-December 2018. https://reliefweb.int/report/nigeria/nigeria-humanitarian-response-plan-january-december-2018

OECD (2018). States of Fragility, OECD Pubishing, Paris. http://www.oecd.org/dac/states-of-fragility-2018-9789264302075-en.htm

Pícon, D. (2018). Resilience Measurement Practical Guidance Note Series 5: Design and Planning for Resilience Monitoring and Evaluation at the Activity Level. Produced by Mercy Corps as part of the Resilience Evaluation, Analysis and Learning (REAL) Associate Award. https://www.fsnnetwork.org/resilience-measurement-practical-guidance-series-guidance-note-5-%E2%80%93-design-and-planning-resilience

Sagara, B. (2018). Resilience Measurement Practical Guidance Note Series 2: Measuring Shocks and Stresses. Produced by Mercy Corps as part of the Resilience Evaluation, Analysis and Learning (REAL) Associate Award. https://www.fsnnetwork.org/resilience-measurement-practical-guidance-series-guidance-note-2-%E2%80%93-measuring-shocks-and-stresses

Schroeder, Andrew. (2019, April). "Rethinking Disaster Preparedness in Southern Africa After Cyclone Ida." Retrieved from https://www.directrelief.org/2019/04/rethinking-disaster-preparedness-in-southern-africa-after-cyclone-idai/

Simmons, Emmy (2013). Harvesting Peace: Food Security, Conflict, and Cooperation (Environmental Change & Security Program report vol. 14, issue 3). Washington DC: Woodrow Wilson international Center for Scholars. https://www.wilsoncenter.org/sites/default/files/HarvestingPeace.pdf

Stockholm Resilience Center (n.d.). Applying Resilience Thinking: Seven principles for building resilience in social-ecological systems. https://www.stockholmresilience.org/research/research-news/2015-02-19-applying-resilience-thinking.html

Tendall, D. M., Joerin, J., Kopainsky, B., Edwards, P., Shreck, A., Le, Q. B., Kruetli, M., Grant, J., Six, J. (2015). Food system resilience: Defining the concept. Global Food Security, 6, 17–23. https://doi.org/10.1016/j.gfs.2015.08.001

Theriaux Benoni, Lori-Anne, Adam, Nadia. (2019, June). "Hard counter-terrorism lessons from the Sahel for West Africa's coastal states." Reliefweb. Retrieved from https://reliefweb.int/report/benin/hard-counter-terrorism-lessons-sahel-west-africa-s-coastal-states

U.S. Government (2016). U.S. Government Global Food Security Strategy FY 2017-2021. September 2016. https://www.usaid.gov/what-we-do/agriculture-and-food-security/us-government-global-food-security-strategy

USAID. (2016a). Food for Peace 2016-2025 Food Assistance and Food Security Strategy. https://www.usaid.gov/sites/default/files/documents/1867/FFP-Strategy-FINAL%2010.5.16.pdf

USAID (2016b). Technical Note: The 5Rs Framework in the Program Cycle. https://usaidlearninglab.org/library/5rs-framework-program-cycle

USAID (2017a). Global Food Security Strategy Technical Guidance Objective 2: Strengthened Resilience Among People and Systems. https://www.feedthefuture.gov/resource/global-food-security-strategy-guidance-on-resilience/

USAID (2017b). GFSS Technical Guidance Diversifying Livelihoods, Resilience, and Pathways. Out of Poverty. https://www.feedthefuture.gov/resource/global-food-security-strategy-technical-guidance-on-diversifying-livelihoods-resilience-and-pathways-out-of-poverty/

Van Den Hoek, J. (2017). Agricultural market activity and Boko Haram attacks in northeastern Nigeria. West African Papers, N°09, OECD Publishing, Paris. http://dx.doi.org/10.1787/13ba9f2e-en

Vaughan, E. and Henly-Shepard, S. (2018). Resilience Measurement Practical Guidance Note Series 1: Risk and Resilience Assessments. Produced by Mercy Corps as part of the Resilience Evaluation, Analysis and Learning (REAL) Associate Award. https://www.fsnnetwork.org/resilience-measurement-practical-guidance-series-guidance-note-1-%E2%80%93-risk-resilience-assessments

Ward, Sarah (2018). 'The Vendor Effect': Hurricane Matthew Response: A Cash Transfer Programming Learning Study. CRS Haiti. Catholic Relief Services. https://www.crs.org/our-work-overseas/research-publications/vendor-effect-hurricane-matthew-response-haiti

APPENDIX A: MARKET ASSESSMENT TOOLS

ASSESSMENT OF MARKET SYSTEMS FOR EMERGENCY CONTEXTS

Albu, M. (2010). Emergency Market Mapping and Analysis Toolkit. Oxfam GB.
https://www.emma-toolkit.org/

CRS (2015). MARKit: price monitoring, analysis, and response kit. A joint publication by the Local and Regional Procurement Alliance. https://www.crs.org/our-work-overseas/research-publications/markit

Lentz, Erin C. and Barrett, Christopher B. (2012) "Notes on the Market Information and Food Insecurity Response Analysis Framework." March. http://barrett.dyson.cornell.edu/MIFIRA/course/

ICRC (2014). Rapid Assessment for Markets: Guidelines for an initial emergency market assessment.
https://www.icrc.org/en/publication/4199-rapid-assessment-markets-guidelines-initial-emergency-market-assessment

ICRC (2014). Market analysis guidance. https://www.icrc.org/en/publication/4200-market-analysis-guidance

IRC (2016). Revised Pre-Crisis Market Analysis. https://www.emma-toolkit.org/what-pcma

ASSESSMENT OF MARKET SYSTEMS FOR DEVELOPMENT PROGRAMMING

The Springfield Centre (2015) The Operational Guide for the Making Markets Work for the Poor (M4P) Approach, 2nd edition funded by SDC & DFID. https://beamexchange.org/guidance/m4p-operational-guide/

Joss, S., Schaltenbrand, H., Schmidt, P. Clients First! A Rapid Market Appraisal Tool Kit. Experience and Learning in International Co-operation – Helvetas Publications, No. 3.
https://beamexchange.org/resources/192/

USAID (2017). Global Food Security Strategy Technical Guidance: Market Systems and Value Chain Programming. https://www.feedthefuture.gov/resource/global-food-security-strategy-guidance-on-market-systems-and-value-chains/

APPENDIX B: MARKET SYSTEMS RESILIENCE RESOURCES

Downing, J., Field, M., Ripley, M., and Sebstad, J. (2018). Market Systems Resilience: A Framework for Measurement. Produced by DAI for USAID.

USAID (2018a) Draft Research Plan: Testing the Market Systems Resilience Assessment Framework. Produced by DAI for USAID.

Developed by DAI under the USAID Africa Lead II program, this resource identifies several "structural" and "behavioral" characteristics of MSR. Based on these, it proposes a theory of change for strengthening MSR and a tool with indicators for measuring MSR. To date, it has been field-tested in the context of livestock market systems in northern Kenya.

GOAL (2019). Resilience for Social Systems: R4S Toolkit, User Guidance Manual. http://resiliencenexus.org/wp-content/uploads/2019/05/2019-R4S-ToolkitD01-1.pdf

Developed by GOAL, with close engagement with the Springfield Center, this resource provides guidance for analyzing the resilience of different socio-economic systems, including market systems. Implementing the full process is time-intensive, although the approach may be adaptable to the particular needs and resources in a given context. The resource includes multiple worksheets for collecting and analyzing data, and a tool for mapping a target socioeconomic system. Also, for each type of resilience capacity, the resource provides a list of suggested research questions and a scale for scoring capacity levels. In case target populations and systems have not yet been identified, R4S includes a method for making these decisions. To date, the R4S toolkit has been piloted for assessments of small scale fisheries and water governance, both in Latin America.

Ambrosino, C., Wellstein, J.M., Barua, B.K., Ullah, M.H. Introducing and Operationalizing the Market System Resilience Index. Resilience Measurement, Evidence, and Learning Conference. New Orleans, 12-15 November, 2018. https://s3.amazonaws.com/www.ideglobal.org/files/public/RMEL_Conference-R_MSRI_FINAL.pdf?mtime=20190610215110

Developed by iDE, the objective of this analytical framework is to provide a model for measuring MSR, based on nine proposed "determinants" (related to the structure, connectivity, of, and support of the market system), which can be used as a diagnostic, monitoring, or evaluation tool. The tool has been piloted to assess Bangladeshi market systems in the context of flooding.

Irwin, B. and Campbell, R (2015). Market Systems for Resilience. LEO Report #6. U.S. Agency for International Development. https://www.marketlinks.org/library/market-systems-resilience

This paper discusses the relationships between resilience and development among households and market systems and proposes a conceptual framework for strengthening household resilience through market systems.

USAID (2018b). An Introduction to Assessing Climate Resilience in Smallholder Supply Chains. Produced by the Feed the Future Learning Community for Supply Chain Resilience. https://sustainablefoodlab.org/5612-2/

This resource was developed by Root Capital, Sustainable Food Labs, and others from the USAID-funded FTF Learning Community for Supply Chain Resilience. It introduces climate change resilience themes to food and beverage companies working with smallholder farmers in their supply chains and provides a roadmap for applying these themes in analysis and monitoring, with the aim of encouraging company investments in climate smart agriculture. The unit of analysis is smallholder farmers facing climate change risks, although the approach is potentially adaptable to other actors in the supply chain. The resource provides suggestive indicators of resilience capacities for intermediaries in a supply chain, e.g. aggregators or processors. The resource was utilized in Uganda by Anheuser-Busch/Nile Brewery to develop a tool for working with their sorghum and barley suppliers, and elsewhere has been used as a reference for cocoa and coffee M&E activities.

Vroegindewey, R.; Hodbod, J. (2018) Resilience of Agricultural Value Chains in Developing Country Contexts: A Framework and Assessment Approach. *Sustainability*, 10(4). https://www.mdpi.com/2071-1050/10/4/916

This paper synthesizes a large literature from social-ecological systems, supply chain management, and value chains to identify seven categories of resilience capacities for agricultural value chains. It discusses several implementation issues— trade-offs, discerning the appropriate amount of resilience in a given context, and identifying where to build resilience within a chain—and outlines a process for assessing resilience in agricultural value chains or in a single market channel.

APPENDIX C: EXAMPLE OF MARKET SYSTEMS MAPPING: THE CORRUGATED GALVANIZED IRON MARKET SYSTEM IN POST-HURRICANE MATTHEW HAITI
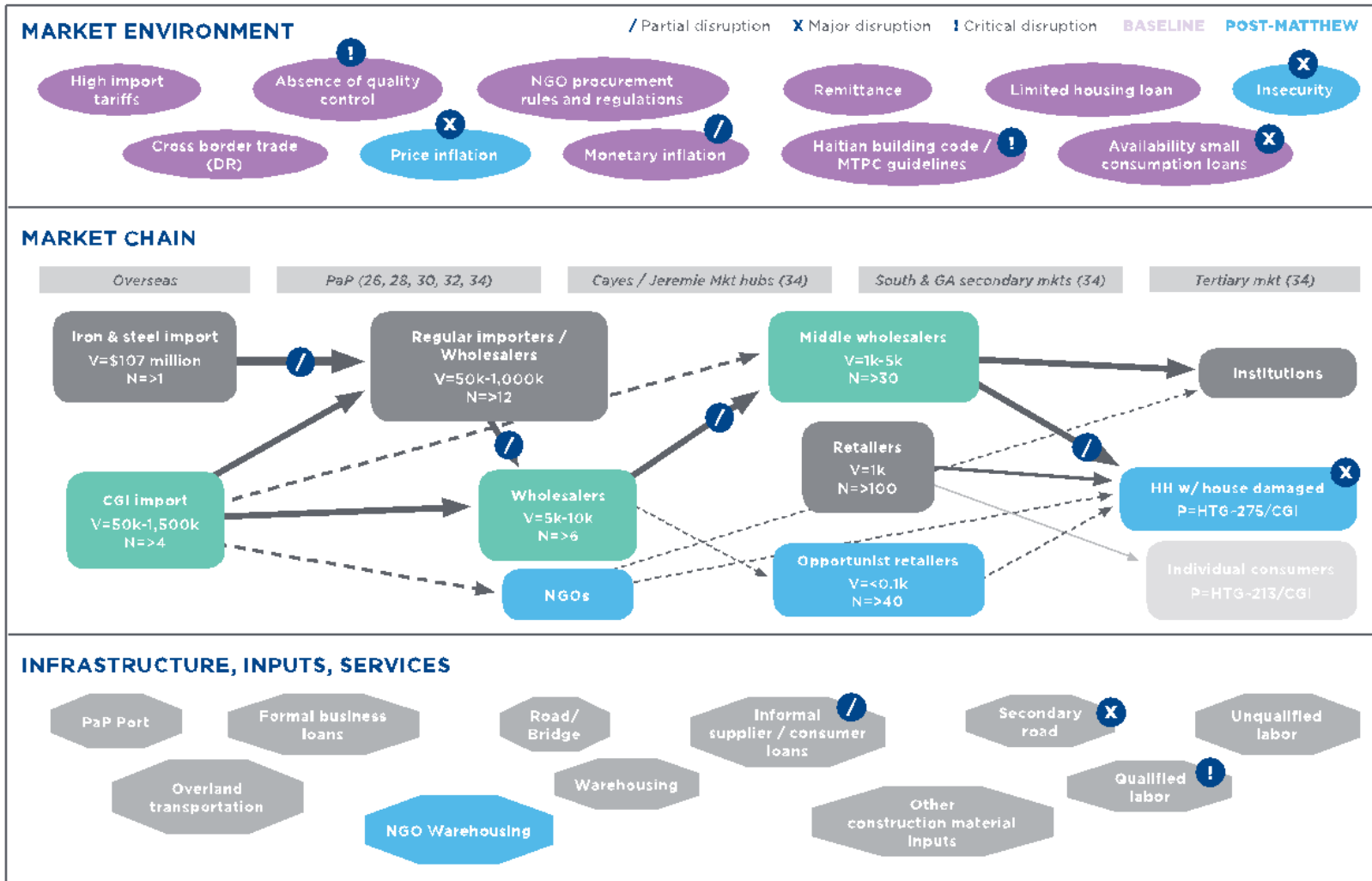
Source: Martin and Walters (2016)

APPENDIX D: SELECT SOURCES FOR HISTORICAL DATA ON DISTURBANCES

Agricultural Market Information System
http://www.amis-outlook.org/amis-about/en/

Armed Conflict Location and Event Data Project (ACLED)
https://www.acleddata.com/

Cash Learning Partnership (CaLP) Resources Library
http://www.cashlearning.org/resources/library

Demographic and Health Surveys (DHS)
https://dhsprogram.com/Who-We-Are/About-Us.cfm

Disease Outbreak News (DON), World Health Organization
https://www.who.int/csr/don/en/

Displacement Tracking Matrix (DTM), International Organization for Migration
https://www.globaldtm.info/global/partnerships/

Emergency Events Database (EM-DAT), Center for Research on the Epidemiology of Disasters
https://www.emdat.be/

Emergency Market Mapping and Analysis (EMMA) library
https://www.emma-toolkit.org/reports

Famine Early Warning Systems Network (FEWS NET)
http://fews.net/

Household Economic Analysis (HEA) baselines
https://www.heacod.org/en-gb/Pages/Home.aspx

Global Conflict Tracker, Council on Foreign Relations
https://www.cfr.org/interactive/global-conflict-tracker/?category=us

International Crime Victims Survey (ICVS), United Nations Interregional Crime and Justice Research Institute
http://www.unicri.it/services/library_documentation/publications/icvs/

MapAction
https://mapaction.org/

OCHA Country Humanitarian Appeals
https://www.unocha.org/where-we-work/ocha-presence

OCHA World Humanitarian Data and Trends (WHDT)
http://interactive.unocha.org/publication/datatrends2018/

Princeton Climate Analytics (PCA)
https://platform.princetonclimate.com/PCA_Platform/

The SEEP Network Resilience Markets Resource Library
https://seepnetwork.org/Resources-Markets-in-Crisis

Social Conflict Analysis Database (SCAD), University of Texas at Austin
https://www.strausscenter.org/scad.html

United Nations Surveys on Crime Trends and the Operations of Criminal Justice Systems (UN-CTS), United Nations Office in Drugs and Crime
https://www.unodc.org/unodc/en/data-and-analysis/United-Nations-Surveys-on-Crime-Trends-and-the-Operations-of-Criminal-Justice-Systems.html

Uppsala Conflict Data Program, Uppsala University
https://ucdp.uu.se/