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The U.S. Government's Global Hunger & Food Security Initiative

RESILIENCE OF MARKET SYSTEMS IN KENYA

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APPLICATION OF THE MSR FRAMEWORK

JUNE 2022



ACKNOWLEDGEMENTS

This study is made possible by the generous support of the American people under the Feed the Future initiative. The contents are the responsibility of the study authors and do not necessarily reflect the views of USAID, USDA, or the United States Government.

The Resilience Measurement of Market Systems (RMS-Kenya) activity is designed to test and align the USAID market systems resilience framework to better understand resilience in crop production, livestock, and dairy market systems and to develop practical guidance on how to apply USAID's Market Systems Resilience Framework to support the field from a global perspective. RMS-Kenya is funded through a Participating Agency Service Agreement between USAID/KEA and the U.S. Department of Agriculture, Foreign Agriculture Service, Office of Global Programs. It is implemented by the Vikāra Institute in collaboration with the Busara Center in Kenya.

Recommended citation: Resilience Measurement of Market Systems in Kenya: Application of the MSR Framework. Vikāra Institute. 2022.

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INTRODUCTION

Resilience Measurement of Market Systems in Kenya (RMS-Kenya) uses USAID's Market Systems Resilience (MSR) framework to identify and strengthen the capability of market systems to respond to shocks and stresses. Funded by the U.S. Department of Agriculture (USDA), Foreign Agricultural Service (FAS), with close collaboration with USAID/Kenya, this piece of research sought to support exploratory research to develop, field test, refine hypotheses, and draft indicators and tools for measuring critical factors that enable market systems to adapt and transform in the face of shocks and stresses. RMS-Kenya conducted field-based testing to understand how the crop and livestock markets respond to market system dynamics such as competition, connectivity and diversity, which impacts its ability to mitigate shocks and facilitate inclusive growth. Specific technical learning from this MSR assessment can be explored in depth in the accompanying Analysis and Key Finding Report. This report aims to put forth field-tested improvements to the MSR framework to provide practical program guidance on how to use the framework and related tools to assess MSR in the context of systemic change goals. The contents of this report are meant to provide guidance to future users of USAID'S MSR framework. In other words, the suggestions should not be treated as absolute recommendations given contextual differences.

This report is divided into three parts. It begins with a discussion of the steps and importance of building systems knowledge in the market system being assessed. This is followed by a discussion on the useful criteria for indicator selection. Finally, guidance is provided on iteration and data collection.

I. BUILDING SYSTEMS KNOWLEDGE

Gaining knowledge of the local market system is a crucial first step to building an understanding of the market system. Shocks and stressors can be understood as disruptions that originate from internal dynamics within the system and external events that impact the system. For example, electricity shortages may originate from systems external to the market system being understood, while farming households may experience price shocks that result from internal dynamics of the system. The first challenge to applying a systems lens to resilience is to understand the interactions between various issues and factors in the market system which are critical to then defining the state of resilience of the system through the domains and relevant indicators.

I.1 DESK RESEARCH

Desk research is useful in this initial phase of understanding the system. In an ideal world, desk research would be sufficient in this phase to learn about how a specific market system works. There are several reasons this was not the case. First, available information online for value chains or industries are mostly country-wide instead of county specific. (As outlined in the Analysis and Key Findings report, the RMS-Kenya team focused on analyzing two specific market systems within two specific counties in Kenya.) This makes it difficult to tease out the local realities of the market system from country wide specific dynamics. Second, studies that include value chain mappings and other stakeholder analyses, not only are sometimes out of date (>5 years), they tend to focus on market structures, but do not tend to go in as much depth into other structural characteristics of the system, for example the relationships between stakeholders, power dynamics, levels of diversity and redundancy, etc. Therefore, depending solely on secondary or online sources could lead to inaccurate judgements on domain dynamics and indicator selection.

The RMS-Kenya team found that in addition to market studies and value chain analysis, other sources of desk research were instructive to explore the underlying dynamics of the system, including:

- Academic research on relevant issues in the market system. For example, in Isiolo county, research on the history of pastoralism in Northern Kenya highlighted differences between regions.
- News clips on relevant issues like major shocks in the system, impact of shocks on market actors and governments' response to these shocks.
- Country reports and policy briefs.

Resilience is not the characteristic of a single issue or factor, but is a set of issues or factors interacting as a complex whole. Therefore, being methodological is important as practitioners start to wade through this complex causality. The approach taken by the RMS-Kenya team was to pull out themes through a qualitative 'coding' method as each source was gone through. Compiling a list of these themes through desk research is a first input to try to identify the multiple parts (issues or factors) and explore their interrelationships with other issues or factors in the system to assess how the system responds to different disruptions (shocks and stressors).

To have a more accurate assessment of the domains, better indicator selection and understanding of the relationships between market actors and the issues and factors in the system, the RMS-Kenya team found these formative steps useful during the context building phase. It was less useful than originally thought to approach the first set of data collection in a very "structured" way. It is likely to be premature to already include an actual measuring piece at the start of the resilience assessment. Rather, these formative steps are about building an understanding of the system and setting boundaries to the analysis.

I.2 USING NARRATIVE QUALITATIVE TECHNIQUES

Narrative interviews involved the researchers asking open-ended questions. For example, asking about experiences during a disruption and how the system responded can provide insight into the self-organizing processes within the system. The responses to the open-ended questions led to follow up questions and directed the interviewer on the topics to probe on. Compared to semi-structured interviews, the narrative approach allowed the respondent, i.e., the market actor, to narrate his/her experiences on a specific event without much interference from the interviewers until much later in the interview.¹ Using the narrative approach aids proper contextualization of domains and indicator selection.

I.3 ASSESSING THE STAKEHOLDERS TO INTERVIEW

Spending more time thinking about how to determine the market actors to interview is important. The key was to interview a mix of actors across the different levels of the market system who could provide perspectives reflecting the unique experiences of the stakeholders in the value chain. This is because different market actors experience disruptions in different ways, and the ways in which market actors cope with shocks can in turn exacerbate or create disruptions for other market players. Here are the profiles of stakeholders that interviewed as part of the process:

¹ Allen, M. (2017). The sage encyclopedia of communication research methods (Vols. 1-4). Thousand Oaks, CA: SAGE Publications, Inc doi: 10.4135/978148338141

Table 1: Stakeholders interviewed in both market systems

Stakeholder Profile	Mango Market System	Livestock Market System
County government officials		
Exporters		
Traders		
Agrovets		
Processors		
Input suppliers		
Service providers		
Development actors		

I.4 BUILD ON EXISTING STAKEHOLDER MAPPING EXERCISES

Rather than mapping the stakeholders from scratch, validating the pre-existing stakeholder structure and linkages, gathered through the desk review, during the narrative phase was more useful. It saved interview time and helped the researchers spend more time on exploring the relationships between the market actors and the power dynamics in these relationships. In the RMS-Kenya study, there was no predefined objective to the mapping exercise and, as such, it was useful to get to better contextualize and understand the mango and livestock market systems, as well as the respective power dynamics in these market systems, but wasn't specifically used for following stages.

I.5 DEVELOP A SET OF HYPOTHESES TO UNDERSTAND THE PATTERNS AND TENDENCIES IN A MARKET SYSTEM

The research team developed two levels of hypotheses. The first level focused on the definitions and assumptions of each domain as indicated in the framework to frame early thinking about domain tendencies in the market system before the narrative interviews. The second level of hypotheses was formulated after the narrative interviews took place. This provided a more nuanced and detailed perspective of the domain tendencies in the face of shocks and stresses. Internal workshops took place to discuss which of the hypotheses to prioritize for the research. Examples of the two levels of hypotheses developed are provided in the table below:

Table 2: Excerpts of developed hypotheses

Domain	Pre-stakeholder interview hypotheses	Post-stakeholder interview hypotheses
Connectivity	Markets in which it is perceived to be difficult to enter into trusted relationships, are less able to support market actors during or after a shock.	Despite being connected to processors outside of Makueni, mango farmers still mostly trust information from family networks, which leads to less investment in commercial upgrading or diversifying.
Power dynamics	Markets where power and wealth are more broadly shared are more inclusive and, therefore, better able to handle shocks and stresses than markets where power and wealth are concentrated.	Livestock traders are more likely to try to get the cheapest price by directly wielding power (i.e., going directly to herd unit and negotiating down) whereas camel milk traders are more interested in a mutually beneficial exchange. The latter approach, in turn, leads to a more inclusive growth in the market.

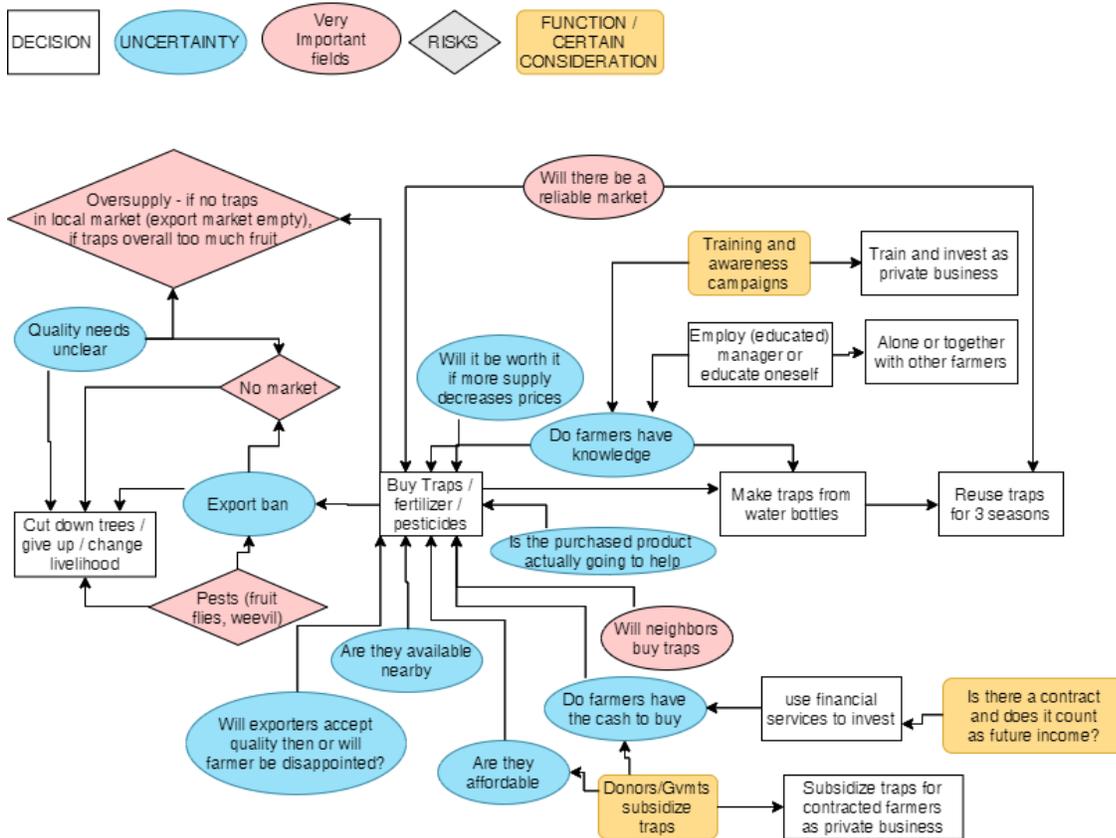
I.6 (IN)VALIDATE ASSUMPTIONS OR HYPOTHESES FROM THE FIRST ROUND OF INTERVIEWS IN FOLLOW-UP INTERVIEWS WITH STAKEHOLDERS

Based on the stakeholder interviews, the research team probed market actors on past shock events to understand, among others, the key risks and considerations around shocks and stresses. More specifically, the interviews focused on the following as a way to gain insights into a person's perception about his or her own acts and their consequences:

- Elicit market actors' beliefs about the system that surrounds them
- Understand risks, key decisions, and considerations around them
- Understand what market actors practically do to stay resilient
- Learn if the behavioral part in framework is reflected in how market actors perceive their role
- Learn how market actors see (or don't see) their options -- from risks on one side, to mitigation options on the other; what seems the most plausible matching to market actors?

An influence diagram was used to depict a representative common set of beliefs about a system. The influence diagram shows the decisions, risks, uncertainties and considerations a mango farmer faces in relation to purchasing fruit fly traps or not in the event of possible oversupply in the market.

Figure 1: Influence diagrams deep dive - mango fruit fly traps (excerpt from a farmer’s perspective)



3. UNDERSTANDING DOMAINS

Domains are the characteristics of market systems resilience. Domains refer to “how much” or “to what degree” the things that are happening in the system are characteristics of a resilient market system. Eight domains have been outlined in USAID’s Market Systems Resilience framework. For example, is an observation or pattern made in the system characteristic of a concentration of power, too little diversity, etc. The first step of identifying “what is happening,” particularly in the context of a disruption or shock, is therefore critical before once can go into the domains to evaluate resilience characteristics.

In this first phase, the RMS-Kenya team observed that certain domains were often linked to each other in market actor’s narration about what was happening in the market system. In other words, what was happening in the system would not only reflect multiple domains but there were clear interactions between domains that reinforced the happenings in another domain. This led the RMS-Kenya team to combine domains to assess the resilience in the system due to the specific context in Kenya. The decision was made to keep the

combinations of domains separate between the structural and behavioral domains. Ultimately, four pairs of domains were used. Below is an explanation of why these domains were combined:

<p>Connectivity and Diversity</p>	<p>The connectivity domain refers to the degree or number of connections between market actors in a market system. The diversity domain refers to the diversity and relative distribution of different parts of a market system. Connectivity and diversity domains were combined because of the tendency to come up together when market actors narrated their experience on the impact of shocks and how they responded. The combination implied that the team had to select from a joint set of indicators for both domains instead of selecting per domain. If the team was to consider the mango market system, from a Connectivity domain perspective, the team would expect that market actors with new and different types of connections would be able to withstand shocks better than market actors having only one type of business relation or being concentrated in a geographic area. This form of branched out connections would be possible in a scenario where the market system has various/diverse channels within the product range, business models. Thus, a Diverse market system would reinforce better connectivity among market actors.</p>
<p>Rule of Law and Power Dynamics</p>	<p>The domain of rule of law is defined as the level of fairness of formal and informal laws in the system. The domain of power dynamics focuses on the concentration of power in the market system. Market actors repeatedly noted that the level of fairness in the mango and livestock market systems was inextricably tied to the power concentration in the system. The research team observed that market actors did not have much faith in the system, to protect them in case of a conflict. The narrative interviews also pointed out very clearly that those with power within the system (brokers for example) were wielding their power to extract margins, and there wasn't a solid legislation that could protect the vulnerable party.</p>
<p>Cooperation and Competition</p>	<p>The cooperation domain refers to market actors collaborating to achieve a common focus. The competition domain focuses on how market actors compete with each other. Both cooperation and competition focus on the rationale for cooperating or competing in a market system. It is unlikely that one is found in the absence of the other. In Makueni, within the mango market system, the narrative interviews revealed that market actors see no value in cooperating to address the major pest problem. While this is part of a bigger challenge among communities, through speaking to stakeholders, the conclusion was reached that, in general, there is a very low level of competition among producers. Competition on the quality of the product is not very evident within the system. There is also a tendency to not wait for better prices and actually sell it to the highest offtaker at the local markets. This lack of competition seemed to be interlinked with a lack of cooperation within the market system.</p>
<p>Decision-making and Business strategy</p>	<p>The domain of decision-making in the MSR framework context is seated around the use of evidence to develop solutions. The domain of business strategy refers to the extent to which market actors proactively plan for anticipating shocks. In Isiolo,</p>

for example, preliminary interviews indicated that decisions around ‘camel herding’ are not based upon any revenue at all, but rather these decisions are made keeping in mind the value that a camel holds for social prestige. Thus the business strategy for pastoralists was not seen as rooted in delivering any customer value.

Within the RMS-Kenya context, combining domains to reduce them to four pairs was very useful and did not have any noticeable adverse effects. This way the team had to score all the indicators, consider all domains, without ending up with too many indicators. However, this method has benefits and cons that are worth noting for future users of the framework guide.

Pros of Combining Domains:

- It reduces the risk of arbitrarily disregarding certain domains, purely because they might have come up less in preliminary research, or are less of an expert’s interest.
- In the process of this study (RMS-Kenya), the team noticed in several instances that certain domains tend to appear “in the same breath”, and are quite difficult to differentiate when analyzing issues in the system, even if a differentiation makes sense in theory.
- Other projects (i.e. USAID’s Transforming Market Systems Activity in Honduras) have also noted that combining domains seemed sensible in their case.

Cons for Combining Domains:

- Teams are less able to “accurately” measure each of the domains, as instead we are looking at a more “composite” value. However, for practical reasons this is unlikely to be an issue, given that the type insights are more important than any form of “accuracy”.
- This approach does make indicator selection slightly more challenging, since teams cannot disregard a subset of the indicators before rating them (or before using some other form of selection process).

4. JUDGING RELEVANCE OF INDICATORS

Indicators are data points that provide an objective measure of a particular aspect of a domain. Indicators of system-level changes are at best proxies for the issue or characteristic we are interested in. Some types of system-level changes are difficult to quantify and more qualitative methods are preferred to indicators. For this reason, the RMS-Kenya researchers needed to be thoughtful in the selection of indicators and in how they interpreted the indicators. The scoring of domains at a later stage was meant to supplement these data points with qualitative information, as well as diverse perspectives to understand system resilience.

The MSR framework provides a set of indicators for each domain that practitioners can borrow from to assess a domain. (In some cases, researchers will need to supplement with their own indicators, based on the system context.) The framework then proposes scoring indicators across different metrics to make a decision on the subset of indicators that will be selected to measure a domain. These primary metrics are relevance and

feasibility.² For relevance, researchers ask if the indicators are material and meaningful to the characteristics of resilience being sought to better understand in the market system. Feasibility is assessed based on the ease of accessing the data given the resources available to the research team. Relevance and feasibility are often not the same. For example, secondary data may be more feasible to gather, but if that data is at a national-level it may not be as relevant for the system you are seeking to analyze if it is a regional system. Similarly, national datasets may be published several months or years prior to the period being evaluated (particularly if gathering primary data), so comparability is an issue.

For the RMS-Kenya study, the team applied a selection strategy called triage, which will be discussed extensively in the next section. Triage helps researchers to evaluate indicators that are highly relevant but may be less feasible to collect given the available resources. Data availability and access is itself often a systemic issue in the contexts development practitioners work in, so triage strategy is helpful to balance what is the best measure with what can reasonably be collected.

Building context is important to understand an indicator's relevance in a market system. Researchers need to identify what specific issues or factors are being measured and how they relate to characteristics of resilience to then identify valid and feasible indicators to measure them. As explained earlier, secondary data sources mostly provide information on a country level which makes it difficult to assess county specific dynamics. RMS-Kenya found these steps useful in judging the relevance of indicators provided no prior research had been conducted to assess resilience capacity in the system.

- Have a scoring rubric that is well defined and allows the researchers to objectively assess relevance given contextual knowledge.
- Have a small number (<5) of narrative interviews during the preparation and indicator selection phase to identify the specific issues or factors to measure. This addresses the need for a "truly emergent process" and is also necessary as the RMS-Kenya team saw desk research alone is not enough to contextualize issues relevant to the multiple domains of resilience.
- Analyze the interviews to decide on the indicators to proceed with and the factors influencing the dominance of some over others.
- Organize co-design or reflection workshops with market system stakeholders outside the research team in the market to (in)validate the selected indicators across each domain.

Each step is important and useful to improve the validity and objectivity of the indicators. Conducting desk research or the inclusion of local stakeholders in the process should not substitute for any of the steps listed. Together, these steps improve the validity and objectivity of the process. It is good practice to decide on an advisory group before embarking on the process. An advisory team can consist of 2-3 market systems experts and local market actors with good context on the workings of the market system.

The RMS-Kenya study did not attempt to score domains, because the assessment was for a single time period and scoring in one time period without a benchmark is subjective. The MSR framework suggests scoring domains only when the assessment is repeated twice to measure changes in the system on a reactive to proactive scale.

² Market Systems Resilience Application: A Framework for Measurement

3. INDICATOR SELECTION

The indicator selection process is an important aspect of any resilience assessment. The data points that will be measured are decided at this stage.

Here are take-aways that RMS-Kenya observed that should be considered:

- Take time, through team workshops and discussions, to identify the issues or factors that are most relevant to how the system responds to shocks and stressors. This preliminary step comes from the contextual phase and helps ensure the validity of the things that will be measured using the resilience framework.
- Depending on the context being assessed, consider which domains are most relevant to describe the characteristics of the systems response - does it lead to concentration of power, distribution of risk through diversity of features, etc. This then narrows to the set of characteristics to focus on.
- Next, select indicators which are most relevant and feasible to measure for each domain that has been chosen - guidance on how to do this selection process is explained below.
- Next, gather different feedback and perspectives to those indicators - are these the right indicators that will help us assess and monitor characteristics of resilience in the system. This feedback could be gathered from the advisory team, as well as from others familiar with the context. RMS-Kenya, specifically, received input from USAID Mission staff who were very familiar with the mango and livestock market systems in Makueni and Isiolo, respectively.

The RMS-Kenya study found the following steps to be useful during the indicator selection stage.

3.1 ENGAGE MULTIPLE RESEARCHERS

To ensure objectivity, it is good practice to have multiple researchers involved in the indicator selection process. The researchers will independently score the set of indicators based on the criteria suggested in the MSR framework (i.e relevance and feasibility). Additional criteria can be included based on the study's needs. (RMS-Kenya included triage and an influence matrix in the selection process.) These additional criteria are discussed in detail in the scoring matrix sub-section.

3.2 SET UP AN ADVISORY TEAM

The indicator selection process is an opportunity to include local stakeholders in the practical aspect of the process. Beyond the core research team, it is also helpful to engage an advisory team at the beginning of the process. The advisory team would ideally be a combination of market system and local value chain experts. Generally, their role should include some or all of the following:

- Recommend additional indicators beyond the menu of indicators provided in the MSR framework.
- (In)validate the shortlisted indicators.
- Provide guidance on contextualizing the final set of indicators.
- Support the contextualization of the instrument or questionnaire used for data collection.

3.3 ASSESSING RELEVANCE

For relevance, RMS-Kenya wanted to check how important an indicator is in understanding how the market works in response to disruptions, and if it can help capture patterns in a domain, e.g., if a domain tilts towards a reactive or proactive market system. The RMS-Kenya study assessed the relevance of an indicator based on the level of applicability in the market system. i.e., how applicable is an indicator in a market system? Applicability evaluates if the data point can be collected given the current development of the market system.

Some questions to consider in deciding the applicability of a framework are:

- Is there information available in the market system or region for the indicator? For example, enterprises that have digital customer relationship management (CRM) systems may have information on customer churn, but pastoralists may have to recall this information.
- Is the indicator tied to a policy initiative or development effort? If there are public or private plans to improve the state of the indicator then the indicator would be considered important to gather for monitoring and evaluation.
- Does a change in the indicator lead to change in how the market system responds to disruptions? This is the ultimate measure of relevance and is why picking indicators that are measuring key factors or issues is very important.

3.4 ASSESSING FEASIBILITY

Another criteria to consider when scoring indicators is feasibility. Data availability and data accessibility are two different things. Sometimes, secondary datasets sit within institutions that are only willing to share this data at a certain level of disaggregation, or that level of disaggregation may not be available at all. The RMS-Kenya study assessed feasibility based on the ease of accessing data given the available resources. Indicators that require secondary data sources are considered more feasible, while indicators that require large field data collection require more resources and are considered less feasible.

For feasibility, either check if there are studies in the target area already, or check if people have collected data on the indicator in other studies or other areas through surveying or interviewing.

3.5 CONSIDERING TRIAGE

Triage simply considers indicators that are highly relevant, but are less feasible to collect given the resources available or other logistical constraints. Awarding points to these indicators helps to ensure no relevant variables are being missed simply because of logistics constraints. Adding this criterion provides more balance to the selected indicators.

4. REFLECTION WORKSHOPS

RMS-Kenya conducted a reflection workshop mid-research with USAID and other development practitioners with extensive MSR experience. The overall objective of the process and results workshops was to take into consideration the collective experience of all workshop participants, and use learnings in a second phase of the research. The reflection workshop is useful to:

- Test how results can be shared meaningfully with relevant stakeholders
- Triangulate results and learn whether other studies have had similar experiences/results
- Bring considerations to our attention that we haven't thought about earlier

The RMS-Kenya study was divided into multiple research phases. Hence, the team could have a reflection workshop to plan for the next phase. A reflection workshop with the researchers and advisory team after the indicator scoring phase would be useful in ensuring the indicators are well contextualized.

5. BEST PRACTICES FOR DATA COLLECTION

5.1 ITERATIONS

Since resilience is subjective, it is important to capture information from each market actor category around their perception of resilience, very early on. Whether a resilience assessment is being done to identify general pain points or being done to assess the resilience related to a particular shock, it is crucial that an early stage of data collection be focused solely upon understanding the interpretations of resilience by various market actors. This interpretation is understood by specifically asking survey or interview respondents to describe their biggest shocks, followed by what type of capacity they would have wished to have in order to reduce the effects of the shock. This is key to understanding and choosing the best indicator to capture, in more detail for each market actor, at a later stage of the data collection.

5.2 INDICATORS OF RESILIENCE

Whether the study is meant for the impact of a specific intervention on resilience or is a general study to understand the emerging areas of learning around resilience, the next step is to define which indicators would be appropriate to capture the resilience capacity of a given market actor.³

Certain indicators are best captured quantitatively. Preferences on a likert scale, for example, or understanding churn rates, or turnovers are types of indicators that are appropriate for a quantitative survey. In order to deep dive into the nuances of these quantitative responses, it is important to have accompanying qualitative questions in the same survey, administered to the same respondent. For example, given a scenario, how likely is it that a market actor would deviate a contract can be captured on a scale. But to be able to see the emerging themes around contract deviation, it is necessary to also administer questions around values and importance placed in contracts, the ability and knowledge to navigate a contract.

³ Resilience capacities are of three types: Absorptive / Adaptive / Transformative (The Future is a Choice, H Jeans for The Oxfam Framework for Resilient Development)

Another angle that can be considered is to capture qualitative information from a given market system's experts, government officials working in related departments or ministries, and private welfare organizations in the sector. And then supplement the thematic areas emerging out of these narrative focused interviews, by administering quantitative surveys to actual market actors, producers, traders, processors and so on. This mixed methods approach provides a broader spectrum of ways to better understand complex research problems in different contexts than could be done through either quantitative or qualitative approaches alone.

5.3 BUILDING CAUSAL PROPOSITIONS

When specifically looking to test the direct impact of an intervention on resilience capacities, it is useful to have already built certain causal propositions. They can be called 'hypotheses'. The hypothesis is a measurement by means of a 'predictor variable'.

5.4 INSTRUMENTS

The hypothesis based on having understood the patterns and tendencies in the market system, make for a very good starting point, in developing survey questions. Additionally, vignettes and stories are helpful in eliciting responses to a common shock, and understanding the main concerns for each market actor around a specific shock. Examples of questions that are useful in capturing basic indicators around combined domains, in the Annex of this report.

5.5 SAMPLE SELECTION AND SURVEYS

Selecting which market actors to interview is a key point of consideration when understanding resilience capacities. First, market actors depending on their size and role in the value chain have different resilience capacities to manage stresses, e.g., a farmer or pastoralist's capacity to manage shocks or stresses differ from a processor's capacity. In addition, due to the difference in resilience capacities, it is possible that market actors within groups perceive the workings of the market systems differently, e.g., small vs large market actors. To address this potential bias, an important aspect is to ensure that the sampling strategy is inclusive, i.e., it captures the different types of market actors within the value chains. Some of the suggested strategies to ensure sampling is inclusive in selection and in analysis are:

- Use proportional sampling weighted by role in the value chain - more sampling weight to be given to strata of smaller market actors since they naturally make up a larger proportion of actors in the market.
- Tailor the survey for different market actors - based on the perceived interactions of the market actors in the system, it may be more valuable to elicit information concerning an indicator from specific market actors. This is also where a mixed methods approach can be considered to be useful. Some market actors only know local, ground level information. For a holistic picture, a mix of government, private, NGO market actors as well as value chain experts can put you at a learning advantage.
- Ensure consistency in definitions of concepts presented to market actors due to the tendency for market actors to interpret information differently.
- Conduct sub-group analysis to understand the different and overarching themes across market actors.

6. PROCESS WHEN APPLYING THE FRAMEWORK FOR MEASURING RESILIENCE CAPACITY

For future programs, the below process could be useful to follow when applying the framework for measuring resilience capacity:

Stage 1: Bound the system to clearly define and understand the system that will be studied. The input of an expert familiar with the context is useful to engage.

Stage 2: Undertake desk research to see what has already been written or published on the topic in the system. This research will highlight insights from experts within the topic area.

Stage 3: Conduct narrative interviews to hear what stakeholders have to say and identify stories about resilience.

Stage 4: Develop hypotheses or factor coding and identification by the MSR research team (bringing in others with MSR experience as needed) to define relevant issues and develop a draft causal structure.

Stage 5: Hold a reflection workshop on the issues and factors with the advisory team and other topic experts, as needed. This is the first point of iteration.

Stage 6: Identify domains most relevant and draft indicators.

Stage 7: Gather feedback from others (an advisory team or other MSR experts) to vote and score those indicators.

Stage 8: Research team to finalize survey instruments and run the analysis.

Stage 9: Data combined with causal structure and story to see what is learned from the analysis.

Stage 10: MSR and content area experts (and other key stakeholders) review and ask questions to make sense of the findings.

Stage 11: If relevant, score by domain.

ANNEX I: EXAMPLES OF QUESTIONS FOR INDICATOR MEASUREMENT

A. Diversity in the market

Diversity of type of products, services and channel in the value chain

Please describe the level of diversity in the market for said product?

Probe: What are the main products in the market? What types of similar products are traded? What processed products?

Probe: How do producers distribute their products to the consumers? Are there multiple channels to distribute products within and across the region?

Probe: In terms of services offered to the producers, how diverse are services like inputs service? Are there numerous options available for producers to access these services ?

Probe: Can you describe the distribution channel for inputs in the market

Probe: Can you provide an example of a time within the last 12 months where you or other market actors took a risk to grow your business?

Probe: Can you mention some services that insure you or other business owners within the value chain from risk-taking?

How do you think the diversity of the market (the type of products, people, channels of distribution) affects the resilience capacity of the [product] market in [region] as a whole?

B. Rule of Law and Power Dynamics

1. Market structure: Please describe the level of competition in the market for livestock products

01. Probe: Who are the main actors in the market, from local producers to other linkages outside the region? e.g brokers, transporters, aggregators?
02. Who are the main non-business actors, such as government, international donors, community leaders or groups? What is the level of market influence of each of these non-business actors?
03. Which market activities will you describe as competitive, which would you describe as monopolistic?
04. How frequently do new businesses enter the market? How are new entrants balanced between men and women? What about youth and non-youth?

2. . Level of pricing control: How much pricing control does the government exert in the market

1. In the last 2 years, has the government enacted any pricing policy e.g a price floor in the market for livestock?
2. How does the government affect the pricing in the market?

3. Number of donor organizations: How many donor organizations operate in the market and what power do they have in the market

01. Please describe how donor organizations influence/are involved with livestock markets in Isiolo?
02. What role do donor organizations play in the market?
03. Do you think it's important for donor organizations to be involved (if so, how and to what degree)? How could their influence be improved?

4. What is your take on how power is used or exercised between these actors in the market and how do you think that affects resilience capacity in the market?

5. What of the way rules are enforced in the market In terms of pricing, standards, and settling of disputes? Does this have any effect on the capacity to be resilient?

C. Cooperation and competition

What's the degree of cooperation among market actors in Isiolo and what's the level of competition

1. **Co investment in alliances:** In the past 2 years, have you co-invested in an initiative with another actor in the market for your mutual benefits?
 - a) If yes, can you describe this co-investment?
 - b) Have you participated in a joint effort with another market actor to respond to a shock or stress that hit the market? Can you describe this effort?
2. **Level of perceived collusion:** How common is it for market actors to come together to gain some unfair advantage in the market?
 - a. How does it work when individuals/groups/businesses in the product market agree to use the same prices?
 - i. How are those agreements formed?
 - ii. Which players in the market are more likely to come together to form these agreements? (same age, ethnicity, region,gender, age, business interest)
 - iii. Do producers/brokers resist in any way?
 - iv. What factors enable people to stick to their arrangements?
 - v. What factors prevent those people from sticking to their price-setting arrangements?
 - b. Are there policies or rules in place to prevent collusion from market actors?
 - c. What effect do you think collusion has on the resilience capacity of the market?
 - d. How does the current state of cooperation in the market affect resilience capacity? Cooperation in terms of how market actors vertically or horizontally cooperate with each other?

ANNEX II: PROCESS DOCUMENTATION

This section outlines the detailed plan for the research study to test the Market Systems Resilience Assessment (MSR) framework. The process of testing the framework was focused on specific value chains.

We first outlined our research objectives at inception, adaptations to the objectives, and our new objectives. We also outlined our learnings from trying to understand the theoretical assumptions in the Market Systems Resilience framework in Phase 1. We provided a summary of the methods we adopted and our reasoning behind them.

For this study, we focused on the horticulture (mango) plus dairy and livestock (cattle and camel) value chains in Makueni and Isiolo county respectively in Kenya. To test the framework we 1) applied the framework on a small scale, i.e., collected and analyzed data and 2) evaluated the process of applying it. The results, as well as the evaluated process, contributed to the evidence base that informed resilience program design, implementation and evaluation. This process cut across three phases: a preparation phase, a ground-truthing phase and a testing phase. The study did not reliably measure the current state of resilience in Kenya or the selected value chains: rather it applied the framework only to the degree required for gaining learnings on its functionality and usefulness.

This study was conducted using a combination of qualitative and quantitative surveys informed by a stakeholder mapping exercise and co-creation workshop with stakeholders, as well as in-built iterative reflection and adaptation processes. It is important to note that we did not adapt the foundation of the framework but only using adaptive processes to ensure the framework fitted the cultural context or market realities, as already suggested in the framework. Both qualitative and quantitative methods were used in the two research phases with key stakeholders in the system.

The research took place in 3 phases: a preparation phase (phase 1), a phase II ground-truthing exercise, and a phase III testing exercise.

For phase 1, we initially envisaged to jump into indicator selection, with a round of qualitative and quantitative research. Soon after starting, however, we realized that it would be difficult to contextualize hypotheses, indicators, and assumptions without first speaking to stakeholders. Moreover, judging the relevance of specific indicators seemed practically impossible.

We therefore chose to restructure the plan and prolong the initial “open discovery” to include not only secondary data research, but also a small round of narrative interviews.

Phase I (Preparation)

The objective of this phase was to:

- Identify the various categories of stakeholders, their roles in keeping the market functioning and identifying recent resilient programmes in the specific regions.
- Select indicators that seemed most useful from the researchers' perspectives as a first step to be validated in Phase I.

During the preparation phase, we also undertook a light literature review to extract existing information on key stakeholders as well as recurring patterns (narratives, stories) in each selected value chain (i.e. a "mapping"). We then built hypotheses, and defined preliminary indicators and domains to be used in the research. All of these were on the framework as well as a few narrative interviews, in order to find emergent indicators as well as learn about the context in more depth.

Phase 0 provided the basis for drafting three levels of hypotheses - the first level of hypotheses was based on a set of research questions that sought to understand the best approaches to apply the framework and if it captured the critical characteristics for understanding market system resilience. The second level focused on the existing assumptions and domains in the framework, and used definitions to frame early thinking about domain tendencies. A third level of hypotheses provided a more nuanced, detailed perspective of the value chains that were being studied. The third level of hypothesis were built based on the preliminary insights of the narrative interviews in Phase 0.

Building on these chosen domains and indicators, we aimed to prepare interview guides for Phase II. This choice was reviewed both together with stakeholders in phase II qualitative data collection, as well as in the midpoint workshop.

Phase II (Ground Truthing)

Our objectives in this phase were :

- Ground truth chosen domains and indicators as well as the stakeholder map
- Pilot and test the qualitative instruments that will be used to collect data
- Learn whether we were reaching and talking to the right stakeholders

The focus of Phase II revolved around:

- 1) how contextualizing actually works and can be done without too much "guess-work"
- 2) how to select and sample the best stakeholders to speak to
- 3) open mental model interviewing with the objective of creating influence diagrams
- 4) direct and indirect questioning of the theoretical assumptions using contextualized hypotheses

In phase II, we conducted qualitative research to understand which of the domains and indicators in their current state can and should be measured in the context of the value chains within Kenya, as well as which stakeholders were the most relevant to speak to. We piloted our questions, evaluated their suitability, and discussed indicators and domains in consideration of the cultural context. This phase included an element of ground truthing results from the preparation phase (choice of indicators and stakeholder mapping), and a discussion of the process of choosing and reaching out to stakeholders. It focused less on measuring the indicators themselves

In response to these aims, the interview guide for the qualitative research consisted of three parts:

- Open questions (focused on decisions and mental models and general resilience)
- Stories, Vignettes & Assumptions (to elicit longer, pattern focused answers)
- Process reflection questions (to learn more about the application process)

Mid Point workshop and reflections

After phase II data analysis, the Vikāra Institute and Busara hosted two workshops, with practitioners from various contexts that were selected based on their experience with either supporting the creation of the MSR framework, or attempting to apply this or other MSR frameworks in their specific context. In an open sharing space, the group discussed emerging insights and brainstormed what might be most important to look at and consider during the next phase of research.

In terms of qualitative methods, the MSR framework puts forward several ideas for both methods and items. Workshop participants state that it is necessary to use the suggested measures and methods to some extent, in order to test and learn more about it. Moreover, some of the creators note that the items and methods in the framework were suggested as a starting point based on theoretical assumptions, and would ideally be tried out and built upon.

What seems most useful in guiding FGDs, based on prior experience among the workshop participants, are vignettes that are real-life events; that is prompts should not just be based on something real, but potentially even show snippets from actual newspaper articles, to elicit stronger feedback that is based on memory rather than hypotheticals. Moreover, the FGDs could aid in supplementing existing stakeholder mappings with smaller stakeholders and groups as well as relationship information.

The most crucial learnings from the discussion around quantitative methods revolved around indicator measurement and question framing. Given the numerous indicators at our disposal, it was considered most useful to determine which measures matter and focus on those measures i.e identify the indicators that have a lot of influence on other factors within the system and drop those that have little influence on other factors in the system. Even then, the number of items needed to measure indicators may be too great, which is why it is helpful to identify what indicators are most relevant to different types of market actors and frame questions accordingly. Furthermore, due to the complexity of the issue, when framing questions it is key to ensure simple and consistent definitions of concepts for all market actors.

The workshops were very useful for:

- Testing how results can be shared meaningfully
- Triangulating results and learning whether other studies have had similar experiences/results
- Bringing considerations to our attention that we haven't thought about earlier

In addition to the research team, participants included practitioners from various contexts and were selected based on their experience with either supporting the creation of the MSR framework, or attempting to apply this or other MSR frameworks in their specific context.

The workshop discussions provide important baseline considerations for designing the next research phase of this project. They raised relevant concerns, such as being conscious about vulnerable populations, weighting in sampling, and how to best triangulate between qualitative and quantitative methods. They provided guidance in terms of which methods had already been tried (MICMAC, participatory validation workshops, theory-of-change-based questionnaires, etc.) and helped frame our discussion from a more informed perspective.

Phase III

In the third phase of research, we hoped to achieve two core objectives 1) to test the application guide 2) test the theoretical framework, albeit indirectly. Our primary objective was to test the application guide by applying the steps outlined in the guidance document - from indicator selection to domain scoring - and make pivots as considered necessary. However, the research did not reach the domain scoring phase because the assessment was for a single time period and scoring in one time period without a benchmark is subjective. The MSR framework suggests scoring domains only when the assessment is repeated twice to measure changes in the system on a reactive to proactive scale.

To test the assumptions within the framework, we leveraged the data we collected during application. This was, among others, done by looking at correlations between indicators and intermediary outcomes of resilience capacity within the domains. For example, for competition, we looked at the indicator [perceptions of being cheated], and the intermediary outcome [innovations to add value to products in the past 6 months]. We also considered exploring correlations between indicators across domains to learn about the theoretical assumptions in the framework. The main difference between the activity in this phase and the prior phase was that we were gauging these relationships indirectly by measuring indicators and behaviors, while we had previously explored these relationships by directly asking market actors about contextualized, theory-based assumptions (hypotheses).

We started phase III with another round of secondary data research. This round of secondary research allowed us to :

- 1) Address knowledge gaps that had become apparent during phase 1 and triangulate intermediate findings

- 2) Test the framework by letting us know more about how the value chains function during fragile events and how shocks pass through them. That way we knew more about what questions to ask in i.e. Focus Group Discussions (FGDs).
- 3) Follow the application guide better by selecting relevant indicators and turning these into actual questions and selecting optimal participants for the quantitative study
- 4) Measure a list of indicators that were found in secondary data sources, as suggested by the framework document
- 5) Find further organizations that were relevant for sourcing respondents

Refinement of domain and indicator selection

In the next step, we revisited the domain and indicator selection. This involved a decision-making exercise on whether or not we should use all the domains as stated in the framework, whether some domains should be combined e.g rule of law and power dynamics, and whether it was worth dropping any. This was using secondary research and extensive review of the findings from the last phase. For indicator selection, we held an internal workshop to shortlist the indicators that matter i.e identify the indicators that have a lot of influence on other factors in the system and drop those that have little influence on other factors in the system. We also used influence diagrams from previous phases to identify the most important variables through a workshop before shortlisting with experts or key stakeholders in the respective value chains. We also identified which indicators were most relevant to different types of market actors and tried to frame questions accordingly.

Empirical strategy

When creating research tools for this second phase, particular emphasis was placed on how qualitative guides could complement the quantitative survey. Ideally, qualitative questions aimed to provide additional context and nuance to questions asked in the quantitative survey, and the quantitative survey questions the population prevalence of comments heard in qualitative research. This approach established a more holistic understanding and prevented misinterpretation of quantitative responses without comments.

Due to practical reasons, such as the number and preferences of various stakeholders, higher-level stakeholders (experts, public officials, exporters, larger processors, etc.) were included in qualitative research, and lower-level stakeholders (producers, brokers, small processors etc) in quantitative approaches. Other reasons for this choice included sample size and contamination concerns (i.e. noisy quantitative data due to a large variety of stakeholder groups). Both approaches included elements of indicator measurement, past pattern elicitation, and behavioral/relational questioning.

Analysis of Phase II Data

We started with identifying the recurring narratives in the focus group discussions and what each market actor had to contribute to the narrative. It is here in the qualitative data that we identified the preliminary focus

areas which have now formed the main components of the Key Areas of Consideration under both value chains. Since this was a mixed methods approach, we then commenced with analyzing the quantitative data in a way that was in line with the emerging themes.

We deliberated on the best ways to present the interplay of domains along with the thematic areas. A primarily domain approach turned out to be quite repetitive. Most of our recurring narratives were nestled across more than 3-4 domains, both behavioral and structural. And thus, in order for the results of the research study to be relevant to a diverse audience simultaneously, we have presented the technical component of domain takeaways as well as the more ground-based analysis via the thematic area examples.

ANNEX III :THREE LEVELS OF HYPOTHESIS

For the purpose of this study, we developed three levels of hypotheses, each attempting to get us closer to reality. By starting from a very broad level of what we set out to learn, we can ensure that the final, granular hypotheses will still help us understand what we need to know to make the high-level judgment calls that are the goal of this study.

The first level of hypotheses was based on a set of research questions around effectively applying the framework to measure trends in the context specific reality of how a given market system manages risk. The second level focused on the existing assumptions and domains in the framework, and used provided definitions to frame early thinking about domain tendencies already before the first round of narrative interviews. Once we finalized early interviews, and selected a mix of indicators to examine in detail, a third level of hypotheses provided a more nuanced, detailed perspective of the value chains that are being studied.

First Level	
<ul style="list-style-type: none"> • The domains provide a sufficient framing of the key concerns of market systems resilience. • Results from applying the framework are useful and meaningful to programming stakeholders/development partners for actionable decision-making and planning. • After applying the framework, it will be possible to make a confident judgment of where the domains lay along the reactive-proactive spectrum. • Scoring domains along the reactive-proactive spectrum is helpful to inform future programming efforts on priorities and challenges. • The reactive-proactive spectrum is a useful tool and reflects/corresponds to different ways in which society and specific market systems manage risk especially in the contexts of shocks and stresses. • Depending on the context, it is not necessarily vital to consider all domains for all market systems. However, deciding to ignore certain domains should take into consideration (i) early findings from studying the context/market system in question, as well as (ii) that both structural and behavioral domains should continue to be represented, though not necessarily in a balanced fashion. • The suggested indicators, as well as those added during early phases of a study, are useful in learning about system mechanisms that influence resilience, and relevant for judging proactiveness as well as prioritizing future interventions. 	
Second level	
Connectivity	<ul style="list-style-type: none"> • Markets with too many or too few connected individuals or

	<p>connected businesses are less likely to have better capacity to generate growth than markets with moderate connections.</p> <ul style="list-style-type: none"> ● Markets in which it is perceived to be difficult to enter into trusted relationships, are less able to support market actors during or after a shock. ● Markets in which connections/relationships are clustered around in-group, traditional, or family networks are less able to withstand shocks. ● Markets that encourage and support connections based on commercial interests (regardless of in-group/outgroup status) that add value back to society tend to be more effective at innovating ways to mitigate and neutralize risks/challenges (i.e., known and knowable stresses and shocks) as those risks/challenges are identified by society/consumers.
<p>Diversity</p> 	<ul style="list-style-type: none"> ● Markets with more variation in its core components (products/firm size/marketing channels, or end markets) are more innovative and therefore resilient than markets with little variation. ● Markets with a better balance between different types of products, firm size, marketing channels or end markets are more innovative and resilient than markets with a skewed balance (i.e. a single large firm controls ~80 percent of the marketed product, or ~70 percent of customers buy the same product). ● Markets with better composition across its components are less likely to be exposed to risks than markets with imbalanced component compositions. ● Markets in which its components can be assembled in various ways to perform the same/similar function are better able to adapt in the case of adverse change.
<p>Power Dynamics</p> 	<ul style="list-style-type: none"> ● Markets where power and wealth are more broadly shared are more inclusive and, therefore, better able to handle shocks and stresses than markets where power and wealth are concentrated. ● Markets in which power is exercised in order to gain unfair advantages are more rigid, inflexible, and fragile. ● Markets in which there are multiple power nodes are more likely to develop social safety mechanisms which benefit a broader group of market actors.
<p>Rule of Law</p> 	<ul style="list-style-type: none"> ● Markets with informal rules or norms that promote fairness and equity lead to formal legal institutions that promote fairness and equity.

	<ul style="list-style-type: none"> ● Markets where formal and informal rules promote higher levels of fairness and equity are less likely to lead to breakdown in rule of law. ● Markets where formal and informal roles are known, relatively aligned, and unambiguously clear to market actors experience fewer strikes, open legal conflict, or instances of demolition. ● Markets in which formal and informal rules tend to favor a small group of actors are perceived to be corrupt, and in consequence less stable and less efficient in resolving conflict. ● Markets in which there is pushback to corruption from media, civil society, market and other systems are better able to weather disruptions and upheavals.
<p>Cooperation</p> 	<ul style="list-style-type: none"> ● Markets where the motivation for cooperation is value addition are able to share and manage risks better than markets where the predominant motivation for cooperating is rent-seeking. ● Markets that display cartel-like behavior do not respond to joint threats and opportunities in an inclusive, win-win approach.
<p>Competition</p> 	<ul style="list-style-type: none"> ● Markets with firms that predominantly compete with the motive to improve the value offered to customers are more likely to create additional value for firms than markets with firms that predominantly compete for the purpose of capturing margins. ● Markets in which firms compete for the purposes of capturing margins or resources and do so by focusing on hurting their competitors, depress innovation and reduce the resources needed to respond to shocks and stresses.
<p>Decision Making</p> 	<ul style="list-style-type: none"> ● Markets with firms that employ science or fact-based evidence for decision-making and in informing their strategy to add value to customers will have better capacity to address shocks than markets with firms that make decisions with little or no evidence. ● Firms that manage a business based on consultations with family, on little or no real data on customers or markets, and on only immediate cash needs, are more likely to fail in the face of adversity, and thereby weaken the system. ● Behavior related to evidence-based decision-making leads to improved capacities to manage a whole range of shocks and stresses.
<p>Business Strategy</p> 	<ul style="list-style-type: none"> ● Markets with firms that adopt practices that lean towards generating value for customers create better information/feedback flow than markets with firms that adopt business practices that seek to maximize margin capture. ● Firms that primarily hire from family/friend networks are more likely

	to fail when facing a shock or stress.
<p>Third Level</p> <p>There are three types of hypotheses. All of which are relevant for our research:</p> <ol style="list-style-type: none"> 1. cause-effect: provides statements about each other's domains by themselves, and how elements of it might affect the state of organizations/the system specifically (i.e. if there is more competition, firms tend to be more profitable/productive.). The effect is something more narrow than resilience, like "income growth". 2. combining domains posits how the domains connect with each other and either act in a reinforcing way or show trade offs i.e. "If there is more evidence based decision making, then there will be more diversity" or "Where there is more connectivity, there is more cooperation" 3. correlation hypotheses i.e. "Markets with higher connectivity see fewer organizations close down during a shock" 	
<p>Livestock (Isiolo)</p> <p>Emerging, without domain</p> <ul style="list-style-type: none"> ● The younger generation is more likely to try out new business models instead of or in addition to traditional pastoralism. ● Innovative emergent business models, such as traders working with farmers to develop an off-take plan that feeds into fattening efforts, create value for all parties involved, especially if the trader shares the value addition with the pastoralists. ● Land reform can lead to more inclusive growth, if enough people own enough land to continue their subsistence and commercial activities. ● Shifting from community social safety nets to more formal social safety net arrangements/emergency response services will make people/communities less vulnerable to health/climate/economics risks in the long run. ● Pastoralists choosing not to vaccinate their livestock despite it being a free service by the government suggests that simply offering support/safety nets/formal mechanisms will not necessarily lead to higher resilience. ● A traditional pastoralist lifestyle is inherently incompatible with a competitive and inclusive market. OR There are limits to longer-term resilience in a system based on traditional pastoralism. <ul style="list-style-type: none"> ● Animal health is a low priority to pastoralists. 	
<p>Connectivity</p> 	<ul style="list-style-type: none"> ● The more connected pastoralists are i.e. in the form of cooperatives, the more innovative is their approach to product marketing. ● Low herd turnover (i.e. having old animals) is a sign for producers caring more about social capital than commercial gain/financial capital. ● Close/dependent relationships with family/small communities ensure support in the case of severe loss (i.e. if the whole herd dies of drought or was taken by bandits).

	<ul style="list-style-type: none"> ● Close/dependent relationships with family/small communities hinder income growth, because financially successful community members will be asked to pay out most of the gains to the community. ● If communities were more connected, not just within but between, there would be more competition, which would lead to new innovations in terms of products and business models ● Markets with higher connectivity with organizations outside of the community, tend to have higher product quality standards.
<p>Diversity</p> 	<ul style="list-style-type: none"> ● Communities that also keep and consume white meat, aren't hit as hard by livestock diseases and/or market closures. ● The primary objective for pastoralists to diversify into camels, goats, or agro-pastoralism is to sustain pastoralist lifestyle and culture, or feed their own family and thereby does not lead to income growth. ● Livestock/meat is almost exclusively traded in open/spot markets, with a small percentage being exported. The lack of additional channels to sell puts pressure on the producers margins. ● Higher perceived fairness in Oldyniro market has increased the diversity of products offered in that market. (clothes, vegetables, fruits, beadwork,...) ● There are only few buyers in the livestock market, which puts additional pressure on pastoralists' margins. Negotiating as cooperatives helps, but increasing the number of players would give pastoralists even more leverage than cooperatives. ● Income is more likely to grow more significantly through niche markets like camel milk, rather than improving livestock market management, i.e. by enacting that Sales Act. ● Pastoralists in more remote areas are less likely to take up agro-pastoralism.
<p>Power</p> 	<ul style="list-style-type: none"> ● Larger markets (i.e. in cities) are more likely to be led by cartel-like groups which show monopolistic behavior. ● Livestock traders are more likely to try to get the cheapest price by directly wielding power (i.e. going directly to herd unit and negotiating down) whereas camel milk traders are more interested in a mutually beneficial exchange. The latter approach, in turn, leads to a more inclusive growth in the market. ● In terms of conflict resolution, informal community level mechanisms are preferred over formal/political system level solutions. This reduces fairness (i.e. outside groups tend to be discriminated against), efficiency and sustainability of the resulting solution. ● Even if someone with a larger herd could use their power commercially, it is often too risky to try this as that would mean leaving one's communal responsibilities and safety network. If there were formal safety nets, more community members might step out of their communal network.

	<ul style="list-style-type: none"> • The market in Oldyniro shares power more widely and is more transparent on distributing sess/tax as compared to Isiolo, where power is wielded to gain higher margins. These elements make Oldyniro more dynamic, growth oriented and inclusive. • More remote areas tend to experience more conflict. • Fewer price fluctuation in meat markets (compared to cereals) comes from the fact that cartel-like behavior forces producers to always sell at a low price. • Prices are in most cases determined by the value of the product, rather than by some market actors wielding power to capture unfair margins.
<p>Rule of Law</p> 	<ul style="list-style-type: none"> • When rules around land use are clear and enforced (either by government or other mechanisms like the Dether system), droughts are less likely to lead to resource based conflict. • If plans around water allocation are made on a higher level (i.e. ward or county) it is more likely to last longer for everyone in the area. • Government intervention in land registering/land reform forces pastoralists to significantly change their norms and way of life, which will lead to more conflicts unless pastoralists shift away from pure cattle/livestock rearing over a larger geographic area. • Enforcement of more transparent pricing would probably increase margins for pastoralists.
<p>Competition</p> 	<ul style="list-style-type: none"> • When pastoralists cooperate more (i.e. in cooperatives) there is less price fluctuation. • Loyal, longer term partnerships with processors and farmers that are more revenue oriented over the long run, tend to accrue more benefits to both parties, even if the per unit price goes down over time. • Increased cooperation in the form of closer connectivity and more stable relationships with processors outside of the community. <ul style="list-style-type: none"> • If the government sells too much land to investors too quickly without collaborating with communities, the shock to pastoralism will likely increase vulnerability in the short run. • Small pastoralist communities cooperate to survive in the face of a shock, however, only if the community member has been following the strict rules enforced by the community.
<p>Cooperation</p> 	<ul style="list-style-type: none"> • Larger market places (i.e. in cities) tend to be more competitive, and in turn offer a greater diversity of products. • In less competitive markets, producers and processors don't feel the need to introduce innovative products or forms of production. • Technology adoption is higher in more competitive markets. • Markets in which farmers and traders compete to win extra margins lead to more suffering because pressure on producer's margins increases vulnerability, and can encourage conflict around resource access.

	<ul style="list-style-type: none"> ● Pastoralists respond most to information shared by peers, often related to social norms. They are less concerned about their product's quality as compared to other pastoralists, or consumers' opinions. This dampens competitive pressures around improving quality, productivity and product diversity.
<p>Decision Making</p> 	<ul style="list-style-type: none"> ● Revenues and commercialization are not the primary reasons to invest in camels in Isiolo. ● Pastoralists who seek out information from outside of their community (i.e. processors, traders) tend to generate higher margins. ● Price is the primary factor for pastoralists to decide what to produce/sell. ● When decisions are motivated by the objective of securing resources for one's small network, the resulting power dynamics can lead to illegal restocking, cattle rustling and other conflicts, which reduces prosperity for most involved. ● Weather information has significant influence on the market, however it is more likely to destabilize it (i.e. via price drops) instead of informing sustainable business strategy.
<p>Business Strategy</p> 	<ul style="list-style-type: none"> ● Camels are mostly held by people who already have substantial wealth and thereby increase inequality, as these pastoralists aren't hit as hard by droughts/floods. ● Because pastoralists don't hold livestock for commercial reasons, they are more dependent on government support when a drought is particularly severe. ● Wealthier and larger market actors use and even encourage price fluctuations to their advantage by using various negotiating tactics to capture higher/unfair margins, which increases inequality. ● Price is the primary information used and negotiated in business transactions, which leads to short-term thinking and to many people trying to capture high margins while they last.
<p>Mango (Makueni)</p> <p>Emerging, without domain :</p> <ul style="list-style-type: none"> ● Support for farmers to export their produce mostly only reaches farmers who were already more sophisticated. Such an intervention may therefore increase inequality which would increase vulnerability in the overall system. ● When exporting is not possible due to a national exporting stop, farmers have no other choice but to sell to the local market at a much lower price, and hope for a better season next time. ● Gradual change towards improved varieties and nurseries was kickstarted by increased demand for the fruits, via better information flow along the value chain. ● The younger generation is more likely to try out new varieties instead of or in addition to traditional trees. <ul style="list-style-type: none"> ● Shifting from community social safety nets to more formal social safety net 	

arrangements/emergency response services will make people/communities less vulnerable to health/climate/economics risks in the long run.

<p>Connectivity</p> 	<ul style="list-style-type: none"> ● Building a processing plant (Kalamba) in Makueni improved connectivity and information flow between Makueni farmers and end consumers, as compared to when processing plants were mostly in the coastal region. ● Being more connected to people outside of one's community network means one is more likely to get information on new agricultural practices or fruit varieties, more likely to try these, and subsequently leads to income growth. ● Despite being connected to processors etc. outside of Makueni, Mango farmers still mostly trust information from family networks, which leads to less investment in commercial upgrading or diversifying. ● Farmers who are most likely to take up improved Mango varieties are those that are either closer to large roads, or those who are younger. ● Labor movement outside of harvesting seasons improves information flow between communities, which increases innovation and commercial activity. ● More connected farmers are more likely to invest in seedlings/improved varieties. ● Performance based supply chain management is critical for developing effective relationships over time. ● Mango farms that hire from within-group networks, such as friends and family, tend to be less productive than those which hire based on merit. ● The more connected farmers are, i.e. in the form of cooperatives, the more innovative is their approach to product marketing. ● Close/dependent relationships with family/small communities ensure support in the case of severe loss (i.e. fruit fly disease). ● Close/dependent relationships with family/small communities hinder income growth, because financially successful community members will be asked to pay out most of the gains to the community. ● If communities were more connected, not just within but between, there would be more competition, which would lead to new innovations in terms of products and business models ● Markets with higher connectivity with organizations outside of the community, tend to have higher product quality standards.
<p>Diversity</p> 	<ul style="list-style-type: none"> ● Mango only has two large offtake markets, Mombasa and Nairobi. Additional markets would make it less likely for cartels to form. ● Mango is primarily a commercial crop, which means Mango farmers tend to be more open to new business strategies which help become more competitive, than other types of farmers. ● Producers who diversify more, are less dependent on weather, and face less suffering from post-harvest loss due to better volume planning.

	<ul style="list-style-type: none"> ● Mango is primarily traded in open/spot markets, with a small percentage being exported. The lack of additional channels to sell puts pressure on the producers margins. ● There are only a few processors in the mango market, which puts additional pressure on producers' margins. Negotiating as a cooperative helps, but increasing the number of processors would give even more leverage than cooperatives.
<p>Power</p> 	<ul style="list-style-type: none"> ● Price is purely driven by large markets, traders or cartels. These types of power dynamics mainly aim to capture high margins from producers and therefore increase farmer vulnerability. ● Increasing influence from development partners in the Mango market influences power dynamics as well as policy, and thereby has the potential to distort information on investment needs. ● Few large players in Mango processing (Gosheni, Coca Cola, Pick'N'Peel) make it more difficult for farmers to take risks as their main priority is ensuring a good, loyal relationship with these partners. ● Some processors, such as Gosheni, are trying to develop value based relationships with farmers, by helping them produce the quality needed in the market. This will lead to income and revenue growth for everyone involved. ● Even though some processors offer mutually beneficial business partnerships, in a situation of low supply Mango farmers tend to sell to the buyer who offers the highest price/margin. ● A lack of investment in processing units despite high profitability is both because existing firms are very powerful and scare away potential competitors, as well as because firms do not respond to what is happening outside of their main network. ● Larger markets (i.e. in cities) are more likely to be led by cartel-like groups which show monopolistic behavior. ● Mango traders are more likely to try to get the cheapest price by directly wielding power (i.e. going directly to farm and negotiating down) whereas innovative processors (like Gosheni) are more interested in a mutually beneficial exchange. The latter approach, in turn, leads to a more inclusive growth in the market. ● In terms of conflict resolution, informal community level mechanisms are preferred over formal/political system level solutions. This reduces fairness (i.e. outside groups tend to be discriminated against), efficiency and sustainability of the resulting solution. ● Most disputes in the Mango value chain might get reported to ag officers, but hardly ever get resolved. This influences cooperation between market actors negatively. ● Prices are in most cases determined by the value of the product, rather than by some market actors wielding power to capture unfair margins.
<p>Rule of Law</p>	<ul style="list-style-type: none"> ● Intransparent regulations and unequal enforcement of rules and

	<p>regulations makes farmers less likely to invest into quality assurance.</p> <ul style="list-style-type: none"> • Ever since the government has introduced more formal social safety nets (i.e. health insurance, pensions), farmers have been less reliant on family networks and started to try more innovative business practices aimed at generating more wealth. • Enforcement of more transparent standards and pricing would probably increase margins for farmers.
<p>Competition</p> 	<ul style="list-style-type: none"> • Specialized services like spraying have yet to pick up -- once farmers cooperate more, agree on market wide standards and transactional norms, the market will be more growth oriented and these services will find higher uptake. • The emergence of the fruit-fly as a market wide problem indicates a lack of early cooperation between farmers. • Loyal, longer term partnerships with processors and farmers that are more growth oriented/profitable over the long run, tend to accrue more benefits to both parties, even if the per unit price goes down over time. • Increased cooperation in the form of cooperatives has led to closer connectivity and more stable relationships with processors outside of the community.
<p>Cooperation</p> 	<ul style="list-style-type: none"> • Private actors rarely invest in technology which could solve known issues (such as ripeners for weather boom and bust cycles). This is because a lack of competition hinders technology adoption. • Larger market places (i.e. in cities) tend to be more competitive, and in turn offer a greater diversity of products. • In less competitive markets, producers and processors don't feel the need to introduce innovative products or forms of production. • Technology adoption is higher in more competitive markets. • Markets in which farmers and traders compete to win extra margins lead to more suffering because pressure on producer's margins increases vulnerability. • Mango farmers respond most to information shared by peers, often related to social norms. They are less concerned about their product's quality as compared to other farmers, or consumers' opinions. This dampens competitive pressures around improving quality, productivity and product diversity.
<p>Decision Making</p> 	<ul style="list-style-type: none"> • Lack of transparent information and evidence-based decision-making hinders farmers from producing the right quality for the export market. • The fact that the government needs to stop the exporting of Mangoes indicates a lack of end-consumer orientation on the producer's side. • The reason some processing firms invest in value based relationships with farmers is because their decision-making systems are evidence-based.

	<ul style="list-style-type: none"> ● Farmers who seek out information from outside of their community (i.e. processors, traders) tend to generate higher margins. ● Price is the primary factor for farmers to decide what to produce/sell.
<p>Business Strategy</p> 	<ul style="list-style-type: none"> ● When firms shift their focus more on revenue rather than price and per-unit margins, they increase productivity and match quality to market needs/wants, which always results in lower cost per unit for standard grade crops. This is how these markets enhance food security over time. ● Wealthier and larger market actors use and even encourage price fluctuations to their advantage by using various negotiating tactics to capture higher/unfair margins, which increases inequality. ● Price is the primary information used and negotiated in business transactions, which leads to short-term thinking and to many people trying to capture high margins while they last.



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