Vulnerability Assessment Methodologies: A Review of the Literature

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Contents

1. INTRODUCTION

Vulnerability is an elusive concept. Its definition varies across disciplines, ranging from engineering to psychology to economics. In the development community, vulnerability has become an important concept used to guide the design, evaluation, and targeting of programs. In southern Africa, for instance, governments, NGOs, UN agencies, and other groups formed country-level Vulnerability Assessment Committees starting in 1999 to harmonize and improve methods of assessing vulnerability, with a focus on food aid (Frankenberger, Mock, & Jere, 2005). Since then, practitioners have given greater emphasis to the multidimensionality of vulnerability, working with a variety of measures to capture the complexity of the concept. For the purposes of this review, we use the broad and established definition of vulnerability in sustainability science as "the degree to which a system, subsystem, or system component is likely to experience harm due to exposure to a hazard, either a perturbation or stress/stressor" (Turner et al., 2003, p. 74). This literature review provides an overview of the tools and methods used to measure vulnerability, as pertains to development interventions focused on economic strengthening, at the population level as well as the household and individual level.

1.1 Levels of Analysis

Vulnerability assessment methodology is determined by the overarching conceptual framework chosen, including a definition of vulnerability that specifies risks for measurement. It also depends on the intended use of the assessment results, which may range from an intention to inform international policy or to spur community-level action. As such, this review distinguishes between methods focused at the population level and those at the household or individual level.

This distinction is key, as methods applicable at one level may not be appropriate at another. At the population level, this review includes approaches that can be considered macro and meso level methods. Macro level interventions typically include measures at the country level, with international and regional policy applications. Meso level measures include subnational measures, usually comprising quantitative measures based on census data or statistical sampling. At the individual and household, or micro level, however, vulnerability is more frequently assessed using participative and qualitative measures for the purpose of program targeting. Though each level possesses unique requirements for analysis, they intersect in important ways, and the literature consistently recommends use of mixed methods.

1.2 Method

The scope of this review is limited to methodologies relevant to interventions that fall under a broad definition of economic strengthening, including interventions that mitigate economic vulnerability and enhance beneficiaries' ability to cope with shocks (Wolfe, 2011). Sources include seminal pieces of published literature and their references, gray literature found on development program websites, and interviews with practitioners.

2. THEORIES OF VULNERABILITY

Given the diversity of uses and definitions applied to the concept of vulnerability, it is useful to trace its

epistemological origins by discipline. Alwang, Siegel and Jørgensen (2001) identify the following strands of literature on the topic: disaster management; environmental; economics, including poverty dynamics, asset-based approaches, sustainable livelihoods, and food security; anthropology/sociology; and health/nutrition. The theories that align most with vulnerability as conceptualized for the purposes of economic strengthening interventions include frameworks that originate in the economics and anthropology/sociology literature. We also discuss disaster management literature, which has had a profound influence on the literature in general and comprises an important component in vulnerability assessments performed by development and relief agencies. We exclude the environmental literature, as its focus on environmental rather than social impact is not compatible with the aims of this review. We also exclude the literature on health and nutrition because their focus is too narrow for our purposes.

2.1 Perspectives on Vulnerability By Discipline

2.1.1 Disaster Management, Ecology, and Hazards Perspectives

A strong element in the literature on vulnerability assessment comes from the disaster management, ecology, and hazards literature, especially as related to climate change. The literature on hazards and vulnerability from the 70s and 80s has had an important influence on the broader literature on vulnerability (Prowse, 2003) and can be divided into two schools of thought: that under the behavioral paradigm, and that under the structuralist paradigm (Adger, 2006). The behavioral paradigm conceptualized hazards as resulting from overwhelming forces of nature and attributes a failure to cope with "poor perception of hazards and risk" (Burton et al., 1993 as cited in Adger, 2006). On the other hand, the structuralist paradigm conceived of the hazardous effects of natural disasters as attributable to the social and economic conditions that create vulnerability. This latter approach has fostered a succeeding literature focused on greater cross-disciplinary integration and assessment of vulnerability based on multiple factors rather than a single stressor such as a natural disaster. The succeeding literature frequently incorporates the sustainable livelihoods/entitlement approaches introduced by economist Amartya Sen.

2.1.2 Anthropology/Sociology Perspectives

One distinctive feature of the anthropology and sociology literature is the conceptual distinction it creates between social vulnerability and economic vulnerability (Alwang et al., 2001). The concept of social vulnerability has been incorporated into both the hazards and economic literature. Literature from this perspective focuses on the multidimensionality of poverty and encourages the use of participatory methods to understand the qualitative features of poverty, going beyond common economic methodologies of measuring proxies for poverty levels such as consumption. This literature analyzes the roles of social institutions and power in creating vulnerability. On the flip side, it also examines the ability to cope, or resilience, as connected to assets such as social capital. Alwang (2001) traces the origins of this asset-based perspective most strongly with the economics literature on vulnerability, as discussed below.

2.1.3 Economics Perspectives

Alwang (2001) identifies three strands within the economics literature that conceptualize vulnerability in terms of either poverty dynamics, food security, or sustainable livelihoods, specifying that the "literature rarely separates risk response into its reduction, mitigating and coping components (p. 5). The poverty dynamics literature is concerned primarily with the risk of falling into poverty or deeper into poverty. Some writers, such as Prowse (2003), emphasize the importance of measures that factor in risk rather than using

static poverty measures. One trope within the literature is a discussion of the external and internal sides of vulnerability, external referring to risk, and internal referring to individual capacities for coping (Chambers 1989, Moser 1998, as cited in Alwang 2001).

This movement toward dynamic measures reflects an overall shift in the literature favoring what has come to be known as the Sustainable Livelihoods approach. Chambers and Conway's oft-cited definition is that "a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to their livelihoods at the local and global levels and in the short and long term" (1991:6). This literature draws on the work of economist Amartya Sen, whose conception of "entitlements" laid the ground-work for asset-based analysis focused on livelihoods (Alwang 2001). Assets include items such as labor, human capital, housing, household relations, and social capital (Moser 1998), and they contribute to resilience. Although Alwang (2001) locates the sustainable livelihoods perspective in the literature on economics, it is cross-disciplinary and features in the sociology/anthropology as well as disaster management literature.

The third strand of literature within the economics literature is that of food security. Food security is useful as a proxy for measuring poverty, as income can be notoriously tricky to measure, but it also receives attention for reflecting the most basic capacity for survival. The World Food Program has developed a number of indices to measure food security, and the Vulnerability Assessment Committees established in southern African countries were set up with a strong emphasis on food security, although they have since moved toward a greater focus on examining the underlying causes of poverty.

2.2 Vulnerability in Economic Strengthening

In development, much of the discussion on vulnerability emerges from the disaster management sector, drawing upon its eponymous theoretical framework. This conception of vulnerability is both overlapping and in tension with how it is used by practitioners in the social protection or economic strengthening sectors of development, which draw more heavily upon economics and anthropology/sociology literature. This review focuses on vulnerability as understood and used in practice in the latter sector.

We use the broad term of "economic strengthening" as used in the gray literature generated by USAID and development practitioner organizations. This can refer to a range of activities focusing on topics such as food security, social protection and social safety nets, transfer programs, social capital and civil society organizations, access to finance, savings, income-generation, and value chain interventions (The SEEP Network, 2013). This section highlights some conceptions of vulnerability as used in practice in this sector and discusses how they intersect with concepts of poverty and resilience.

2.2.1 Vulnerability vs. Poverty

Economic strengthening programs seek to reduce poverty, so targeting beneficiaries according to poverty level seems intuitive. Poverty levels, however, can fluctuate, and people on the cusp of the poverty line may be more vulnerable to shocks than those who are already deemed poor. The consensus in the literature agrees that poverty cannot be conflated with vulnerability, and that vulnerability analysis requires forward-looking information including indicators of risk (Naudé, Santos-Paulino, & McGillivray, 2009b; O'Brien, Quinlan, &

Ziervogel, 2009; Prowse, 2003). Understanding vulnerability helps practitioners better understand future trajectories for different groups, and thus design and target interventions more effectively.

2.2.2 Vulnerability as Multiple Stressors

Vulnerability is obscure as a stand-alone concept and only serves a practical purpose once we ask the question, vulnerability to what? The tendency in answering this question is to isolate a single cause of vulnerability. However, the literature has moved away from this approach to a more systemic perspective, in recognition of the complexity of vulnerability and the interaction of various causes and effects of vulnerability. As Adger (2006) notes, more recent work on the topic now "emphasizes multiple stressors and multiple pathways of vulnerability" (p. 268). This also suggests that the perspectives listed above are increasingly influenced by one another, taking natural hazards, social vulnerability, and economic vulnerability into consideration with varying degrees of emphasis. As such, measures of vulnerability continue to vary and operate according to different definitions and purposes.

2.2.3 Vulnerability vs. Resilience

In recent years, the concept of resilience has been featured very strongly in the language of the development community, referring to "the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change" (Adger 2000, as cited in FAO 2010). Where vulnerability is focused on risk, resilience is concerned with coping. Given the attention directed to resilience, we would like to state from the beginning of this review that though a "sibling" concept to vulnerability (Béné, Wood, Newsham, & Davies, 2012), resilience remains a distinct concept and draws upon a different literature. Its importance should neither be understated nor allowed to eclipse that of vulnerability, which we argue remains key to economic strengthening activities.

Although the Food and Agriculture Organization of the UN (2010) notes vulnerability and resilience are complementary concepts, it warns that the tendency of vulnerability measures to focus on a single shock can oversimplify measurement. This is echoed in Bene et al.(2012), who note that the literature on resilience, which tends to be more focused on ecology, features a more systemic perspective than much of the literature on vulnerability, but it is limited by its lack of engagement concerns of power and agency. They go on to warn that if "resilience 'goes to scale' as a development narrative," it may risk co-optation and dilution, much like the concept of "sustainable development," noting that in this case, "using vulnerability perspectives to enrich resilience thinking has to be centre stage" (p. 17). Following this, they recommend that development practitioners draw upon frameworks that create a pathway from vulnerability to resilience. In our review of vulnerability assessment methods, we highlight comprehensive vulnerability analysis, such as the Household Vulnerability Index discussed below, which includes discussion of both risk and coping.

3. VULNERABILITY ASSESSMENT APPROACHES

3.1 Principles of Vulnerability Assessment

Despite the range of approaches to measuring vulnerability, several best practices in vulnerability assessment emerge. Most of the literature adheres to some variation of a basic formula recurrent throughout the literature: Risk + Response = Vulnerability, or, as articulated in Holzmann et al.'s guidelines on the

Household Economy Approach (2008), "Baseline + Hazard + Response = Outcome (v)." Part of measuring the response include incorporating a sustainable livelihoods perspective to assess capabilities and assets that contribute to resilience (Naudé, Santos-Paulino, & McGillivray, 2009a).

Vulnerability assessments should have a predictive function (Naudé et al., 2009a) that "define[s] vulnerability in relation to a socially acceptable level of outcome" and evaluates both idiosyncratic (individual) and covariate (systemic) risk in addition to a "system's ways and means of coping" (Naude et al., 2009: 185). Frankenberger (2005) suggests that "vulnerability assessment data should be easily aggregated and disaggregated from the household to the regional level" (p. iv). In reality, this level of disaggregation is only feasible when utilizing quantitative household measures.

Hoddinott and Quisumbing (2003) pose five questions that a vulnerability assessment should answer (p. 46). First, "What is the extent of vulnerability?" and "Who is vulnerable?" In a stable environment without shocks, vulnerability to poverty is a good enough measure, but if there are shocks, an assessment should examine which households will move in and out of poverty. Next, the authors asks, "What are the sources of vulnerability? How do households respond to shocks?" and "What gaps exist between risks and risk management mechanisms?" Answering these questions requires multiple data collection methods and additional data, including the identification of "proximate causes of vulnerability as they relate to structural poverty and consumption volatility" (Chaudhuri and Christiaensen 2002, cited in Hoddinott and Quisumbing 2003: 37). They also require data on response to shocks as well as private and public responses to risk.

A final key feature of vulnerability assessment is the inclusion of community perceptions of vulnerability into the assessment design and definition of vulnerability (Kalibala, Schenkb, Weissc, & Elsond, 2012). Participatory methods, such as Participatory Rapid Appraisal (PRA), are considered a best practice. In their study on targeting the ultra-poor for intervention in India, Banerjee et al.(2007) found that PRA results followed by surveys yielded more accurate targeting than the quantitative approaches then used by the Indian government at the time.

In selecting methods, there are several factors to consider, including the time and resources available to undertake the study. Data constraints are an especially important consideration when working in developing countries (Naudé et al., 2009a). USAID recommends selecting tools and indicators by scoring their relative levels of "feasibility, reliability, and utility" (2013b) according to a given scope. Below, we discuss a number of population level as well as individual and household level measures that can be used to assess vulnerability, including their uses, benefits, and drawbacks.

3.2 Comprehensive Livelihoods Frameworks: Macro to Micro Level Measures

This section features vulnerability assessment approaches used to create a comprehensive baseline for analysis. They provide overall guidelines for assessing vulnerability from the macro to micro levels, for both segmenting the population by levels of vulnerability and targeting individuals or households. They employ mixed methods and tend to be resource intensive, requiring large amounts of data in order to capture the complexity of vulnerability.

3.2.1 Southern Africa Vulnerability Initiative (SAVI) Framework

The Southern Africa Vulnerability Initiative (SAVI) framework is a conceptual approach that emphasizes interconnections of multiple stressors, including HIV/AIDS, that was developed by group of scientists in 2004 (O'Brien et al., 2009). It draws on the vulnerability literature originating in the disciplines of anthropology/sociology, economics, and disaster management. Though it does not provide a toolkit or instructions for the selection of instruments for measuring vulnerability, the SAVI framework provides a set of research questions that can be used to drive the development of an assessment.

The framework's focus on the interaction of multiple stressors is based on the premise that ignoring these interactions hides certain vulnerabilities (O'Brien et al., 2009). Instead of conceiving of vulnerability as an "end-point" of an assessment, as many assessments in the hazards literature, the SAVI approach encourages examination of the dynamism of vulnerability, including how coping mechanisms and responses change vulnerability (Casale, Drimie, Quinlan, & Ziervogel, 2010, p. 159). Casale and colleagues explain how sites for development interventions "can be described as 'entangled crises' in which different stressors, people's responses and development interventions become entwined. Development efforts to disentangle one thread or another of the knot all too easily do not succeed. Equally, assessments of the problem in terms of vulnerability do little more than justify interventions if the concept is used simply as a synonym for poverty" (p. 166).

In Practice…

The SAVI framework was used to assess vulnerability for parents and their children in the Child Future Study, conducted by the International Food Policy Research Institute (IFPRI), the University of Cape Town, HEARD at the University of KwaZulu-Natal, and the Institute for Policy Research and Social Empowerment (IPRSE) in Malawi between January 2006 and March 2007 (Casale et al., 2010). The study was conducted across three sites, two in South Africa and one in Malawi, using interview conducted over five months to understand vulnerability at the individual, household, and community levels. Participants were identified via purposive sampling, including ten caregivers at each site. Data included in-depth semi-structured interview, observations, and key informant interviews. Several rounds of interviews were conducted in an iterative fashion, with each module based on responses aggregated from all sites from the previous interview. Questions were designed to examine "livelihood capitals," livelihood strategies, key stressors, external interventions (p. 161). The research team used this information to identify themes suggesting region-wide symptoms of vulnerability.

The SAVI framework can be used to guide the development of a comprehensive vulnerability assessment aimed at understanding the context of vulnerability at different levels, providing insight on the secondary data required for analysis, and which data collection methods and tools might be most appropriate. Case studies using the framework include examples of employing micro-level qualitative methods in different regions to identify multiple stressors (on larger scale) and how they interact in specific context to distinguish idiosyncratic as well as covariate risks. The framework offers the benefit of resisting over-simplification by

uncovering "hidden" vulnerabilities through deep and context-specific evaluation. However, it is not a tool and does not serve as a monitoring instrument. Because it focuses on root causes, assessments utilizing the SAVI framework will be more complicated and resource-intensive than those using a single-stressor approach.
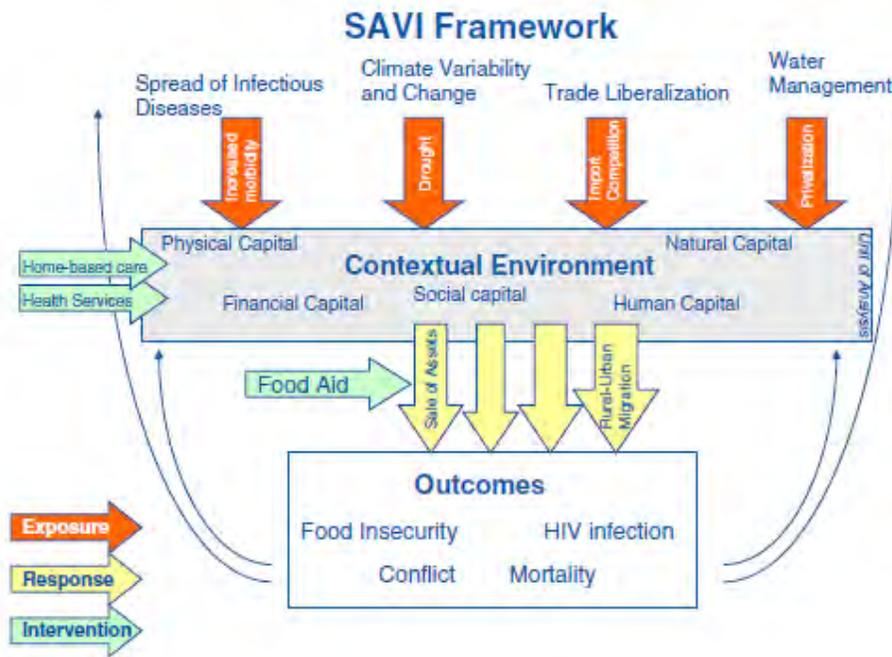
Figure 1 Representation of SAVI Framework from Casale et al.2010, p. 160

3.3.2 Household Economy Approach (HEA)

The Household Economy Approach is an livelihoods-based analytical framework developed by Save the Children UK in the early 90s designed to obtain information on how people access food and cash based on multi-level analysis (Lawrence et al., 2008). Its draws from anthropology and sociology, disaster management, and the sustainable livelihoods and food security strand of the economics literature. HEA is primarily used to predict the impact of national-level shocks and disasters across different wealth groups, seeking to answer the following questions: "Where is assistance needed, and of what type? Who needs it? How much is needed, when and for how long?" (Lawrence et al., 2008, ch. 1 p.2). Amartya Sen's work on famines is a strong influence on the framework (Sen, 1981). Sen argued that famines do not emerge simply from food shortages, but that underlying systems of inequality prevent certain groups from accessing food. The HEA seeks to understand these systems and set a baseline measure for livelihoods under normal conditions to better predict how they are affected by shocks.

Like SAVI, HEA is not a field tool, but a framework with discrete steps to follow to answer this set of research questions. It was initially developed to "provide large-scale (e.g. national) predictions of food emergencies," but has since been adapted to assess an array of shocks (Petty & Seaman, 2004, p. 10) and is used by most National Vulnerability Assessment Committees in southern Africa (SADC FANR Vulnerability Committee, 2004). HEA uses mixed methods, which can include analysis of secondary data, quantitative primary data, and participatory and qualitative approaches.

HEA can be used to create a comprehensive baseline for vulnerability analysis at the population level or can be combined with other frameworks and tools, such as political economy analysis, to create a four-way wealth breakdown and predict the impact of shocks. It can also be disaggregated to be useful at the individual and

Table 2. Steps in HEA analysis with description and rationale		
Steps in HEA	**What is it?**	**Why is it needed?**
BASELINE		
Step 1. Livelihood Zoning	A delineation of areas within which people share broadly the same patterns of livelihood	It provides a livelihoods-based sampling frame; allows you to target assistance geographically; and to customise indicators for livelihoods monitoring systems.
Step 2. Wealth Breakdown	A grouping of people based on local definitions of wealth and a quantification of assets	It disaggregates the population into common 'access' groups, which allows you to see important differences in households' vulnerabilities to different shocks and to estimate numbers of people who will be affected by different changes.
Step 3. Analysis of Livelihood Strategies	A categorisation and quantification of people's sources of food and income, and their expenditure patterns, using a common currency.	It enables comparisons to be made across wealth groups and livelihood zones, facilitating prioritisation of resources. It also provides a starting point for outcome analysis.
OUTCOME ANALYSIS		
Step 4. Problem Specification	Translation of a hazard or other shocks into economic consequences at household level	It allows you to mathematically link the shock (or positive change) to each relevant livelihood strategy
Step 5. Analysis of Coping Capacity	Analysis of the ability of households to respond to the hazard	It helps you to determine how to support people's own efforts, and to provide external assistance before households turn to damaging strategies; it highlights relevant indicators to monitor.
Step 6. Projected Outcome	Prediction of the effects of the hazard in relation to a survival and livelihoods protection threshold.	It clearly predicts whether and when assistance is needed to help people survive and/or protect their livelihoods. It also models the potential beneficial effects of proposed policies or programs.

Figure 2 From Lawrence et al., 2008, ch.1, p.7

household level using the Individual Household Model described below. There are a number of free available tools, resources, and methodological guidance made available by Save the Children UK and other

organizations on HEA. It is a fairly commonly-used framework and has been adapted according to the needs of various interventions.

Table 1. Typical methods used to gather information for the HEA Framework		
	Step in the Framework	Information collection methods used (to date)
Baseline	Livelihood Zoning	Semi-structured interviews; participatory workshops; secondary data review
Baseline	Wealth Breakdowns	Semi-structured interviews; proportional piling; census data review (to cross-check household composition)
Baseline	Analysis of Livelihood Strategies	Semi-structured interviews; review of secondary data (to cross-check yields, production, livestock numbers, etc.); proportional piling; participatory seasonal calendars and community mapping
Outcome Analysis	Problem Specification	Household surveys (to gather monitoring data such as crop production and prices); Semi-structured interviews; review of secondary information, especially time series data
Outcome Analysis	Analysis of Coping Capacity	Semi-structured interviews; review of secondary data (on labour markets, herd composition, viable off-take rates, etc)
Outcome Analysis	Projected Outcomes	No additional information goes into this step; this step comprises an analysis and processing of the data and information gathered in the previous steps

Figure 3 From Lawrence et al., 2008, ch. 1, p. 3

There are some limitations to the HEA, however. As discussed, HEA analysis, unless disaggregated, does not reach to the individual or household level. HEA's use of purposive sampling generates "a simplified data set, with only one 'typical' household defined in each wealth group," which limits its power to predict household vulnerability with a high degree of granularity (Petty & Seaman, 2004, p. 10). Finally, generating a baseline can be expensive and requires higher levels of skill among staff than standard household surveys (Holzmann et al., 2008).

3.2.2.1 Individual Household Model (IHM)
The Individual Household Model (IHM) is a disaggregated version of HEA designed to provide more detailed vulnerability analysis at the household level (Holzmann et al., 2008). Though it operates according to the same framework as HEA, IHM employs different field methods. Instead of interviewing individual households as representatives of a larger wealth group, IHM utilizes semi-structured interviews with individual households selected using statistical sampling methods. Another difference is that the results of IHM analysis are expressed in terms of household disposable income rather than access to food and other resources (Petty & Seaman, 2004).

3.2.3 Household Livelihood Security Analysis (HLSA)

Like HEA, Household Livelihood Security Analysis (HLSA) is rooted in the sustainable livelihoods tradition of the economics and anthropology and sociology literature. Introduced in 1994, a Household Livelihood Security (HLS) approach has "become CARE's basic framework for program analysis, design, monitoring and evaluation" (Frankenberger, Luther, Becht, & McCaston, 2002, p. 1). It is an asset-based, multidisciplinary framework with the intention of better understanding the broader systems that affect livelihoods based on gathering three types of data: quantitative, qualitative, and analytic (causal) (Cannon, Twigg, & Rowell, 2005). It looks specifically at the dimensions of economic security, food security, health security, educational security and empowerment (Lindenberg, 2002). HLSA was originally a primarily participatory method used to inform program design, drawing on both Participatory Rapid Appraisal (PRA) and Rural Rapid Appraisal (RRA) techniques, which can incorporate ranking exercises for household targeting. An alternative approach is to use the same conceptual framework of Household Livelihood Security (HLS) to develop quantitative surveys for population level segmentation.

HLSA begins with exploratory study months before implementing the full analysis. The process continues with institutional profile mapping, stakeholder identification and participation, and site selection. The next step is to generate livelihood profiles tailored to individual communities. The approach uses macro level information to examine the broader context of the area of interest, then proceeds to investigating at the community, household, and intra-household levels, inventorying livelihood resources, such as "natural capital, financial capital, physical capital, human capital, social capital, political capital" (2002, p. 50). There are two levels of analysis in this process. Level I analysis includes inventorying hazards/risks, risk management mechanisms, and livelihood outcomes. Level II analysis involves identifying vulnerable individuals and groups, distinguishing between chronic and temporary poverty, and conducting an opportunity analysis (Frankenberger et al., 2002, p. 50).

Several variations on this approach have been developed. Lindenberg (2002) follows CARE's HLSA toolkit in using rapid appraisal in select households to develop a composite HLS index. This involves teams of 10-12 conducting household surveys to generate a qualitative index. However, Rahman and Akter (2010) question the generalizability and reliability of survey data from select households. Instead, they construct a quantitative

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In Practice…

In addition to program planning and targeting, the HLSA can be used for program monitoring and evaluation. The objective of CARE's 2009 HLSA in Zimbabwe was to understand the current livelihood security status of households, how it has changed, and the impact of CARE interventions by comparing the 2009 HLSA to HLSAs from 2006 and 2007 (Mazzeo, 2009). An HLSA questionnaire was administered to 6,393 households in CARE's operating area and identified using stratified random sampling (p. 7). HLS indicators were then

> "…combined into an index with weights chosen using factor analysis. Factor analysis is a statistical procedure that chooses index weights based on how indicators relate to one another, that is, on the intercorrelations among the indicators. The result is an index that optimally weights each indicator based on the strength of its association with the overall index. To create an index of livelihood security, the indices calculated for its four subcomponents are combined, again using factor analysis" (56-57).

Results from the survey showed positive results for households involved in CARE intervention, particularly those involved in multiple interventions.

HLS index drawing upon the Livelihood Security Index used by Hahn et al.(2009) to investigate livelihoods dimensions of climate vulnerability, using an in-depth quantitative questionnaire. This approach uses pre-selected indicators for each dimension of household livelihood security as discussed by Frankenberger and colleagues (2002).

Like other comprehensive assessments, conducting a HLSA can be resource-intensive. Qualitative HLSAs conducted via PRA and RRA are not generalizable, and require intensive labor resources, but are useful for rapidly responding to community needs. Quantitative surveys can be developed based on the livelihood dimensions discussed above for more generalizable data, but they should include indicators on risk to be considered useful for assessing vulnerability. We recommend using qualitative approaches to inform the development of quantitative surveys, as shown in Figure 4 below.
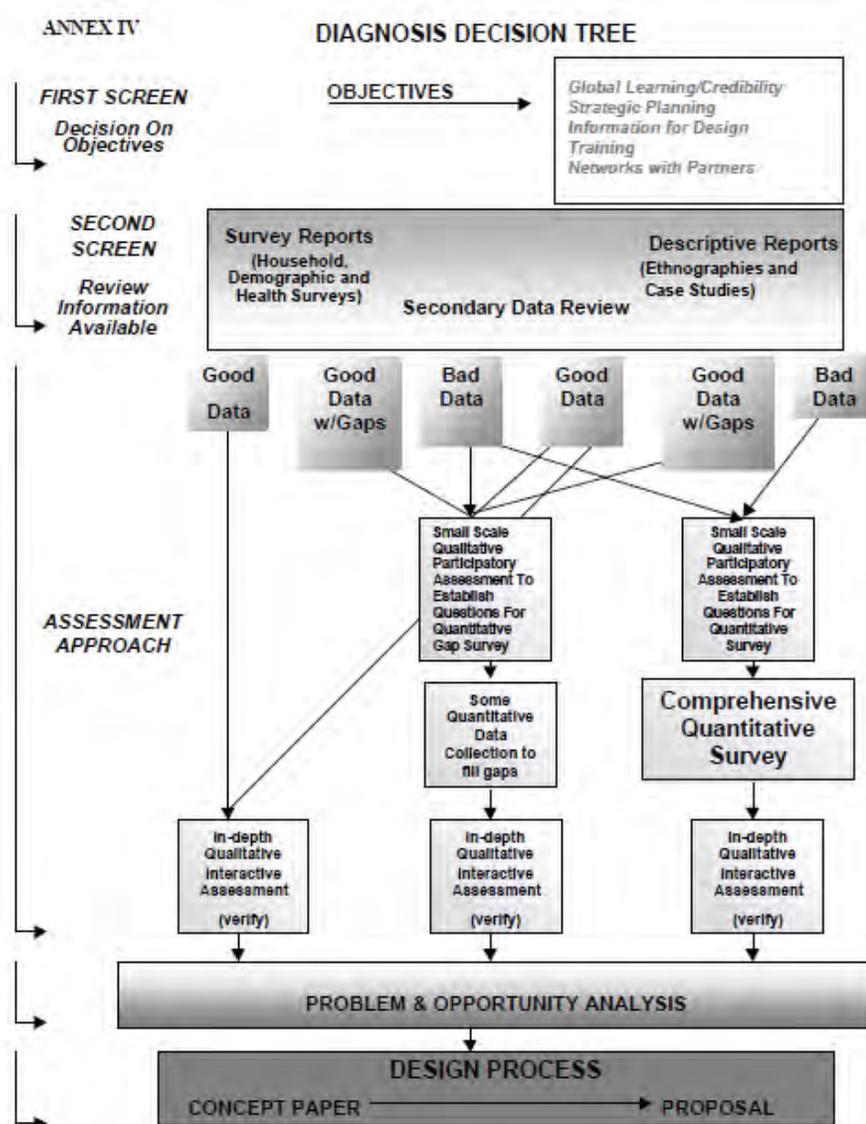

Figure 4 From Fankenberger 2002, Annex IV

Information needs	Level I analysis	Level II analysis	Programme Design	Targeting	Monitoring/Evaluation

Contextual/External
 	
Physical and environmental information
 	
Key features and trends
• Political
  - Policy reforms (e.g. land tenure)
• Social
  - Population dynamics, potential for conflict
• Economic
• Ecological
• Infrastructure
• Institutions
 	
Community Level
 	
Social differentiation
Socio-political considerations
Institutional types
Spatial considerations
Livelihood systems
 	
Household Level
 	
Livelihood resources (capital)
• Physical
• Natural
• Social
• Economic
• Human
• Political
 	
Household characteristics
Economic activities/livelihood strategies
Norms
 	
Intrahousehold Level
 	
Gender
Generational
Dependency ratios
HIV/AIDS
	Hazard/Risk Inventory
	
	Hazard/risk sources
	• Health
	• Environment
	• Conflict
	• Social
	• Economic
	
	For all hazards/risks
	• Frequency
	• Severity
	• Trends
	• Correlation (covariate, idiosyncratic)
	• Temporal/spatial attributes
	• Exposure level
	
	Risk Management (Ex Ante)
	
	Risk reduction
	Risk mitigation
	
	Risk Coping(Ex Post)
	
	Household coping Strategies
	Community Informal safety nets
	Formal Safety nets
	
	Outcomes
	
	Food security proxies
	Human capital indicators (nutritional status, health status, education)
	Poverty indicators (income, assets, social exclusion)
		Sensitivity
		
		Dynamic perspectives
		• Trends in household dynamics
		• Trends in livelihood strategies
		• Institutional trends
		
		Current vulnerability (snapshot)
		
		• Individuals that are vulnerable
		• Household vulnerability
		• Vulnerable groups
		  - Chronic
		  - Transitory
		• Vulnerable populations
		
		Opportunities/Resilience
		
		Capabilities/capacities
		• Households
		• Communities
		  - Informal safety nets
		
		Stakeholders (local and external)
		
		Policy
			Human Capability Protected and Enhanced
			• Saving lives
			• Health interventions
			• Supplementary and Therapeutic feeding
			• HIV/AIDS interventions
			• School feeding
			• Price stabilization through market sales
			• Public works to rebuild water and sanitation facilities
			
			Livelihood Capacities Protected and Enhanced
			• Public works (building and repairing roads, water reservoirs , irrigation systems and water conservation measures)
			• Food for Training
			• Ag and income diversification
			• Education interventions (eg. nutrition education)
			
			Community Resiliency Protected and Enhanced
			• Public works to build community infrastructure
			• Market interventions
			• Build community grain banks
			• Local Early Warning systems and disaster plans
				Target Level
				• Geographic
				• Groups
				• Households
				• Intra-household
				• Individual
				
				Criteria(vulnerabilities)
				• Physiological
				• Economic
				• Social
				• Political
				
				Mechanisms
				• Market
				• Self-selection
				• Administrative
				• Community-based
					Outcomes
					
					Food security indicators
					• Food consumption
					• Nutrition
					• Anthropometric measures
					
					Indicators of Risk and Vulnerability
					
					Hazards/risks occurrence
					• Health
					• Environment
					• Conflict
					• Social
					• Economic
					• Political
					
					Community and livelihood changes indicating increasing vulnerability
					• Social networks
					• Institutions
					• Inter/intra community dynamics
					
					Households
					• Coping strategy index
					• Asset divestiture
					• Livelihood strategy changes
					• Terms of trade
					• Consumption frequency index
					
					Integrated Humanitarian Information Systems
					• Baseline vulnerability and poverty assessment
					• Early warning
					• Needs assessment
					• Program monitoring
					• Impact evaluation
					• Context monitoring
					• Programme evaluation and lessons learned

Figure 5 HLSA Framework, from Frankenberger 2005, p. 48

3.3 Population Level Measures

Assessments that aim to segment a given population into different levels of vulnerability tend to emphasize quantitative measures according to a given definition of vulnerability. Commonly available sources of secondary data can be useful at both the macro (country) and meso (subnational) levels. For example, UNICEF's Multiple Indicator Cluster Survey (MICS) data is particularly relevant to vulnerability as understood through the lens of "health, education, child protection and HIV/AIDS" (UNICEF, 2012). Another useful source of secondary data is the World Bank's Living Standards Measurement Survey (LSMS), which includes survey data at community and household levels, including information on pricing and consumption to provide information on living standards. Similarly, the Common Wealth Indicator Questionnaire (CWIQ) examines living standards indicators through a nation-wide household survey, with a focus on service delivery (Ajayi, 2006).

Other international surveys can be consulted for further population level information depending on the indicators for vulnerability selected and desired geographic level of analysis. The measures discussed below include methods for gathering information on poverty and subnational regional vulnerability associated with spatial poverty traps, but, again, other surveys can be compiled according to desired vulnerability indicators.

3.3.1 Poverty Measures: PPI and PAT

Though poverty measurements capture only one dimension of vulnerability and lack a predictive function, poverty remains highly correlated with vulnerability and can be useful, in addition to other measures, to an assessment. Poverty Assessment Tools and the Progress out of Poverty Index are simple tools designed to help microfinance institutions (MFIs) target poor or extremely poor clients in response to congressional requirements for poverty targeting. Among poverty assessments used by MFIs, only PAT and PPI "are directly derived from international or national poverty lines, have known levels of accuracy, and are relatively simple to administer" (The SEEP Network Social Performance Working Group, 2008, p. 181).

Poverty Assessment Tools (PAT) were developed by the IRIS Center at the University of Maryland for USAID. They "are short household questionnaires with 16 to 33 questions on topics ranging from consumer durables ownership to educational attainment. The individual questions have been chosen to balance practicality of implementation and the accuracy of aggregate poverty predictions" (The SEEP Network Social Performance Working Group, 2008, p. 181). So far, there are 37 countries with developed PATs.

The Progress out of Poverty Index was developed by the Grameen Foundation with funding from CGAP and the Ford Foundation. The PPI consists of a scorecard based on answers to ten questions about household characteristics and asset ownership. Scores are then interpreted in terms of the likelihood that an individual falls below the poverty line. The score itself is not a measure of poverty, but a measure of poverty likelihood. PPIs are available for 46 countries (Grameen Foundation, 2013).

To be useful in vulnerability assessment, the PPI and PAT should be used to complement other vulnerability measures. The accuracy of a given tool depends on quality of national survey and "spatial differences in underlying poverty relationships" (Ford Foundation, CGAP, & Social Performance Task Force, 2010, p. 16). They can both be used to segment populations by poverty level. Also, though both generate poverty scores at the individual or household level, their use for individual targeting is contested (Ford Foundation et al.,

2010). PAT was not designed for the purpose of stand-alone use for poverty targeting. "PATs are calibrated to be accurate at the aggregate level and household-level misclassifications are expected ... However, when used in conjunction with other measurements related to poverty, income, assets or other targeting criteria, some organizations have used HH level PAT expenditure calculations for analysis" (USAID, 2013a). On the other hand, while also not designed for targeting, the developer of PPI has suggested that individual level scorecards can be used for this purpose (The SEEP Network Social Performance Working Group, 2008). It is generally not recommended to use either tool for targeting, as the design of the tools is only statistically accurate at a group level (Ford Foundation et al., 2010).

Both PPI and PAT are simple to use, tested tools for assessing poverty incidence. However, they only measure poverty ex post, rather than examining ex ante vulnerability. PPI and PAT measures have been developed for a limited number of countries, not all of which have updated measures. Finally, they do not distinguish "between urban and rural households, which will likely have different poverty characteristics" (The SEEP Network Social Performance Working Group, 2008, p. 182).

Distinctions between PPI and PAT may determine selection of one or the other, as described in the table below:

Table 1. PAT vs. PPI

Item	PAT	PPI
Purpose	Provide low-cost and accurate estimate of poverty incidence	Provide low-cost and accurate estimate of poverty incidence Measure change in poverty incidence through time Targeting
Method	Estimate percentage of population falling below absolute extreme poverty line using a short set of proxy indicators for household expenditures	Estimate percentage of population falling below absolute poverty line using a short set of proxy indicators for household expenditures Poverty status is probabilistic
Source of Information[a]	Existing data from recent national household survey Primary data collection by IRIS on nationally representative sample	Existing data from recent national household survey
Derivation Method[b]	Selects the most accurate model for each country from a pool of eight potential regression methods	Unique process based in part on Logit regression
Types of Indicators[c]	Simple and practical Most indicators show variation over time	Simple, objective, practical, and objectively verifiable Indicators show variation over time

Item	PAT	PPI
Poverty Lines[d]	Extreme poverty: • $1 DPCE • Bottom 50% below national poverty line	Extreme poverty: • $1 DPCE • $2 DPCE (CEE countries) • Bottom 50% below national poverty line • National extreme poverty line • Other extreme poverty lines Poverty: • $2 DPCE • $4 DPCE (CEE countries) • National poverty line • Other poverty lines
Data Collection	Collected in field by staff or other enumerators not known by the interviewee	Collected in field by loan officers
Poverty Calculation	Automated—done at office by customized freeware computer program	Can be calculated by loan officers or survey enumerators in the field or in the office by hand or with electronic device (e.g., PDA or computer)
Level of Poverty Analysis[e]	Aggregated	Individual client Aggregated
Poverty Targeting[f]	Not used for poverty targeting	Used for poverty targeting
Transparency[g]	Enumerator does not see poverty score	Enumerator sees poverty score Scoring weights are public knowledge
Poverty Monitoring[h]	Some indicators used for poverty tool do not vary or vary little over time	Indicators used for poverty tool are objective and vary over time with changes in poverty status

Figure 6 From the SEEP Network Social Performance Working Group 2008, p.183-184

3.3.2 Local Vulnerability Index (LVI)

The Local Vulnerability Index was designed by Naude, McGillivray, and Roussouw (2008) to address a gap in vulnerability assessment methodologies, which tended to either focus on the household or country levels, but not in between. Defining vulnerability as "the risk that a 'system', such as a household, region or country would be negatively affected by 'specific perturbations that impinge on the system' or to the probability of a 'system' undergoing a negative change due to a perturbation (Gallopin 2006: 294, cited in Naude et al., 2008, p. 1), LVI measures can be placed firmly within the poverty dynamics strand of the economics literature. The LVI examines subnational regional vulnerability to identify "spatial poverty traps" which can explain much household poverty in the form of covariate risk in a given area.

Noting the importance of subnational level and geographic variation in assessments of vulnerability, "Günther and Klasen (2007:3) recognize that one problem is due to the fact that 'equal incomes do not translate into equal outcomes for all ... different people are faced with different environments for translating income gains into non-income wellbeing gains'" (as quoted in Naude et al., 2008, p. 3). The LVI uses principal components analysis "to extract the common factors from a number of domains influencing the vulnerability of a place," which resulted in the following variables: the size and structure of the local economy, international trade capacity, peripherality, income volatility, demography and health, environment and geography, and the financial system (Naude et, al, 2008, p. 8-9). In Naude et al's study, each variable was then weighted, and each district given a score. Most data was collected from Global Insight's Regional Economic Focus (REF) (see www.globalinsight.co.za), a website that compiles official statistics.

The LVI is especially useful for generating regional public policy. There is no published guidance or toolkit for the construction of an LVI, though Naude et al.(2008) provide an overview of how it is accomplished. The index can help identify larger scale stressors beyond the household level and can be combined with individual and household level measures to understand how those stressors interact. The major benefit of the index is the insight it yields on spatial poverty traps and covariate risks. However, analysis is still bound by district or other subnational level boundaries, depending on available data, which may not capture how individual stressors cross boundaries. It also works within the parameters of an a priori definition of vulnerability, which may not match how individuals understand and experience vulnerability.

> **In Practice…**
>
> Naude et al.(2008) created a Local Vulnerability Index using a subnational dataset on 354 magisterial districts in South Africa. Averages across 10 selected variables from 1995 to 2005 were calculated and ranked across a nine-point index. An income-conditioned version of the LVI, the Vulnerability Intervention Index (VII), was then generated to highlight locations where increases in per capita income were not considered likely to decrease vulnerability. The results demonstrate significantly lower vulnerability to shocks in urban than rural areas. The index shed light on the vulnerability of place, particularly as it relates to environmental and geographic factors.

3.3.3 Household Vulnerability Index (HVI)

The Household Vulnerability Index (HVI) is a statistical index developed by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) in 2004 to measure household vulnerability. The index is part of the sustainable livelihoods and food security traditions of the economics literature on vulnerability. As a product of southern Africa, the index examines household vulnerability through the lens of the influence of "HIV and AIDS pandemic on household agriculture and food security" (FANRPAN, 2011). The HVI is concerned with the following two questions: "How can the 'most vulnerable' be identified and assisted?" and "How can the impact of the epidemic on household food security be monitored and evaluated over time?" (Kureya, 2013a, p. 5). It defines vulnerability as the "presence of factors that place households at risk of becoming food insecure or malnourished, "which is assessed on the levels of "'external vulnerability,' which refers to exposure to external shocks or hazards; and 'internal vulnerability,' which refers to the capacity to cope with or withstand those shocks (resilience)" (2013a, p. 6).

The HVI instrument examines 15 "impact areas" of vulnerability, to which various indicators can be assigned. Most data is collected via semi-structure household interviews. FANRPAN has developed a generic

In Practice…

The HVI was used in Swaziland to assess the effects of HIV/AIDS on food security and to quantify the vulnerability of farming households to the disease, filling a gap in data on the effects of HIV/AIDS across demographics (Masuku & Sithole, 2009). A Household Vulnerability Index was developed using questionnaire data gathered from 847 household interviews and validated using focus groups.

This information allowed researchers to classify households according to vulnerability level, defined as coping households (CLH), acute level households (ALH), or emergency level households. The results follow:

Table 6:   Household vulnerability index (HVI)

HVI level	HVI range	Situation of household	Frequency	%
Vulnerability Level 1	0 – 33.3%	Coping households (CHH) –household in vulnerable situation but still able to cope	660	77.9
Vulnerability Level 2	33.4 – 66.7%	Acute level households (ALH) –household has been hit so hard that it badly needs assistance to the degree of an acute health care unit in hospital. With some rapid-response type of assistance the family may be resuscitated.	186	22.0
Vulnerability Level 3	66.8 –100%	Emergency level households (ELH) – the equivalent of an intensive care situation – almost a point of no return – could be resuscitated only with the best possible expertise	1	0.1
Total			847	100.0

Results showed a major effect of HIV/AIDS on livestock, as families tend sell their livestock for cash needed to cope with the illness. Other effects show exacerbated vulnerability due to a diversion of labor to tending to the sick, at the expense of crop production. However, most households demonstrate an ability to cope on a basic level.

questionnaire which can be modified. Primary household data is supplemented by secondary data. A pre-programmed HVI database is used to calculate the index, and an online portal allows for both sharing and online calculation of the index. Using sampling methods, the HVI can be used for population level analysis. It can also be used as a census-type instrument for either population level analysis or individual and household level monitoring and targeting. FANRPAN estimates that the resources required to undertake an HVI survey is comparable to other baselines (2013).

The HVI offers several benefits. It accords with current best practices by using a sustainable livelihoods focus to analyze the dimensions of both vulnerability and coping. Additionally, it can be used for targeting purposes as well as population level analysis. However, its focus on food security may not be universally appropriate. Further, though the model invites community participation as a possibility, current published guidelines do

not emphasize it.

3.3.4 Econometric Measures: VEP, VEU, and VER

In the poverty dynamics strand of the economics literature on vulnerability, three econometric measures appear repeatedly: the Vulnerability as Expected Poverty (VEP), Vulnerability as Expected Utility (VEU), and Vulnerability as Uninsured Exposure to Risk (VER) measures all provide models to assess vulnerability to poverty (Hoddinott & Quisumbing, 2003; Naudé et al., 2009b). VEP and VEU produce individual level measures which can be aggregated to the population level (Hoddinott & Quisumbing, 2003, p. 12). Like PPI and PAT, although it is possible but not recommended to use VEP and VEU for the purposes of individual level targeting, as these measures are much less accurate than when used at the aggregate level (Bérgolo, Cruces, & Ham, 2012). Although panel data are recommended to generate the most accurate results using econometric methods, it is often difficult to access in developing countries (Jha & Dang, 2009).

The Vulnerability as Expected Poverty (VEP) metric creates a benchmark for consumption and the probability for falling below it at an individual level. It is calculated using indicators on household characteristics related to poverty, shocks, and risks (Shubham Chaudhuri, Jalan, & Suryahadi, 2002). It is easy to calculate and particularly useful when only cross-sectional, rather than panel data is available (Jha & Dang, 2009). Though results using this measure can be similar to ex post poverty measures, VEP has the power for a finer level of discrimination than measures like PPI or PAT and can be particularly useful in situations where a large portion of the population is just above the poverty line (Hoddinott & Quisumbing, 2003). Ultimately, Jha and Dang consider VEP a "second-best solution" (2009, p. 10) when panel data is unavailable. The figures below demonstrate survey questions used to develop indicators on risks and shocks to calculate VEP.

1 Type of event	2 Do you think that … will occur in the next 5 years? If "No" go to Q13 A	4 How often, do you think, will … occur in next 5 years? B	3 If … occured within the next 12 months, what would be the impact on your household? income C	3a assets C	13 Do you do anything to prevent … from happening OR to mitigate its impact on your household's income and assets? A	14 What do you do to prevent … from happening OR to mitigate its impact on your household's income and assets? (most important strategy only) do not ask if Q13=no D	15 Concerning …, approximately how much does it cost you per year to prevent/mitigate? (incl. forgone income) do not ask if Q13=no do not record expenses twice THB/1000 VND	16 If the same measure is taken to prevent/mitigate for another type of risk and costs have been recorded there, record the code of the event type here
1 Illness of household member								
3 Household member left the household								
4 Person joined the household								
5 Money spent for ceremony in the household								
24 Accident								
38 Law suit								
6 House damage								
7 Theft								
8 Conflict with neighbours in the village								
9 Relatives/Friends stopped sending remittances								
10 Flooding of agricultural land								
11 Drought								
12 Unusually heavy Rainfall								
13 Crop pests								
14 Storage pests (including rats)								
15 Livestock Disease								
16 Landslide, Erosion								
55 Storm								
46 Was cheated								

Figure 7 "How to ask about risks?" from Waibel 2013

d. Causal relationships between shocks.

21	22	23a	23b	23c
Enumerators: List Event IDs of all shocks mentioned by the household in sections 3.1.a to c	Did shock ... lead to any of the other shocks you mentioned? (ask for all the shocks indicated by the household in sections 3.1.a and 3.1.c) (if "No" go to next row) E	Which of the shocks you mentioned were consequence of shock ... (write down event IDs)		

Figure 8 "How to ask about shocks?" from Waibel 2013

The Vulnerability as Expected Low Utility (VEU) measure is based on a definition of vulnerability as "as the utility lost due to risk, as the difference between the expected household consumption and the certainty-equivalent consumption," or consumption that would have occurred in a situation of certainty (Jha & Dang, 2009, p. 46). This measure has the benefit of disaggregating vulnerability due to poverty and vulnerability due to uninsured risk. Although considered a stronger measure or vulnerability than VEP, VEU is difficult to calculate and reliant upon difficult-to-acquire panel data.

Vulnerability as Uninsured Exposure to Risk (VER) is not a predictive tool, but instead measures actual changes in welfare due to a given risk. It is easy to calculate and can attribute welfare loss to either idiosyncratic or covariate risks.

Hoddinott and Quisimbung (2003) point out that all three measures can be mixed and matched, and that the definition of risk in terms of consumption or income can be replaced by health, education or other indicators of wellbeing. Additionally, there is no one method for using these tools, and the literature contains various approaches. Data can be acquired from questionnaires at the individual, household, and community levels, such as the World Bank's LSMS (Jha & Dang, 2009). Each measure has its relative advantages: VEU examines poverty and risk, where VEP provides less insight on risk and can actually lead to perverse policy outcomes that increase risk for households (Hoddinott & Quisumbing, 2003). However, VEP can be measured using cross-sectional data, where VEU's reliance on panel data makes it difficult to calculate. Additionally, as quantitative tools, each of these measurements relies on a predetermined definition of vulnerability, which may or may not line up with perceptions of vulnerability at the community level. The richness of these measures can be enhanced when combined with qualitative methods.

3.4.5 Participatory Vulnerability Analysis (PVA) and Participatory Vulnerability and Capacity Analysis (PVCA)

Participatory Vulnerability Analysis (PVA) and Participatory Vulnerability and Capacity Analysis (PVCA) are based on PRA methods specialized to assess vulnerability. In addition to the sustainable livelihoods literature, they are both influenced by the disaster management literature and were originally developed for the intended use in natural disaster contexts, although both also assess other types of shocks. The strength of these approaches lie in the power of the community to identify its own definitions for vulnerability.

PVA is a rights-based approach developed by Action Aid in 2000 with a focus on action-planning (Chiwaka & Yates, 2004). Like other participatory methods, it mobilizes community information about vulnerability

and facilitates the process of making plans to address it. It distinguishes itself as a "multi-level, multi-stakeholder approach," whereby long-term action planning flows up from the community level all the way to international level policy. PVA can be used to complement a baseline analysis or to gather information for targeting, with three specific uses:

> "1) to diagnose vulnerability as well as its causes (this may be done as a baseline that takes a broad view of vulnerable situations)
> 2) to focus on specific vulnerable groups, hazards or locations or
> 3) to inform better emergency preparedness, mitigation and response as well as better development work (this may be for a new or existing programme or overall strategy)" (Chiwaka & Yates, 2004, p. 15).

PVCA is a similar, action-oriented approach to vulnerability assessment, developed by Christian Aid. The additional letter in its acronym signals a greater focus on understanding the capacity of a target population, also called coping or resilience. PVCA includes additional provisions regarding the potential for scale-up, which includes activities such as assessing the capacity of Christian Aid's local NGO partners and mapping existing initiatives and baseline studies (Christian Aid, 2011). Christian Aid advises against using the PVCA to conduct a large-scale research project, although it can inform one. It also notes that it should not be used as "an extractive research method," but rather as an action-planning tool (p. 5). It should not be used in conflict situations.

Both PVC and PVCA use participatory methods to define vulnerability to gain a more nuanced understanding of how it is experienced locally. This information can be particularly valuable in informing more quantitative measures of vulnerability, and, by incorporating ranking exercises, can facilitate individual and household targeting. However, participatory methods require time and financial investment and can be biased by community power dynamics or facilitator input. Participant disappointment is a risk mentioned by Christian Aid, as many participants will expect interventions that can address the problem they express following a participatory exercise. Again, these exercises should be attached to action, and are not appropriate for "extractive" research.

3.4 Individual and Household Measures and Targeting

External targeting measures can cause stigma, so the World Bank recommends using community-based approaches for individual and household level targeting (n.d.-a). Participatory approaches, like PRA, have shown to yield greater accuracy in individual targeting than external approaches (Banerjee et al., 2007). Whereas PVC and PVCA are PRA-influenced approaches, the Participatory Wealth Ranking (PWR) is a specific exercise that can be used in a PRA. Numerous such exercises might be employed in a PRA, but PWR is included here for its utility in targeting according to community definitions of relative poverty or vulnerability (CGAP Microfinance Gateway, 2013). Community ranking exercises are considered a best practice for individual level targeting, and thus PWR is the only tool we discuss in this section of the review. PWR can be conducted as a public exercise or with key informants.

Generally, PWR involves facilitation of a discussion with community members to come up with a definition of the topic of analysis (Simanowitz & Nkuna, 1998). Though the exercise was originally used for wealth ranking, conceptions of wealth can be extended to vulnerability, with the facilitator ensuring that both risk

and coping mechanisms are considered by participants in their criteria for vulnerability. Next, a process of community mapping and ranking of individual households is facilitated. This can involve defining levels or wealth or vulnerability. The entire process is often repeated with reference groups as well to compare findings and ensure consistency.

When participants define levels, they are asked to "discuss the characteristics of each category of wealth (such as happiness, hunger, health, number of children, relationship to important people, ownership of land/livestock)" (World Bank, n.d.-b). The broad conceptions of wealth that emerge from these discussions explain why PWR sometimes called Participatory Well-Being Ranking (VENRO, 2011).

Several variations on this method exist, including alternative statistical methods for calculating wealth scores (Lekshmi, Vungopalan, & K, 2008) and either defining criteria and categories a priori or allowing participants to create these

In Practice…

For CARE's Zimbabwe interventions , beneficiaries were selected using a three-step participatory process involving PWR methods. First, representatives of the community rank households by vulnerability level and creates a list of potential beneficiaries based on CARE's targeting criteria. Then, a public meeting is held to verify the information. Finally, CARE visits 5% of the selected households to verify that they meet the criteria (Mazzeo, 2009, p. 76).

definitions. "There is a potential trade-off between making the results easier to analysis [sic] statistically, by, for example, predetermining the number and criteria of the wealth strata used by the informants, and allowing the informants to categorise as they wished… to discover more about aspects of wealth and poverty and the people's perceptions" (Jeffries, Warburton, Oppong-Nkrumah, & Antoh, 2000, p. 15).

PWR is a standard part of a set of PRA exercises. Some authors recommend against conducting the ranking as a public exercise, given the potential for stigmatization (Rennie & Singh, 1995). In order to successfully conduct a PWR, participants should "know the assets and situation of the units which will be ranked" (World Bank, n.d.-b), making it difficult to conduct with pastoral groups.

There are several benefits associated with using PWR. First, community developed indicators for wealth ranking provide insight into perceptions of poverty that goes beyond measures of income or consumption. Second, it is useful for targeting, as it is difficult to determine relative poverty levels without community participation. PWR tends to be accurate and generally corresponds with measures of absolute poverty, matching LSMS scores 70-79% of the time (Zeller, Feulefack, & Neef, 2006). However, participants can be resistant to the exercise, particularly when done publicly (Rennie & Singh, 1995). Moreover, for some interventions, targeting at this level is simply unnecessary, and it will be preferable to target beneficiaries by using population-level categories.

3.5 Summary Table

Type	Level	Origins in Literature	Tool	Purpose	How to Use	Strengths	Weaknesses	References
Tool	Macro, Meso, Micro	Economics (poverty dynamics)	Vulnerability as Expected Poverty (VEP)	Econometric method for analyzing vulnerability to expected poverty	Ex ante quantitative measurement of vulnerability based on concept of vulnerability to expected poverty at individual level	Easy to calculate	Can lead to perverse policy recommendations	(Hoddinott & Quisumbing, 2003); Chaudhuri 2002; Jha and Dang 2009
Tool	Macro, Meso, Micro	Economics (poverty dynamics)	Vulnerability as Expected Low Utility (VEU)	Econometric method for analyzing vulnerability to poverty as expected utility	Ex ante quantitative measurement of vulnerability based on concept of vulnerability to expected low utility at individual level	Disaggregates between vulnerability due to poverty and vulnerability due to uninsured risk	Difficult to calculate	(Hoddinott & Quisumbing, 2003); Jha and Dang 2009
Tool	Macro, Meso, Micro	Economics (poverty dynamics)	Vulnerability as Uninsured Exposure to Risk (VER)	Econometric method for analyzing vulnerability to poverty as uninsured exposure to risk	Ex post quantitative measurement of vulnerability to uninsured exposure to risk; measures actually changes in welfare due to a given risk	Can attribute welfare loss to either idiosyncratic or covariate risks, easy to calculate	Ex post, not predictive	(Hoddinott & Quisumbing, 2003)
Tool	Meso	Economics (poverty dynamics)	Progress out of Poverty Index (PPI)	Poverty measurement tool for organizations and businesses with a mission to serve the poor, country-specific 10 question survey	Household survey compared to national poverty line to measure poverty level. Can be used for targeting.	Simple, easy to use.	Not available for all countries; ex post, not predictive	(The SEEP Network Social Performance Working Group, 2008); Ford Foundation, CGAP, & Social Performance Task Force, 2010; Grameen

								2013; USAID 2013a
Tool	Meso	Economics (poverty dynamics)	Poverty Assessment Tools (PAT)	Measures the percentage of population below national poverty line	Household survey compared to national poverty line to measure poverty level. Not recommended by developers for targeting.	Simple, easy to use	Not available for all countries; ex post, not predictive	(The SEEP Network Social Performance Working Group, 2008); Ford Foundation, CGAP, & Social Performance Task Force, 2010; Grameen 2013; USAID 2013a
Tool	Micro	Economics (poverty dynamics, sustainable livelihoods), Anthropology/Sociology	Participatory Wealth Ranking (PWR)	Participatory assessment allows community to define poverty and segment itself accordingly	Participatory tool used for targeting	Increased accuracy by allowing community to define levels of poverty/vulnerability rather than using external definitions	Can be stigmatizing, seen as intrusive	Simanowitz & Nkuna, 1998; World Bank n.d.-b; VENRO 2011; Jeffries et al.2000; Lekshmi et al.2008
Framework	Micro	Economics, Anthropology/Sociology, Disaster Management	Household Economic Approach	"livelihoods-based framework for analysing the way people obtain access to the things they need to survive and prosper" (Lawrence et al.2008, p.2)	This is a framework, including a range of tools for information collection	Focus on vulnerability, comprehensive	Resource intensive	Lawrence et al.2008, Holzmann et al.2008, Petty & Seaman 2004

Method	Micro	Anthrpology/Sociology	Participatory Rapid Appraisal (PRA)	Participatory community assessment of vulnerability	This is an information collection tool – specific questions and activities must be designed according to purpose of project. Can be used to define concepts and select indicators for quantitative assessments.	Community engagement reduces stigma/conflict associated with targeting; useful for understanding community perceptions of vulnerability	Can reinforce marginalization of some groups	Banerjee et al.2007
Frame work	Meso/Micro	Economics (sustainable livelihoods, food security), Anthropology/Sociology, Disaster Management	SAVI Framework	Southern Africa Vulnerability Initiative framework for vulnerability analysis	This is a framework, including a range of tools for information collection	Accounts for multiple stressors that contribute to vulnerability	Not a toolkit; comprehensive nature demands complex and long-term research	O'Brien et al.2009, Casale et al.2010
Tool	Meso	Economics (poverty dynamics, sustainable livelihoods)	Local Vulnerability Index (LVI)	Measure vulnerability on sub-national, regional level	Ranks regions, create income-conditioned vulnerability intervention index (bigger differences mean interventions focused on income won't be as successful in reducing vulnerability)	Regional/sub national data good for policy-making	Not appropriate for more localized interventions	Naude et al.2008; Ballesteros 2012

Tool	Meso and Micro	Economics (food security, sustainable livelihoods), Anthropology/Sociology	Household Vulnerability Index (HVI)	Impact of HIV and AIDS on Agric & Food Security	Statistical measure of vulnerability to shocks like natural disasters, disease, and poverty, by assessing 5 sets of assets according to Sustainable Livelihoods Approach: ideally conducted through census, but can use sampling methods	Considers risk and coping mechanisms; tools and resources available	Focus on food security not appropriate for all interventions	Sibanda et al; FANRPAN 2011
Frame work	Macro, Meso, Micro	Economics (sustainable livelihoods), Anthropology/Sociology, Disaster Management	Participatory Vulnerability Analysis (PVA)	PVA is a systematic process that involves communities and other stakeholders in an in-depth examination of their vulnerability, and at the same time empowers or motivates them to take appropriate actions. The overall aim of PVA is to link disaster preparedness and response to long-term development.	Community identifies vulnerabilities and responses	Multi-level framework with emphasis on participation elicits community perceptions of vulnerability	Not generalizable	Chiwaka and Yates 2004

Frame work	Micro	Economics (sustainable livelihoods), Anthropology/Sociology, Disaster Management	Participatory Vulnerability and Capacity Analysis (PVCA)	Disaster-risk-reduction tool to be used for designing livelihoods or poverty-reduction projects. As understanding of the short-, medium- and long-term impacts of climate change increases, the importance of applying PVCA to a wider set of livelihood risks grows.	Community identifies vulnerabilities and responses – designed with follow-up intervention in mind, not for pure research	Multi-level framework with emphasis on participation elicits community perceptions of vulnerability	Not generalizable	Christian Aid 2013
Frame work	Macro, Meso, Micro	Economics (sustainable livelihoods, food security), Anthropology/Sociology	Household Livelihood Security Analysis (HLSA)	HLSA is multidisciplinary, systems approach, understand broader systems that affect livelihoods, used by CARE by CARE	Framework provides guidance for analysis of quantitative, qualitative, and analytical (causal) information. Used to identify vulnerable households by understanding context on holistic level. In-depth assessment takes 4 – 6 weeks	Useful in creating comprehensive baseline, incorporates mixed methods, including participatory methods	Criticized for not being useful in situations of chronic conflict. Qualitative approach not generalizable.	Frankenberger et al.2002; Frankenberger 2005; Jaspars and Shoham 2002; Lindenberg 2002; Cannon, Twigg, and Rowell 2005; Rahman and Aketer 2010

4. ADAPTING APPROACHES TO INTERVENTION NEEDS

The methods discussed in this review are only a handful of the tools available to conduct a vulnerability assessment for economic strengthening interventions. The analytical frameworks discussed, such as HEA, SAVI, and HLSA, offer insight in how to combine these tools in a conceptually coherent way. These approaches can and should be mixed and matched according to intervention objectives, resource availability, and the intended use of data acquired.

Mixing qualitative and quantitative methods is highly recommended to enhance the accuracy of the assessment (Frankenberger et al., 2005). It is key to leverage secondary data, and recommended to use qualitative data to inform quantitative measures, such as informing the indicators used to develop a vulnerability index. Some qualitative methods include case studies, participatory methods, participant observation, and life history interviews (Chronic Poverty Research Centre, n.d.).

Tools should never be used "off-the-shelf," but should be carefully adapted to a specific context and level of analysis. However, researchers should be aware of the data and sampling requirements of tools for them to remain accurate. For example, PAT should not be used to measure individual vulnerability, so no attempts to adapt these tools to such purposes should be attempted. It is recommended to work with the developer of a given tool in order to appropriately adapt it to intervention needs.

4.1 Case Studies

There are several factors that shape the development of a vulnerability assessment methodology, including funder specifications for M&E, data constraints, and time and resource constraints. The examples below demonstrate how vulnerability analysis has been incorporated into recent economic strengthening interventions and adapted according to these constraints.

4.1.1 IMARISHA

Development Alternatives Incorporated (DAI)'s IMARISHA Project (2011-2015), an economic strengthening technical assistance project in Tanzania, adapted HEA in conjunction with developing its own vulnerability and resilience indices (Green, 2013). As a technical assistance project, IMARISHA's objective in collecting HEA data was "to help international and local organizations and the Tanzanian government deliver more targeted and effective socioeconomic assistance to communities in order to empower HIV/AIDS-affected families" (Green, 2013).

Based on Save the Children UK's Household Economy Approach, DAI's Household Economic Assessment survey is an abbreviated, targeted version of HEA designed for the context of Tanzania. DAI adjusted the HEA according to insights gathered from focus groups and informal discussions with project partners, which revealed the key importance of food security in the Tanzanian context. DAI compared results to secondary data sources such as the Demographic and Health Survey, the FinScopes survey on financial access, and the National Household Budget Survey in Tanzania. DAI used frequencies and bivariate analysis to analyze the data, with a focus on examining trends linking household hunger to other key indicators in order to identify entry points of intervention.

Respondents were selected via randomized sample of the HIV-affected population, including households receiving or scheduled to receive PEPFAR assistance. A targeted sample, rather than a sample of the general population, was selected due to financial restraints. Surveys were completed in "34 districts in eight regions of Tanzania—Dar es Salaam, Dodoma, Morogoro, Mbeya, Mwanza, Iringa, Singida, and Shinyanga. Qualitative focus-group discussions in 15 districts corroborated the findings" (Green, 2013). Reaching about 1,300 households, surveys were completed by partner organizations, not professional enumerators. Although this was a decision based on cost, it came with several benefits, such as "helping to further the dialogue with local partners around how to target beneficiaries, how to better understand and address household economic vulnerability and to consider economic vulnerability in the context of program design of interventions"(Mgaramo, 2013).

IMARISHA also developed an Economic Vulnerability Index to look at indicators determined to be of importance to the project goal of economic strengthening, including "household hunger, household size, presence of an orphan or vulnerable child, number of earners, ability to pay for medical treatment, access to transport, and savings" (Green, 2013). IMARISHA also developed a complementary tool to measure resilience, called the Economic Resilience Index, to measure "productive behaviors such as smart post-harvest handling and bulking; participation in savings; engagement with the formal sector (especially the financial sector); and perceptions of control of economic future, household food situation, and community economic situation."

DAI experienced some challenges coordinating with a large number of partners. It was also challenging to work with paper rather than electronic data collection methods. The results were eventually used to provide partners with recommendations to enhance their program design and targeting methods.

IMARISHA's adaptation of the HEA methodology responded to the project's objectives and financial and time constraints. Importantly, DAI utilized qualitative methods to corroborate its quantitative findings. However, it is likely that quantitative indicators could have benefited from more qualitative input from the beginning of the project. Sampling was conducted according to funder interests and project needs, as well as financial constraints. Interestingly, survey implementation proved to be an opportunity to both enhance relationships with and educate partner organizations. Finally, DAI's use of both a vulnerability index and a resilience index provided an extra dimension to their analysis, which could be used in support of recommendations in the literature that interventions generate a pathway from vulnerability to resilience (Béné et al., 2012).

4.1.2 SCORE

The Sustainable, Comprehensive Responses for Vulnerable Children and their Families (SCORE) Project (2011-2015) in Uganda is a household economic strengthening project focused on vulnerable children led by Association of Volunteers in International Service (AVSI) and a consortium of partners, including FHI 360, TPO Uganda, and CARE. SCORE used vulnerability assessment for both targeting and project monitoring and evaluation.

SCORE developed a quantitative Vulnerability Assessment Tool (VAT) based on the national core programming areas (CPAs) for Orphans and Vulnerable Children (OVC) program provided by the Ministry of Gender and Social Development of Uganda (MGSD) (Walugembe, 2013). In addition to variables relating

to the CPAs, the VAT included vulnerability criteria used by technical advisors and consortium members. SCORE operates through over 50 implementing partners, who were responsible for actually carrying out the VAT survey (SCORE, 2013).

SCORE identified potential beneficiary households through referrals made by community-based entities. These included various actors in each community, such as HIV/AIDS intervention organizations or community-based organizations serving the vulnerable. In some communities, local government bodies called District Community Development Offices worked in conjunction with another USAID project to provide a list of vulnerable families to SCORE. In other cases, implementing partners held community meetings to identify vulnerable community members (Lowicki-Zucca, 2013).Once potential beneficiary populations were identified, the VAT was used to segment them into vulnerability brackets decide whether they would be enrolled in the program. The cut-off for enrollment was determined by a numerical target that had already been set based on a situation analysis conducted by Population Council and the MGSD.

Then, SCORE utilized a separate questionnaire to assess the needs of enrolled beneficiary households and develop tailored intervention plans. The VAT was reintroduced at roughly one-year intervals to assess impact. In the first two years of implementation, SCORE reached over 22,000 beneficiary households, with roughly half moving to a lower level of vulnerability (SCORE 2013).

Although using implementing partners to conduct the survey allowed SCORE to reach a large number of households, the complexity of the process presented challenges. In addition to ensuring that enumerators are well trained and that guidance is available for VAT implementation, Chief of Party Massimo Zucca has emphasized the importance of checking the completed surveys for accuracy before submitting them to headquarters for analysis (2013). He also notes that there is a trade-off between survey length and potential for error, and that sometimes a series of questions evoking vulnerability "red flags" are enough for simple program enrollment. However, he emphasizes the importance of tailoring the assessment tool according to its desired use and output, requiring specific questions according to use for purposes of monitoring and evaluation or enrolment.

The VAT used by SCORE is a quantitative instrument with a heavy focus on income. Indicators based on government and project priorities, and targeting was based on a variety of methods. Though this approach is very pragmatic and benefits from building on work previously completed, it does not represent a systematic approach to understanding vulnerability. Additionally, the same VAT was used across very different regions to generate a quantitative measure of vulnerability without tailoring it to local perceptions. This was ameliorated to some degree by community-based methods of generating a pool of participants, but suggests that the VAT's utility for segmenting the larger population into vulnerability brackets may be limited. Finally, though VAT questions might serve as a good indication of ex post well-being, it is unclear if they are truly indicative of risk, as discussion of the VAT in SCORE's annual report makes no mention of risk at all (2013). SCORE's successfully reached its goals for vulnerability assessment as a tool for program enrollment and evaluation. The VAT, however, is not a tool meant to identify the causes of vulnerability, and would therefore be inappropriate for program design, for which a separate needs assessment was conducted.

4.2 Discussion

These examples demonstrate the challenges of using assessments to gain a holistic understanding of vulnerability when faced with constraints such as funder objectives as well as limited time and financial resources. In analyzing them, we return to the principles of vulnerability assessment discussed earlier in this paper to determine if these assessments answer the questions posed by Hoddinott and Quisumbing (2003): "What is the extent of vulnerability?...Who is vulnerable?...What are the sources of vulnerability?...How do households respond to shocks?" and "What gaps exist between risks and risk management mechanisms?" We also examine whether community input on the subjective experience of vulnerability was sought.

Both IMARISHA and SCORE relied heavily upon quantitative assessment tools, and both emphasize the simplicity of these tools. This makes sense to the degree that both projects were operating within the boundaries of pre-determined definitions of vulnerability and specific funder objectives. Though both projects incorporate qualitative data at some level, it is likely that a lack of a more thorough qualitative analysis resulted in missing information about the subjective experience of vulnerability, as well as the "hidden" vulnerabilities generated by interacting stressors (O'Brien et al., 2009). Neither IMARISHA nor SCORE demonstrate significant community input on the subjective experience of vulnerability.

SCORE's vulnerability assessment, as a tool for determining beneficiary eligibility for the program, based its cut-off score, and therefore its definition of vulnerability, based on pre-defined numerical objectives. In other words, it fit the concept of vulnerability according to what it could accomplish as an intervention with finite resources. This information, therefore, cannot be considered generalizable, but it does answer the question of "what is the extent of vulnerability?" and "who is vulnerable?" It also identifies the sources of vulnerability among pre-determined options. The VAT does not, however, address the question of how households respond to shocks or assess the gaps between risk and risk management (see Appendix XI). IMARISHA's HEA, on the other hand, does explicitly examine risk as well as coping mechanisms. It also utilizes largely pre-determined concepts of vulnerability to assess the extent of vulnerability and who is vulnerable.

These examples demonstrate how the intended use and purpose of a vulnerability assessment affects its design. IMARISHA's vulnerability assessment was intended to provide partner organizations with insight on program design and targeting as well as its own monitoring and evaluation, while SCORE's assessment was used for just program enrolment and monitoring and evaluation. The assessments differ accordingly. IMARISHA's HEA survey included questions related to household access to resources, risk, and coping to provide greater insight for partner organizations on beneficiary populations' areas of vulnerability, providing vulnerability and resilience indexes to segment the population by level of vulnerability. SCORE used the VAT to segment the population of pre-determined potential beneficiaries based on a set of vulnerability indicators, with less attention to risk or coping. It was re-administered at regular intervals to monitor progress. It is notable that points of entry for intervention were assessed according to a needs assessment rather than a vulnerability assessment.

Results of both assessments certainly shed light on aspects of vulnerability and identify groups that suffer from it. The pre-definition of vulnerability was built into the design of both projects, limiting the scope of assessment according to that definition. However, a more comprehensive conceptualization of vulnerability, informed by qualitative data could have benefited project design.

5. CONCLUSION

Vulnerability assessments can be used for monitoring and evaluation, intervention design, and targeting in economic strengthening interventions. The assessment methods most relevant to economic strengthening are influenced by the literature on vulnerability from several disciplines, most notably economics, disaster management, and anthropology/sociology. Best practices emergent in the literature emphasize using a livelihoods perspective to examine multiple stressors of vulnerability. Vulnerability assessments should be informed by a strong conceptual framework, including parameters for defining vulnerability, and accounting for both risk and coping mechanisms. Vulnerability measures should be predictive, making full use of available secondary data and employing mixed methods. The vulnerability tools discussed in this review are a sample of available methodologies. They are designed to be mixed, matched, and adapted to intervention needs, though they should be adapted carefully to maintain their integrity.

SOURCES

Adger, W. N. (2000). Social and ecological resilience: are they related? *Progress in Human Geography, 24*(3), 347-364.

Adger, W. N. (2006). Vulnerability. *Global Environmental Change, 16*(3), 268-281.

Ajayi, O. O. (2006). Experiences in the Application of the Core Welfare Indicator Questionnaire (CWIQ) Survey Technology in Africa: The Journey So Far. *The African Statistical Journal, 3.*

Alwang, J., Siegel, P. B., & Jørgensen, S. L. (2001). *Vulnerability: A View From Different Disciplines*. Social Protection Discussion Paper Series. Retrieved from http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Social-Risk-Management-DP/0115.pdf

Banerjee, A., Duflo, E., Chattopadhyay, R., & Shapiro, J. (2007). *Targeting Efficiency: How well can we identify the poor?* Working Paper Series No. 21. Institute for Financial Management and Research Centre for Micro Finance Retrieved from http://poverty-action.org/sites/default/files/89_Duflo_Banerjee_Targeting_Efficiency.pdf

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 Paper, 2012*(405).

Bérgolo, M., Cruces, G., & Ham, A. (2012). Assessing the Predictive Power of Vulnerability Measures: Evidence from Panel Data for Argentina and Chile. *Journal of Income Distribution, 21*(1), 28-64.

Burton, I., Kates, R. W., & White, G. F. (1993). The Environment as Hazard (Second ed.). Guilford, New York.

Cannon, T., Twigg, J., & Rowell, J. (2005). Social Vulnerability, Sustainable Livelihoods and Disasters *Report to DFID Conflict and Humanitarian Assistance Department (CHAD) and Sustainable Livelihoods Support Office*. London: DFID.

Casale, M., Drimie, S., Quinlan, T., & Ziervogel, G. (2010). Understanding vulnerability in southern Africa: comparative findings using a multiple-stressor approach in South Africa and Malawi. *Regulating Environmental Change, 10*, 157-168. doi: 10.1007/s10113-009-0103-y

CGAP Microfinance Gateway. (2013). Poverty Assessment Tools Retrieved October 25, 2013, from http://www.microfinancegateway.org/p/site/m/template.rc/1.11.48260/1.26.9234/

Chambers, R. (1989). Editorial Introduction: Vulnerability, Coping, and Policy. *IDS Bulletin, 20*(2), 1-7.

Chaudhuri, S., & Christiaensen, L. (2002). Assessing household vulnerability to poverty: Illustrative examples

and methodological issues *IFPRI-World Bank Conference on Risk and Vulnerability: Estimation and Policy Applications*. Washington, DC.

Chaudhuri, S., Jalan, J., & Suryahadi, A. (2002). *Assessing Household Vulnerability to Poverty from Cross-sectional Data: A Methodology and Estimates from Indonesia*. Discussion Paper: #0102-52. Columbia University Department of Economics. New York, NY.

Chiwaka, E., & Yates, R. (2004). Participatory Vulnerability Analysis: A Step-By-Step Guide for Field Staff: ActionAid International,.

Christian Aid. (2011). Participatory Vulnerability and Capacity Assessment: Christian Aid.

Chronic Poverty Research Centre. (n.d.). Choosing which methods to use In L. Scott & P. Reyes (Eds.), *CPRC Methods Toolbox*: Chronic Poverty Research Centre.

Drimie, S. (2013, November 12). [Interview].

FANRPAN. (2011). *The Household Vulnerability Index*. Retrieved from http://www.fanrpan.org/projects/seccap/vulnerability_assessment/HVI_Pilot_Summary_20110829.pdf

Food and Agriculture Organization of the UN. (2010). *Measuring Resilience: A Concept Note on the Resilience Tool*. Food Security Information for Decision Making. FAO. Retrieved from http://www.fao.org/docrep/013/al920e/al920e00.pdf

Ford Foundation, CGAP, & Social Performance Task Force. (2010). Poverty Targeting and Measurement Tools in Microfinance: Progress out of Poverty Index and the Poverty Assessment Tool.

Frankenberger, T. R., Luther, K., Becht, J., & McCaston, M. K. (2002). Household Livelihood Security Assessments: A Toolkit for Practitioners. Atlanta, Georgia: CARE USA.

Frankenberger, T. R., Mock, N., & Jere, P. (2005). Vulnerability Assessment Methodology Review Synthesis: The Southern Africa Development Community: Food, Agriculture and Natural Resources, Regional Vulnerability Assessment Committee (SADC-FANR RVAC).

Gallopin, G. C. (2006). Linkages between Vulnerability, Resilience, and Adaptive Capacity. *Global Environmental Change, 16*, 293-303.

Grameen Foundation. (2013). PPI By Country Retrieved December 10, 2013, from http://www.progressoutofpoverty.org/ppi-country

Green, C. (2013, Summer 2013). Using Hard Data to Inform HIV/AIDS Interventions for Economic Strengthening. *Developments* Retrieved October 15, 2013, from http://dai-global-developments.com/using-hard-data-to-inform-hivaids-interventions-for-economic-strengthening/

Günther, I., & Klasen, S. (2007). *Measuring Chronic non-income Poverty*. CPRC Working Paper 79. Chronic Poverty Research Center. University of Manchester. Manchester.

Hahn, M. B., Riederer, A. M., & Foster, S. O. (2009). The Livelihood Vulnerability Index: A pragmatic approach to assessing risks from climate variability and change—A case study in Mozambique. *Global Environmental Change, 19*(1), 74-88.

Hoddinott, J., & Quisumbing, A. (2003). *Methods for Microeconometric Risk and Vulnerability Assessments*. Social Protection Discussion Paper. Social Protection Unit, Human Development Network. World Bank.

Holzmann, P., Boudreau, T., Holt, J., Lawrence, M., & O'Donnell, M. (2008). The Household Economy Approach: A guide for programme planners and policy-makers: Save the Children UK.

Jeffries, D., Warburton, H., Oppong-Nkrumah, K., & Antoh, E. F. (2000). *Case Study 6: Wealth ranking study of villages in peri-urban areas of Kumasi, Ghana*. Methodological Framework Integrating Qualitative and Quantitative Approaches for Socio-Economic Survey Work.

Jha, R., & Dang, T. (2009). Vulnerability to Poverty in select Central Asian Countries. *The European Journal of Comparative Economics 6*(1), 17-50.

Kalibala, S., Schenkb, K., Weissc, D., & Elsond, L. (2012). Examining dimensions of vulnerability among children in Uganda. *Psychology, Health & Medicine, 17*(3), 295-310.

Kuhanendran, J. (2013, November 11). [Interview].

Kureya, T. (2013a). *Household Vulnerability Index Background Document*. Unpublished document. FANRPAN.

Kureya, T. (2013b). Household Vulnerability Index Technical Information. FANRPAN.

Lawrence, M., Holzmann, P., O'Donnell, M., Adams, L., Holt, J., Hammond, L., & Duffield, A. (2008). The Practitioners' Guide to the Household Economy Approach. In T. Boudreau (Ed.): Save the Children.

Lekshmi, S., Vungopalan, R., & K, P. (2008). Livelihood Analysis using Participatory Wealth Ranking Tool of PRA. *Indian Research Journal of Extension Education, 8*(2 & 3), 75-77.

Lindenberg, M. (2002). Measuring Household Livelihood Security at the Family and Community Level in the Developing World. *World Development, 30*(2), 301-318.

Lowicki-Zucca, M. (2013, December 10). [Vulnerability Assessment].

Masuku, M., & Sithole, M. (2009). The impact of HIV/AIDS on food security and household vulnerability in Swaziland. *Agrekon, 48*(2).

Mazzeo, J. (2009). *Zimbabwe Household Livelihood Security Assessment DRAFT*. CARE, TANGO. Retrieved from http://works.bepress.com/cgi/viewcontent.cgi?article=1067&context=jmazzeo

Mgaramo, K. (2013, December 10). [IMARISHA Assessment Methodology].

Moser, C. (1998). The Asset Vulnerability Framework: Reassessing Urban Poverty Reduction Strategies.

World Development, 26(1), 1-19.

Naudé, W., McGillivray, M., & Rossouw, S. (2008). Measuring the Vulnerability of Subnational Regions *UNU-WIDER*.

Naudé, W., Santos-Paulino, A. U., & McGillivray, M. (2009a). Measuring Vulnerability: An Overview and Introduction. *Oxford Development Studies, 37*(3), 183-191.

Naudé, W., Santos-Paulino, A. U., & McGillivray, M. (2009b). *Vulnerability in Developing Countries*. WIDER Angle newsletter. Retrieved from http://www.wider.unu.edu/publications/newsletter/articles/en_GB/Vulnerability-angle-article/

O'Brien, K., Quinlan, T., & Ziervogel, G. (2009). Vulnerability interventions in the context of multiple stressors: lessons from the Southern Africa Vulnerability Initiative (SAVI). *Environmental Science and Policy, 12*, 23-32.

Petty, C., & Seaman, J. (2004). A New Household Economy Method for Assessing Impact of Shocks. *Field Exchange, 23*, 10-12.

Prowse, M. (2003). Towards a clearer understanding of 'vulnerability' in relation to chronic poverty. CPRC Working Paper. Chronic Poverty Research Centre.

Rahman, S., & Akter, S. (2010). *Determinants of Livelihood Security in Poor Settlements in Bangladesh* NAF International Working Paper Series. Natural Resources, Agricultural Development and Food Security International Research Network.

Rennie, J. K., & Singh, N. C. (1995). Wealth Ranking and Poverty Analysis. *CASL Guidebook* Retrieved November 13, 2013, from http://www.iisd.org/casl/caslguide/wealthranking.htm

SADC FANR Vulnerability Committee. (2004). *Vulnerability in Southern Africa: Insights from the VAC process* Paper presented at the GECAFS Southern Africa Food Systems & Vulnerability Workshop Gaborone, Botswana.

Schreiner, M. (2009). A Simple Poverty Scorecard for Peru Retrieved December 10, 2013, from http://www.microfinance.com/English/Papers/Scoring_Poverty_Peru.pdf

SCORE. (2013). Sustainable COmprehensive REsponses (SCORE) for Vulnerable Children and their families: End of Year 2 Report. USAID.

Sen, A. (1981). Poverty and Famines: An Essay on Entitlement and Deprivation. Oxford: Clarendon Press.

Simanowitz, A., & Nkuna, B. (1998). Participatory Wealth Ranking Operational Manual (3 ed.): The Small Enterprise Foundation Tshomisano Credit Programme.

The SEEP Network. (2013). Economic Strengthening Disciplines Retrieved December 12, 2013, from http://www.seepnetwork.org/economic-strengthening-disciplines-pages-20334.php

The SEEP Network Social Performance Working Group. (2008). Social Performance Map (pp. 180-185): The SEEP Network.

Turner, B. L., Kasperson, R. E., Matsone, P. A., McCarthyf, J. J., Corell, R. W., Christensene, L., . . . Schillerb, A. (2003). A framework for vulnerability analysis in sustainability science. *Proceedings of the National Academy of Sciences of the United States of America, 100*(14), 8074-8079.

UNICEF. (2012). Multiple Indicator Cluster Survey (MICS). *Statistics and Monitoring* Retrieved October 31, 2013, from http://www.unicef.org/statistics/index_24302.html

USAID. (2010). Cambodia PAT Survey Retrieved December 10, 2013, from http://www.povertytools.org/countries/Cambodia/Cambodia.html

USAID. (2013a). Applications of PAT Data Retrieved November 26, 2013, from http://www.povertytools.org/PATapplications/index.html;

USAID. (2013b). Poverty, Vulnerability, and Tools to Measure Them Retrieved October 15, 2013, from http://www.povertytools.org/povertypres/Poverty_Vulnerability/player.html

VENRO. (2011). Participatory Monitoring of Outcome and Impact. NGO-IDEAS Impact Toolbox.

Walugembe, P. (2013, December 10). [Interview].

Wolfe, J. (2011). *Household Economic Strengthening: Concepts & Principles*. USAID. Retrieved from http://www.slideshare.net/jmwolfe/household-economic-strengthening-concepts-principles

World Bank. (n.d.-a). Targeting Resources to OVC. *OVC Toolkit* Retrieved October 7, 2013, from http://info.worldbank.org/etools/docs/library/162495/howdo/targeting3.htm

World Bank. (n.d.-b). Wealth Ranking Retrieved November 25, 2013, from http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEV/0,,contentMDK:21233901~menuPK:3291499~pagePK:64168445~piPK:64168309~theSitePK:3177395~isCURL:Y~isCURL:Y,00.html

Zeller, M., Feulefack, J., & Neef, A. (2006). *How accurate is Participatory Wealth Ranking (PWR) in targeting the poor? A case study from Bangladesh* Paper presented at the International Association of Agricultural Economists Conference, Gold Coast, Australia.

APENDIX I. HOUSEHOLD LIVELIHOOD SECURITY ANALYSIS

From Mazzeo, 2009

Factor Analysis Output Example from CARE Zimbabwe

Table A 1. Factor analysis output for computation of livelihood security index and index sub-components

	Factor loadings	
Indicators	2007 & 2009 data combined	2009 data only
Food security index		
Number of months with sufficient food	0.569	0.427
Number of meals in the previous day	0.633	0.642
Dietary diversity score	0.453	0.588
Coping strategies index	0.728	0.666
Percent of variance accounted for by component	36.5	34.6
Health security index		
Percent of households with no illnesses in last 2 months	0.313	0.258
Sanitation of toilet facility index	0.670	0.703
Percent of households that possess soap	0.530	0.502
Sanitation of water source index	0.579	0.574
Percent of variance accounted for by component	25.6	24.8
Livelihood security index		
Food security index	0.639	0.652
Health security index	0.621	0.570
Education security index	0.468	0.485
Income security index	0.618	0.573
Percent of variance accounted for by component	32.6	32.3
Whether owns a plough	0.694	0.705
Whether owns oxcart	0.711	0.695
Whether owns wheelbarrow	0.652	0.665
Whether owns radio and or tv	0.527	0.490
Whether owns bicycle	0.452	0.431
Whether owns bed	0.574	0.581
Value of livestock owned	0.739	0.731
Percent of variance accounted for by component	39.5	38.8

Figure 9 From Mazzeo 2009, p. 110-111

Targeting Guide Example from CARE Zimbabwe

Annex 2. CARE-Zimbabwe Targeting Guide

1. Only households without major means of self-support are eligible.

```
REJECT
        Yes ←——  Does the household have any means of self-
                 support?
                         |
                         | No
                         ↓
        Yes ←——  Does the household have assets with a market
                 value of 3 months sustenance for the family?
                         |
                         | No
                         ↓
        Yes ←——  Does the household have fixed or temporary
                 income of $1 or more per day per individual?
                         |
                         | No
                         ↓
        Yes ←——  Does the household engage in trading or small
                 business generating $1 or more per day per
                 individual?
                         |
                         | No
                         ↓
        Yes ←——  Does the household receive remittances from
                 national or international sources?
                         |
                         | No
                         ↓
                 Continue screening process
```

2. Vulnerability criteria, and number of vulnerability criteria met, provide the next level of screening should there be more potential beneficiaries than the number allocated to the intervention or program. These include
   - Chronically ill household members (medically certified illnesses or any recurring illness that affects ones' productivity for the 3 previous consecutive months)
   - Child headed (one or both parents deceased and is 17 years of age or below)

- Elderly headed (60 and above years of age)
- Single-parent (widow) headed (spouse is deceased or long-term single parent receiving no support from estranged partner)
- Disabled headed (body and/or mental deformity that affects one's productive ability and consequently needs to be cared for by their family)
- Households with mentally or physically disabled member
- Households with one or more orphans (child with one or both parents deceased)
- Households with high dependency ratios (household with 7 or more members)
- Destitute household or person (able-bodied households without means of self-support, including vulnerable pregnant lactating mothers and households with malnourished children)

Figure 10 From Mazzeo 2009, p. 106-107

HLSA Questionnaire
(Mazzeo 2009, p. 95-105)

Annex 1. 2009 HLSA questionnaire

Questionnaire ID [ ] / [ ] / [ ] / [ ]
(7 digit)   District / Ward # / Village / Household #

Date of Interview [ ] / [ ] / [ ]
Day / Month / Year

Province _____   District _____   Ward # _____   Village _____

Enumerator's Name _____   Supervisor's Name _____

Location [ ]   1 = Communal   2 = Old resettlement   3 = New resettlement (A1)
4 = New Resettlement (A2)   5 = Commercial Farm   6 = Urban

Guidance for introducing yourself and the purpose of the interview:

Good morning/afternoon. My name is _____ and I work for CARE
Your household has been chosen at random from a list of all beneficiaries for this interview. The purpose of this interview is to obtain information about the programs we are implementing. It helps us understand whether we are implementing our program properly & whether we are meeting our objectives or not.
The survey is voluntary and you can choose not to take part. The information that you give will be confidential. The information will be used to prepare reports, but will not include any specific names. There will be no way to identify that you gave this information.
Could you please spend some time (around 60 minutes) for the interview?
NB: to enumerator: This survey is NOT part of the registration exercise and will have no influence on your status as a beneficiary/non beneficiary.

Name of Respondent (Breadwinner/Spouse/Household Head)_____

CARE   Household Livelihood Security Assessment Survey 2009

A. Participation in CARE Project/Program Interventions

		A	B	C	D	E	F	G
	Project Intervention (READ EACH ONE)	CARE Project any year from 2005 Yes (1) No (0)	Current participation if Other NGOs activity Yes (1) No (0)	If yes to A, indicate which year(s) Yes (1), No (0), 99=N/A 2005	2006	2007	2008	2009
Q1	Community Garden							
Q2	Household Garden							
Q3	Conservation Farming							
Q4	Seed Production and Storage							
Q5	Agric Inputs Distribution							
Q6	Sweet potatoes							
Q7	Internal Savings & Lending							
Q8	AGENT (Farmer Groups)							
Q9	Feeding (VGF Safety Net)							
Q10	Feeding (CI Institutional)							
Q11	School Feeding							
Q12	Harvesting of Natural Resources							
Q13	Agro-forestry							
Q14	Rehabilitation of water points							
Q15	Construction of toilets							
Q16	Food for Work Asset							
Q17	OVC							
Q18	CHBC (including ECHO food support)							
Q19	CHBC (without ECHO food support)							
Q20	Cassava							
Q21	Small livestock							

CARE-Zimbabwe Household Livelihood Security Assessment _2009
DRAFT

B. Household Demographics

	A	B	C	D	E	F	G	H	I
	Name of each HH member (Start with the household head)	Is NAME male or female	Is NAME male or female 1 = Male 2 = Female	How old is NAME in years?	Marital Status 1 = Married 2 = Widowed 3 = Divorced 4 = Single 5 = Other	0 to 17 years only What is NAME's birth parental status?	Is NAME mentally physically Challenged? 0 = No 1 = Yes	Highest Level of education completed (See codes)	Health Status (See codes below)
Q22									
Q23									
Q24									
Q25									
Q26									
Q27									
Q28									
Q29									
Q30									
Q31									
Q32									
Q33									
Q34									
Q35									
Q36									

Codes for Birth Parental Star 1= both parents alive 2 = Mother alive father dec 3 = Father alive mother de 4 = Both parents dead 99=N/A

Highest Level of Education Completed 1 = None, 2 = Grade 1-4, 3 = Grade 5-7, 4 = Form 1-2, 5 = Form 3-4, 6 = Form 5-6, 7 = Tertiary

Codes for Health Status 1 = little sickness   2 = some sickness 2-10 weeks in the 12 months
3=sick more than 3 months in the 12 months (chronically ill)   99 = N/A

Deaths in the Household

Q37   Has someone died of chronic illness in the household in the past 12 months?   [   ]   Yes = 1 \ No (0)

Has someone died of cholera in the household in the past 12 months?   [   ]   Yes -1 No (0)

Q38   If someone died, was the person the breadwinner?   [   ]   Yes (1)   No (0) 99=N/A

C. Access to Education

For household members aged 3-24 years

	A	B	C	D	E	F	G
		Did NAME attend school last term? (See codes below) 1 = everyday 2 = sometimes 3 = not enrolled	If (NAME) attended some days or not enrolled what is the main reason (Codes below)	If NAME attended school regulary or some days did NAME have full set of stationery and scholastic materials 0 = No, 1 = Yes	If not, why (See codes below) 1 = Cannot afford 2 = Other (Specify) 99 = N/A	Does NAME have a birth certificate? 0 = No 1 = Yes	(applicable if aged 17) Is NAME engaged or have skills to undertake self selected trade? 0 = No 1 = Yes
Q39							
Q40							
Q41							
Q42							
Q43							

Q44								
Q45								
Q46								
Q47								

Reasons for attending some days or no days 1 = No birth certificate , 2 =Can't pay , 3 = Failed exams ,4 = Completed exams ,5 = Sick , 6 = Work for money/food , 7 = Unpaid work for h/h , 8 – Care for ill person , 9 = Too young , 10 = Hunger, 11= Refused ; 12 = Unavailability of teachers   13 = Distance   14= Other_____   99= N/A

D. Land Use, Agricultural Inputs and Extension Services

(1 acre = 0.4 ha)

Q48 What estimated amount of **ARABLE** land does your household own/rent/given (combined)? |____| acres

Q49 What was the size of land cultivated this main season(in acres)? |____| Acres

Q50 This year, did you leave land uncultivated that is **normally** cultivated?   [ ]   Yes (1)   No (0)   N/A(99)

Q51 If yes, how many acres were uncultivated? |____| acres

Q52 If land uncultivated, was it more, less or same as compared to last year?   [ ]
1 =More land this season   2 = The same   3 = Less land this season   99 = N/A

Q53 If you left land uncultivated during the main season, what were the reasons?(see codes below)
A-C   A. Primary(1st Most) [ ]   B Secondary (2nd Most) [ ]   C Tertiary (3rd Most) [ ]
1 = Lack of labour   2 = Lack of seed on the m 3 = Lack of draught power   4 = Lack of rain
5 = Fallow   6 = Lack of fertiliser on the market   7= Lack of money to buy inputs   99 = N/A

Q54   Does the household have access to a community garden?   [ ]   Yes (1)   No (0)   N/A(99)

Q55   Does the household have access to household garden?   [ ]   Yes (1)   No (0)   N/A(99)

Q56   Does the household have access to water for gardening all year?
Yes (1)   No (0) 99=N/A   [ ]

Q57 If yes , what is the source of water?
1 = Piped water 2 = Public/Communal tap   3 = Well ,
4 = River/Stream/Dam ,5 = Borehole/Pump   6 = Other (Specify)

Current Season (2008/9)

	Crop planted	A Land plante (acres)	B Amount harvested (# 50kg Bags)	C Amount still Standing in the (50kg Bags)	D Amount Expect to Sell (50kg Bags)	Main Source of seed (see codes)	E Did you have enough seed? Yes (1), No(0) 99=N/A
Q58	Maize(CF Practice)	|____|	|____|	|____|	|____|		[ ]
Q59	Maize(Non-CF)	|____|	|____|	|____|	|____|		[ ]
Q60	Sorghum (CF Pract	|____|	|____|	|____|	|____|		[ ]
Q61	Sorghum (Non CF)	|____|	|____|	|____|	|____|		[ ]
Q62	Millet	|____|	|____|	|____|	|____|		[ ]
Q63	Rapoko	|____|	|____|	|____|	|____|		[ ]
Q64	Groundnuts(unshelle	|____|	|____|	|____|	|____|		[ ]
Q65	Cotton (Bales)	|____|	|____|	|____|	|____|		[ ]
Q66	Sunflower	|____|	|____|	|____|	|____|		[ ]
		Check if yes			Check if yes		
Q67	Covo	[ ]	NA	NA			
Q68	Onion/shallot	[ ]	NA	NA			
Q69	Potato(Ordinary	[ ]	NA	NA			
Q70	Rape	[ ]	NA	NA			
Q71	Sugar Beans	[ ]	NA	NA			
Q72	Tomato	[ ]	NA	NA			

				NA	NA								
Q73	Garlic				NA	NA							
Q74	Cow peas				NA	NA							
Q75	Carrots				NA	NA							

Main Source of Seeds Codes *if multiple sources, choose the main source* 1= Retain unplanted seed(not homegrown)
2 = Retain home grown seed   3 =Government   4 =CARE   5 = Other NGO   6 = Purchase
7 = Borrow   8 = Contract growing   9 = Gift   99 =N/A

Q76 Have you received any agricultural advice/training during 2008/9 season?   Yes (1)   No (0)   99=N/A

Q77 What type of advice/training did you receive in 2008/9 season?
1=CF training   2=Micro dosing 3=Pest control   4=Agronomic practices   5=Other

Q78 Who provided this agricultural advice/training? (*check* **ALL** *that apply*)

A. AREX [ ]   B. CARE [ ]   C. Other NGO [ ]   D. Neighbor [ ]   E. None [ ]   [ ]

F   Lead Farmer [ ]

E. Household Food Sources and Stocks

Q79 Does the household have cereal (grain&ground) from last year's harvest in stock now?   [ ]   [ ]

Yes (1)   No (0)   N/A(99)

Q80 If no, how many months did last year's harvest last? |____| months   [ ]

Q81 Estimated amount of cereal the entire household consumes in a month? |____| kg   [ ]

Q82 Number of months access to adequate food(**all foods including non-cereals**) in the past 12 months? |____| months

Q83 During the past 4 months (lean period Jan _ April 2009) , what were the most important sources of cereal?(see codes belo
A-C   A.Primary(1st Most) [ ]   B.Secondary (2nd Most) [ ]   C.Tertiary (3rd Most) [ ]   [ ]
1 = From own harvest   2 =Maricho   3 =Borrowed   4 =Gifts   5 = Free food aid
6 = HBC   7 = School Feeding   8 = Food For work   9 = Purchased at GMB   10 = Purchased at local market

Q84 During the past 4 months (lean period)Jan _ April 2009) , what were the most important sources of vegetables?(see codes
A.Primary(1st Most) [ ]   B.Secondary (2nd Most) [ ]   C.Tertiary (3rd Most) [ ]
1 = community garden   2= household/homestead garden   3 =Maricho   4 =Borrowed   5 =Gifts
6= Local market

Other sources of cereal during the past 12 months? amount in kg

Q85 On-Farm casual labor (working for food as payment) |____| kg ☐

Q86 Off-farm casual labour (working or food as payment) |____| kg ☐

Q87 Remittances and Gifts sent to the household |____| kg ☐

Q88 Borrowing |____| kg ☐

Q89 Other sources (including begging) |____| kg

Q90 How much cereal did you purchase from GMB in the last 12 months ? |____| kg ☐

Q91 How much cereal did you purchase at local markets during past 12 months? |____| kg ☐

F. Food Consumption

Q92 How many meals did the ADULTS eat in your household yesterday? |____| meals ☐

Q93 How many meals did the CHILDREN under 5 eat in your household yesterday? |____| meals ☐

Q94 How many meals did the chronically-ill members eat in your household yesterday? |____| meals ☐

		A	B
		Which of the following did somebody eat in your household yesterday? Yes(1) , No(0)	How many times HH members consumed this item yesterday?
Q95	Sadza		
Q96	Other cereals (including CSB)		
Q97	Cassava /Potato/Other tubers		
Q98	Sugar/Sugar Products		
Q99	Legumes (beans, peas, groundnuts)		
Q100	Vegetables/Leaves(include wild)		
Q101	Bread		
Q102	Fish		
Q103	Cooking Oil/Fat		
Q104	Milk		
Q105	Meat(include wild)		
Q106	Fruits		
Q107	Eggs		
Q108	Wild Fruits		
Q109	Insects (madora, ishwa, majuru) etc		
Q110	Mahewu		
Q111	RUTF (Ready to Use Therapeutic Feeding)		

G. Income , Expenditure & IGAs

		A	B
	Did the HH participate in the following activities in the past 12 months? (READ EACH ONE)	HH received cash from this source? Yes(1) , No(0)	Rank income sources based on estimated amount (1= most) 90=N/A
Q112	Formal Employment		
Q113	Sales of livestock		
Q114	Trading & self employment		

Q115	Gold panning	☐	☐
Q116	Government Public Works.	☐	☐
Q117	Cereal & Cash Crop Sales.	☐	☐
Q118	On-farm Casual Labour	☐	☐
Q119	Off-farm Casual Labour	☐	☐
Q120	Receives remittances.	☐	☐
Q121	Foreign Currency Dealing	☐	☐

If the response to Q114A is yes, proceed to ask question (Q122 -Q125)

	During the last 12 months which of the following enterprise were you engaged in ? (See codes below)	During the last 12 months what changes occured to the enterprise? (indicate all that apply) (See codes below)				
	A	**B** Change 1	**C** Change 2	**D** Change 3	**E** Change 4	**F** Change 5
Q122	☐	☐	☐	☐	☐	☐
Q123	☐	☐	☐	☐	☐	☐
Q124	☐	☐	☐	☐	☐	☐
Q125	☐	☐	☐	☐	☐	☐

Codes for Enterprise (A)
1= Fruit and vegetable selling(formally/informally)
2= Knitting
3 = Garment making
4 = Cross Border trade
5 =Crochet
6 =Carpentry
7 =Tailoring
8= Poultry
9 =Baskets and mats weaving
10 =Stone sculpture and wood carving
11 = Brick Moulding
12 =Non-timber forest produce
13=Buying and selling (fuel etc)
14 =Building
15 =Metal work
16= Other
99 =N/A

Codes for changes (B-F)
1 = Expanded size of enterprise/business facility
2= Added new products.
3 = Hired more workers
4 =Improved quality or desirability of product/added value
5 =Increase stock/goods
6 = Developed a new enterprise
7 = Sold in new markets/locations
8 = Increase in customer base
9 = Reduced stock
10 = Reduced customers
11=None
12= Other
99=N/A

Q126 What is the ESTIMATED cash earned or remittances received last month ? $ |_____|

Q127 From the total cash available last month ,how much was spent on the following
(Use counters to represent amount in incurred for each item)(20 counters represent the cash that was available in the household)

A   Transport |_____| B   Health |_____|

C   Other household food stuff |_____| D   Loan repayment |_____|

E   Mealie meal (including milling cost) |_____| F   Input cost |_____|

G   School fees & uniform |_____| H   Clothes/shoes |_____|

I   Utility bills (Water, Sewage, and ZESA) apply to urban set up |_____|

J   Social occasions/funeral expenses |_____|

Q128 What were the three greatest sources of spending during the past 4 months(Jan-April 2009?
A. Primary(1st Most) ☐   B Secondary (2nd Most) ☐   C Tertiary (3rd Most) ☐
1 = Health and medical supplies for the ill(clinical and traditional)   2 = Food (cereal and groceries)
3 = School Fees   4 = Funerals   5 = Travel   6 = Agriculture inputs , 99=N/A.

H. Assets

	Type of Asset (READ EACH ONE)	A Own Yes(1) No(0)	B Borrowed in past 12 months Yes(1) No(0)	C Purchased in past 12 months Yes(1) No(0)	D Sold in past 12 months Yes(1) No(0)	E Reason for selling? (codes below)	F Condition of most of the assets (codes below)
Q129	Plough	☐	☐	☐	☐	☐	☐

Q130	Ox-Cart									
Q131	Wheelbarrow									
Q132	Bicycle									
Q133	Radio/TV									
Q134	Bed									

Codes for Reason for Selling Asset (see E above) 1 = No longer needed   2 = Transport expenses: 3 = Buy food   4 = Pay debt
5 = Pay medical expenses   6= Other emergency   7 = Pay social event   8 = Pay funeral   9 = Pay school fees   99 = N/A

Codes for Condition of the Asset (see F above)   1 = Good- in working condition   2 = Average needs attention
3 = Poor - non functioning

I. Livestock

	Type of Asset READ EACH ONE)	A # Own	B # purchased in past 12 months?	C # of deaths in past 12mths	D # sold in in past 12 months?	E Main reason for sale? (codes below	F Hire in/ Borrow in past 12 month Yes(1)_No(0)	G Hire Out in past 12 months? Yes(1) No(0)
Q135	Cattle(Owned)							
Q136	Cattle(Keeping for others)							
Q137	Of total, # for draught power				99 = N/A			
Q138	Donkeys							
Q139	Sheep&Goats							
Q140	Pigs							
Q141	Poultry							
Q142	Rabbits							

Codes for Reason for Selling Asset (see E above) 1 = No longer needed   2 = Transport expenses: 3 = Buy food   4 = Pay debt
5 = Pay medical expenses   6= Other emergency   7 = Pay social event   8 = Pay funeral   9 = Pay school fees   99 = N/A

J. Borrowing

Q143 During the past 4 months , did you or any member of your household borrow money?

Yes (1)   No (0)

Q144 If you borrowed money, what were the reasons for borrowing?(see codes below)

A-C   A. Primary(1ˢᵗ Most)   B.Secondary (2ⁿᵈ Most)   C. Tertiary (3ʳᵈ Most)
1 = Food   2 = Health care   3 = Funeral   4 = Social event   5 = Avoid selling assets
6 = Agriculture   7 = School Fees   8 = Pay Debt   99 = N/A

Q145 If you borrowed money , from whom did you borrow? (check ALL that apply)   Yes (1)   No (0)

A-E   A. Relative/Friend   B. Money Lender   C. Savings Group
D. Microfinance Inst   E. Bank   F. Burial Society
G. Friend/Neighbour   09 = N/A

K. Health , Water & Sanitation

A #	B Has (NAME) suffered from an of the following illness in the last 60 days? (See codes below)	C If someone got ill , did they seek treatment (See codes below)	D If no what was the reason for not seeking treatment (See codes below)	E Did a child under 5 have a sudden fever in the last 60 days	F For children < 5 years		G
					If so , was treatment sought within 24 hrs	If not why not (See codes below)	
	1 = diarrhea 2 = dysentery 3 = malaria 4 = scabies 5 = STLs 6 = bilharzia 7 = Cholera 8 = other (specify)	Yes (1) No (0) 99 = N/A		Yes (1) No (0) 99 = N/A	Yes (1) No (0) 99 = N/A		

		99 – N/A														
Q146			☐			☐		☐		☐			☐			☐
Q147			☐			☐		☐		☐			☐			☐
Q148			☐			☐		☐		☐			☐			☐
Q149			☐			☐		☐		☐			☐			☐
Q150			☐			☐		☐		☐			☐			☐
Q151			☐			☐		☐		☐			☐			☐

Codes for Reason for not seeking treatment (see D & G)   1=Can't afford   2=No money to pay for treatment
3 =No transport, too far, or too expensive   4 = Poor quality of service/lack of confidence 5 = Prefer not to go – religious or cultural reasons
6 = Other reasons   99= N/A

Q152 Did anyone in the household sleep under a mosquito net last night?   ☐   Yes (1)   No (0)   ☐

Q153 If yes, to Q147a ,how many household members who slept under a mosquito net last night? |_____| members

Q154 What is the primary source of water? (drinking, cooking) (see codes)   ☐   ☐
1 – Piped water inside, 2 – Piped water outside, 3 – Public/Communal tap,   4 – Protected Well, 5 – Well-unprotected?
6 = River/Stream/Dam, 7 = Borehole/Pump , 8 = Other (Specify)

Q155 What containers do you use to **fetch** water for drinking & cooking from this source?   (see codes)
A-B   (Circle up to 2) most common containers   A. Primary(1st Most) ☐   B.Secondary (2nd Most) ☐   ☐
1=Plastic container with a lid, 2=Plastic container without a lid   3=Metal container with a lid 4=Metal container without a lid   5=Other 99=N/A

Q156 What containers do you used to **store** water for drinking & cooking from this source?   (see codes)
A-B   (Circle up to 2) most common containers   A. Primary(1st Most) ☐   B.Secondary (2nd Most) ☐   ☐
1=Plastic container with a lid, 2=Plastic container without a lid   3=Metal container with a lid 4=Metal container without a lid   5=Other
99=N/A

Q157 How many minutes does it take to walk to the water source (one way)?   # |_____| minutes   ☐

Q158 How many minutes does it take to fill a 20 litre water bucket ?   # |_____| minutes   ☐

Q159 How many minutes do you **normally** take queuing for water?   # |_____| minutes   ☐

Q160 What amount of water is **collected** per day?   # |_____| litres   ☐

Q161 When do you wash your hands?   (Check **all** that apply)
A-C   A. Before eating   ☐   B. Before food preparation   ☐
C. After coming from the toilet   ☐   ☐
D. Before feeding children   ☐
Q162 At the moment does the household possess any soap?   ☐   Yes (1)   No (0)   ☐

Q163   When do household members use soap? (check all that apply)
1= After visiting the toilet   2= Bathing   3= After removing soiled nappies/clothes
4= Washing clothes/utensils   5= Before eating   6= After eating
7= Before preparing food   8= Other specify_____

Q164 What type of latrine does your household use?   ☐   ☐
1 – No latrine available , 2 – Single blair latrine with hand washing facility   3 – Single blair latrine , no hand washing
4 – Double blair latrine with hand washing facility   5 – Double blair latrine , no hand washing , 6 – Other latrine (specific)

L. Social Support & Participation in Community Safety Nets

		A		B		C	
		What types of support did you rely on from other households or institutions in the past 12 months? Yes (1) No (0)		What was the main source of support? (see codes below)		What is the nature of involvement? (See codes below)	
Q165	Agric inputs (seed or fertiliser)						
Q166	Cereal						
Q167	Clinic/Hospital Expenses						
Q168	Clothing						
Q169	Draught power(cattle or donkeys)						
Q170	Funeral Support						
Q171	Groceries(not mealie meal)						
Q172	Labor for farming						
Q173	Loan for cash						
Q174	School fees						
Q175	Hoes and Other Small Farm Tools						
Q176	Plough						
Q177	Care of the ill member						
Q178	Care of the children						

Main source of support codes 1 = Burial Society 2 = Savings Clubs 3 = Zunde Ramambo 4 = Cooperatives 5 = Extended Family, 6 = Community Based Organisation (CBO) 7 = Church support group 8 = Community members 99=N/A

Nature of Involvement 1 = Ordinary member 2 = Committee member 3 = Recipient of support ONLY 99=N/A

M. Coping Strategies

Q179	In the past 30 days , how frequently did your household resort to one or more of the following strategies in order to access food?(indicate the appropriate frequency)	Frequency (see codes below)	
A	Limit portion size at mealtimes		
B	Reduce number of meals eaten per day		
C	Skip meals for the entire day		
D	Borrow food or rely on help from friends or relatives		
E	Rely on less expensive or less preferred foods		
F	Purchase/borrow food on credit		
G	Gather unusual types or amounts of wild food / hunt		
H	Have household members ate at relatives or neighbors		
I	Reduce adult consumption so children can eat		
J	Rely on casual labor for food		

Codes for frequency 1= Almost every day 2 = Pretty Often(3-6 days/week) 3 =Once in a while (1-2 days a week) 4 = Seldom(<1 day a week)never 5 =Never

N. Knowledge, Attitudes & Practices Concerning HIV/AIDS

Q180 Have you ever heard of HIV or AIDS? [ ] Yes (1) No (0) [ ]

Q181 Is AIDS different from HIV? [ ] 1 = Different 2 = The Same 3 = Don't know [ ]

Q182 Are issues on HIV & AIDS openly discussed in the household? [ ] Yes (1) No (0) [ ]

Q183 In your opinion, if a mother has HIV, would the virus always be passed on to the baby? [ ]
0=No   1=Yes   2= Don't know   3= Sometimes/rarely   4=Depends

Q184 How can a person get HIV, the virus that causes AIDS?   Yes (1)   No (0)   Don't know(2)

A	Kissing	[ ]	
B	Shaking hands	[ ]	
C	Having unprotected sexual relations	[ ]	
D	Receiving a blood transfusion	[ ]	
E	Sharing needles and syringes	[ ]	
F	Mosquito bites	[ ]	
G	Supernatural means	[ ]	
H	Having sex with prostitutes	[ ]	
I	Mother to baby during birth	[ ]	
J	Mother to baby while breastfeeding	[ ]	
K	Other	[ ]	

		Q185	Q186
		What can a person do to avoid getting HIV? Anything else?	As an individual what are you currently doing to avoid getting HIV/re-infection?
A	Abstain from sex	[ ]	[ ]
B	Use condoms correctly & consistently	[ ]	[ ]
C	Limit sex to one partner/stay faithful to one partner	[ ]	[ ]
D	Limit number of sexual partners	[ ]	[ ]
E	Avoid sex with prostitutes	[ ]	[ ]
F	Avoid sex with persons who have many partners	[ ]	[ ]
G	Avoid sex with homosexuals	[ ]	[ ]
H	Avoid sex with persons who inject drugs intravenously	[ ]	[ ]
I	Avoid blood transfusions	[ ]	[ ]
J	Avoid injections	[ ]	[ ]
K	Avoid sharing razors/blades	[ ]	[ ]
L	Avoid kissing	[ ]	[ ]
M	Avoid mosquito bites	[ ]	[ ]
N	Seek protection from traditional practitioner	[ ]	[ ]

Q187 In your community do you know someone who, in the last 12 months has had the following happen to them because they were known to have, or suspected of having, HIV/AIDS   0=No 1=Yes

a	Excluded/treated differently at social gathering	[ ]
b	Abandoned by spouse/partner, family or sent away from the family	[ ]
c	Teased, insulted or sworn at	[ ]
d	Lost customers to buy their produce or lost a job or being denied promotion	[ ]
e	Lost housing or not been able to rent or had property (land, household goods etc taken away)	[ ]
f	Given poorer quality health services eg being passed from provider to provider, not given medicines, denied treatment	[ ]
g	Denied religious rights/services eg marriage, communion, burial, singing in choir not allowed to go to church	[ ]

O. Chronically Ill (for households with CI members ONLY)

	B	C	D	E	F	G	H	I
A	Relationship to the household head (see codes)	# of years since fell seriously ill	Has this person had an HIV test Yes (1) No (0)	If they are willing to disclose, what is their HIV/AIDS status? Positive(1) Negative(0) 99=N/A 98=Not answered	Does anyone provide care to the sick from the community Yes (1) No (0)	Is the client on 1 =OI prophylaxis 2 = Anti – retro therapy 3= DOT 99 =N/A Check all that apply		
Q188								
Q189								
Q190								

Codes for relationship to household head
1 = Household head   2 =Spouse   3 = Son/Daughter 4 =Grandchild   5 = Brother/Sister 6 = Parent   7 =Grandparent   8=Other

Services Currently being offered by Community member(proceed to Q178 if any of the F above is yes)

	Service	1 – Is service currently being provided Yes (1) No (0)	2 – How would you rate the service on a scale 1-5 (See codes below)	
	A Hand Feeding			
	B Bed Bathing			
	C Treating wounds			
	D Fetch firewood/water			
Q191	E Cook for the sick			
A-J	F Provide emotional comforting & prayer			
	G Administer medicine			
	H Accompany to clinic/hospital			
	I Clean-up their living area			
	J Help them get around			

Codes for Service Rating level   1 =Very Dissatisfied   2 =Dissatisfied   3 = Neutral   4 = Satisfied   5 = Very satisfied

Stigma & Discrimination

Q192	Do you share eating utensils with the sick?		Yes (1) No (0)
Q193	Is leftover food of the sick eaten by someone else?		Yes (1) No (0)
Q194	Does the sick have regular visitors from outside the household? (include relatives)		Yes (1) No (0)
Q195	Has the sickness caused a change for the worse in relations with others?		Yes (1) No (0)
Q196	Is the community willing to include the sick in activities?		Yes (1) No (0)

Quality Control

		Date	Day	Month	Year
Verification/District Supervisor Name (Field)		Date			
Final Quality Assesor Name (M&E Unit)		Date			
Data Entry Clerk		Date			

*****End of Survey--express thanks for their time--answer any questions*****

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APPENDIX II. HOUSEHOLD VULNERABILITY INDEX TECHNICAL INFORMATION

From Kureya, 2013

Theoretic Framework
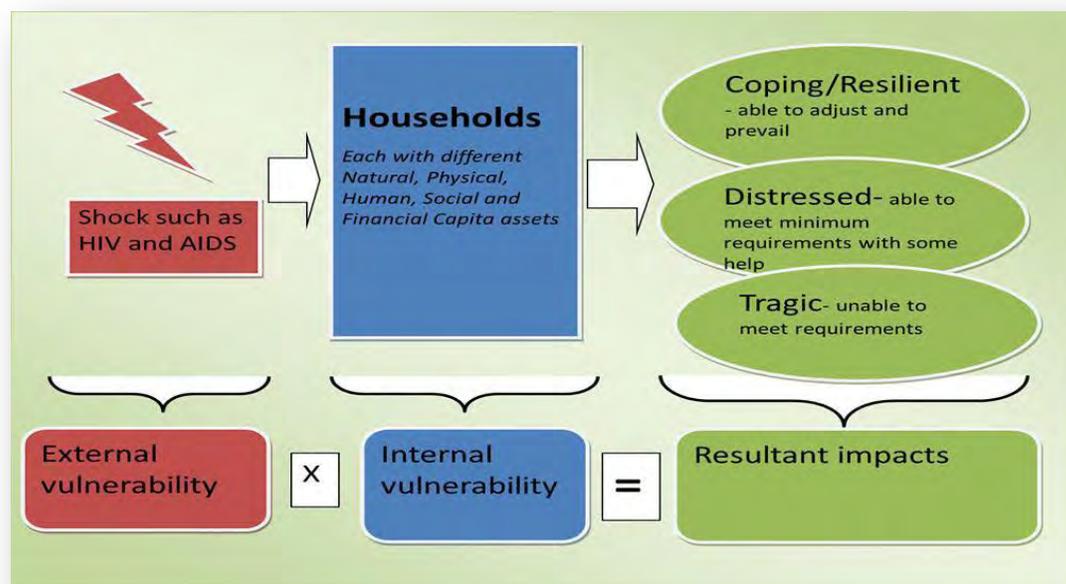
The HVI tool uses fuzzy logic on 15 variable classes (which we call dimensions) to explore the relationships between vulnerability and a household's access to and use of five capital assets (natural, social, physical, human and financial). These assets are:

- natural capital (2 dimensions);
- physical capital(6 dimensions);
- financial capital (2 dimensions);
- human capital (3 dimensions);
- Social capital (2 dimensions).

Households are classified into three categories based on their statistical HVI score (between 0-100). The HVI has both internal and external vulnerability components employed. External vulnerability is assessed separately and used to adjust weights on the household's access to the five capitals. Each of the 15 dimensions measures internal vulnerability.

Human Capital

Changes in household demographic structure
-dependency ratio   -number of sick members
-household size

Gender implications
-female headed hhlds -child headed hhlds

Mobility of household members
- household disintegration due to sickness and/or death

Natural Capital

Environmental degradation
-use of forest products
-household access to water resources

Changes in household natural capital base
- access to land

Social Capital

Social Networks
-type and $ value of support from government, community and NGOs

Access to behavioral change information
-sources and quality of information on HIV and AIDS and Agriculture

Impact of HIV and AIDS on Agriculture and Food Security
(Household Level)

Physical Capital

Changes in household physical assets
-livestock index
-number of farm implements

Changes in optimal farm-hhld production decisions -% cash cropping
-changes in fertilizer application rates

Impact of household market access
-net revenue from asset transactions
-crop marketing

Agricultural extension services
-absenteeism due to illness
-access to extension services

Financial Capital

Changes in household income and expenditure patterns
- % expenditure of health care
- % expenditure on food

Changes in household food and nutrition security
-no. of food safety nets   -nutrition diversity index

Changes in household financial assets
- amount of savings (withdrawals, deposits)
- amount of credit loans received

Changes in household investment choices
-farm equipment purchases/sales
-livestock purchases/sales
-land purchases/improvements

HVI Equation

The construction of the HVI uses a multidimensional approach to quantitatively determine the impact of a shock on a household[1] using Fussy logic:

- For the population (N) made up of n households (hh) (N={hh1, hh2, hh3 ...}), V is a subset of v households with some degree of vulnerability (internal vulnerability). Thus v≤n and v=0

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[1] Costa, M. (2002) A Multidimensional Approach to the Measurement of Poverty: An Integrated Research Infrastructure in the Socio-Economic Sciences IRISS Working Paper Series No. 2002-05; and Costa, M. (2003). A Comparison Between One-dimensional and Multidimensional Approaches to the Measurement of Poverty An Integrated Research Infrastructure in the Socio-Economic Sciences IRISS Working Paper Series No. 2003-02.

implies that there are no vulnerable households whereas v=n implies that all households are vulnerable.

- Break down the vulnerability (X) into specific dimensions of impact (m), and give a corresponding weight (wi, i=1,..., m) to each dimension. The weights can be predetermined, or developed using an appropriate function. The weights correspond to the **external** component of vulnerability.

- The vulnerability of any given household (hhi i=1...n) to the dimension of impact (jth j=1,...m) can be expressed as Xij, and given a value between 0 and 1 such that 0=no impact and 1=full impact. A specific formula for calculating Xij is discussed separately, and is largely based on the variable's probability distribution function. Each Xij denotes the degree of vulnerability of household i to the jth dimension of impact, and Xijwi will be the corresponding weighted vulnerability.

- The sum of the weighted vulnerabilities across all dimensions will give the particular household's total vulnerability (Vhh) to a specific shock, that is:

$$\sum_{j=1}^{m} X_{wj} / \sum_{j=1}^{m} w_j \quad = \quad Vhh_i$$

this is the **HVI** for that household, a number that lies between 0 and 100.

- An assumption is that households exist in a fairly homogenous context, and the sum of the weights are made such that:

$$\sum_{j=1}^{m} w_j \quad = \quad 100$$

where 0 represents no vulnerability while 100 represents full impact.

The Three HVI Categories

The HVI categorises households into three classes according to their level of vulnerability as follows: **1.** Low Vulnerability – Coping or resilient **2.** Moderate Vulnerability – Can cope after receiving assistance **3.** High Vulnerability – Tragic (point of no return – require special intervention)

Capital	Low vulnerability (Category 1)	Moderate vulnerability (Category 2)	High Vulnerability (Category 3)
Human	• Household is headed by an economically **active** household member • Dependency ratio is low, less sick household members and no orphans. • More economically active household members than dependants.	▪ Household is headed by an economically **active**, elderly or child ▪ Dependency ratio is high, more orphans and sick household members. ▪ Economically active household members are few.	▪ Household is headed by an economically **inactive**, elderly or child ▪ Dependency ratio is high, more orphans and sick household members. ▪ No economically active members.
Natural	• Household use both inorganic and organic fertilizers • Sustainable agriculture activity • Utilize all available land for subsistence or commercial farming • Household has extra labour and time to manage the environment	▪ Organic fertilizers are the main sources of fertilizers ▪ Low agriculture activity ▪ Utilize less land for subsistence farming ▪ Household cannot manage the environment well	▪ Organic fertilizers are the main sources of fertilizers ▪ Very low or no agriculture activity ▪ Utilises very little land for subsistence farming ▪ They cannot manage the environment well
Social	• May receive some means of support from NGO's and government, but could do without. • More knowledgeable on agriculture and shock-related issues that are discussed regularly in the household	▪ Needs or receives support from NGO's and government, and most of the support goes to food and health ▪ Knowledgeable on agriculture and shock-related issues that are sometimes discussed in the household	▪ Needs and may not be recieving support from relatives, community, NGOs and government. ▪ Most support goes to food, health and education. ▪ Limited capacity to discuss agriculture and shock related issues
Financial	• Have a diversified income source • Household income is used on a balance of needs (farming inputs, education, health, recreation etc)	▪ Have limited sources of income ▪ Most of the household income is used on food and medicines	▪ Have no basic source of income ▪ Most of the household income is from charity, and is used on food and medicines
Physical	• Own important livestock eg cattle, in sustainable numbers • Have labour for farm and off farm work • Receive some agricultural extension services • Regularly have three meals per day	▪ Own important livestock in agricultural production ▪ No adequate labour for farm and of farm work ▪ May own farm implements in limited numbers ▪ Do not regularly eat three times a day	▪ Do not own important livestock in sustainable numbers ▪ No labor for farm and of farm work ▪ Do not own farm implements ▪ Do not regularly eat three times a day

HVI input variables

Capital Asset (weight)[2]	#	Dimension and (sub-weight)	Theory	Variables [3]	Transformation [4]	Household Categories
Natural Capital (10)	1	Change in natural capital base (4)	Soil fertility declines for vulnerable households as application of natural fertilizers declines.	Proportion X of the household field that is fertilized by natural means, where A is the land size fertilised by natural means and B is the total land size.	X = A / B (continuous)	Low: >=0.75 Moderate: 0.4-0.75 High: <=0.4
	2	Environmental degradation (3)	Environmental management deteriorates with increasing vulnerability: More vulnerable households revert to the environment for "free" products such as wood and fruits.	Total number of yes responses (C), to the 5 questions below: 1. Have you ever resorted to cutting down trees and selling wood? 2. Have you ever resorted to collecting wild fruits to supplement food? 3. Has sickness or death prevented you from managing your environment? 4. Has sickness or death affected the amount/quality of water used? 5. Has sickness or death prevented your household from participating in planned water or environmental management projects?	X = 1-C / 5 (Categorical)	Low: <=0.4 Moderate: 0.4-0.6 High: >=0.6
	3	Change in natural capital base (3)	Vulnerable households do not fully utilize their existing land.	Proportion of land is available but not used due to illness or death(X) where size of land not utilized (E), and total land available for cultivation (F).	X =1- E / F (continuous)	Low: <=0.4 Moderate: 0.4-0.6 High: >=0.6
Human Capital (25)	4	Changes in household demographic structure (4)	Households are vulnerable when they have members who are regularly sick.	Proportion of sick members regularly sick (X); where Z is the total Household size and Y is the number of members regularly sick (have been bedridden for at least three different times in the last year, with each bout extending up to a week; or have been diagnosed with any of TB, Meningitis, Caporsi Sarcoma, Hepatitis, Pneumonia)	X = Y / Z (Discrete)	Low: <=0.3 Moderate: 0.3-0.6 High: >=0.6

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[2] Determined independently in two ways: using literature from past studies (defaults given); or using the community weighting system.

[3] Chosen on the basis of accuracy in measuring vulnerability, and ease of data collection.

[4] Each variable should be normalised to between (0,1) by multiplying by (Xi-Xbar)/sigma

	5	Gender implications (2)	Households are vulnerable when the sick members include the head of the household.	Health state of the head of the household (X) where A (=1) if the head of household is sick and Z is the total Household size	$X = A/z$ (Discrete)	Low: =0 Moderate: =0 High: >=1
	6	Mobility of household members (7)	Households that have productive sick members are more vulnerable.	Who is sick? Total productive score of household members(X) where Household size=Z; Yi denoted production potential for member i. Yi= 1 if adult member is not sick; 0.5 if dependent member is not sick; 0 if member is sick;	$X = \Sigma Y_i/Z$ (discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
	7	Changes in household demographic structure (6)	A greater number of dependents makes households more vulnerable.	Dependency rate (X), Y= where number of dependants ({0-15}+{>64} +{bedridden or disabled})Y, and Z= household size.	$X = Y/Z$ (4) (continuous)	Low: <=0.5 Moderate: 0.5-0.75 High: >=0.75
	8	Education implications (3)	Households with educated members are better able to cope with shocks, compared to illiterate households.	Household decision making index (X), where household size=Z; Wi = 0.2 for illiterate, 0.4 for primary school, 0.6 for secondary school, and 1 for post-secondary education,	$X = \Sigma W_i/Z$ (discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
	9	Mobility of household members (3)	Diseases such as HIV and AIDS have caused disintegration of vulnerable households	Proportion of household members who moved away due to sickness and death (X) where Household size = Z; and number of members who have moved away within the last three months of data collection = Y	$X = Y/Z$ (Discrete)	Low: <=0.2 Moderate: 0.2-0.3 High: >=0.3
Physical Capital (25)	10	Changes in household income and expenditure patterns (4)	Food insecurity increases with less use of fertilizers.	Nitrogen fertilizer application rate(X) where Z is the weight of top dressing fertiliser used in the last planting season; Y is the land size Y in ha; and assuming 400kg/ha top dressing fertilizer application (for maize crop).	$X = Z/400Y$ (continuous)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
	11	Changes in household physical assets (2)	Affected households have reduced harvests.	Per capita staple cereal output (X). What is the total household size (Y)? How many Kgs of Maize were harvested (Z)? What is the staple cereal requirement for an individual household member (S)? Assumption: 1 healthy adult can use 0.5 ha of land to grow enough staple for themselves in rain-fed agriculture, producing the equivalent of at least 1 tonne of maize.	$X = Z/(Y*S)$ (2) (continuous)	Low: >=0.8 Moderate: 0.5-0.8 High: <=0.5

12	Changes in household physical assets (3)	Households that do not own an ox drawn plough or cart are likely to face difficulties in cultivation, planting and other farming operations.	Ownership of key ox-drawn farm implements(X) where: $Y_i = i$ if HH owns i ox-drawn farming implements such plough or cart etc;	$X = \Sigma Y_i/2$ (Discrete)	Low: >=2 Moderate: =1 High: =0
13	Changes in household physical assets (5)	Households that do not own cattle or other livestock in sustainable numbers are more vulnerable.	Productive livestock index (X) where cattle owned (C); goats (G); Sheep (S); Donkeys (D); are multiplied by livestock weights (c=0.5; g=0.1; s=0.1; d=0.3); based on livestock index[5],	$X = 1 / (C_a + G_b + S_c + D_d + 1)$ (6) (continuous)	Low: <=0.04 Moderate: 0.04-0.6 High: >=0.06
14	Household market activity (3)	Vulnerable households adopt unsustainable short term coping strategies which include the selling of livestock assets.	Livestock changes (X); Where Change Y_i is set for cattle (C_i), Goats (G_i), sheep (S_i) and donkeys (D_i) as -1 if the number decreased within the last year, 0 if they remained the same, and 1 if they increased.	$X = \Sigma Y_i/4$ (continuous)	Low: >=0.5 Moderate: 0-0.5 High: <=0
15	Agricultural extension services (3)	Households that have limited access to extension services due to ill health or inadequate time to devote to such activities are more vulnerable.	Extension services access (X): $Y_i = 1$ if household has access to livestock extension services; 1 if household has access to crop extension services; 0 otherwise.	$X = \Sigma Y_i/2$ (Discrete)	Low: =1 Moderate: =0.5 High: =0
16	Changes in household food and nutrition security (3)	Vulnerable households eat less variety of foods per day.	Nutrition Index (X) constructed from 10 food types: 1. Maize (e.g. Pap, thin porridge); 2. Rice; 3. Bread; 4. Other cereals (sorghum, millet, pasta, etc.); 5. Roots and tubers (cassava, irish and sweet potatoes, etc.); 6. Beans (peas, nuts); 7. Vegetables and leaves; 8. Fruits; 9. Meat (domestic or wild); 10. Poultry (chicken, guinea fowl, ducks); 11. Fish; 12. Eggs; 13. Oil, fat, butter; 14. Sugar and sugar products; 15. Milk and milk products	$X = \Sigma(F_i*d_i)/15*7$ (continuous)	Low: >=0.66 Moderate: 0.33-0.66 High: <0.66

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[5] Shown below

				Food diversity index $Y_i = F_i * d_i / 7$ where F_i is food item I; d_i = number of days food item I was consumed in the last 7 days preceding the survey.		
	17	Changes in household food and nutrition security (2)	Vulnerable households take less meals per day due to inadequate food availability	Number of meals taken daily by adults(X) where Z_i = 0,1,2,3 or more is the number of meals taken.	$X = Z/3$ (discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
Financial (25)	18	Changes in household financial assets (6)	Households with little or no savings are more vulnerable	Savings score (X), where Y_i = total number of "yes" responses for: *Do you have bank accounts?* *Did you receive any remittances from family/relatives?* *Have you joined any community or formal savings credit scheme?* *Do you receive family support?* And Z_i = 1 if "No" is the response for: *Do you have any Unpaid debt?*	$X = (Y+Z)/5$ (Discrete)	Low: >=0.9 Moderate: 0.4-0.9 High: <=0.4
	19	Changes in household financial assets (6)	Vulnerable households have fewer sources of regular income	Income score (X), where two sources of income Y and Z are weighted and summed. Regular sources have higher weights as follows: Salary=1; informal work= 0.3; livestock sales= 0.2; crop sales=0.3; remittances=0.1; trading=0.4; donations from NGOs=0.1; government allowances=0.1; Pension=0.6; Other=0.1, none=0.	$X = (Y+Z) / 2$ (Discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
	20	Changes in household investment choices (5)	Vulnerable households with ill members experience increased expenditure on health care	Where does the household spend most of its financial resources? Expenditure score (X), where the 2 main expenditure items (Y,Z) are weighted and summed. An indicator of hierarchy of need: Food= 1; non-food basic goods=0.8 health=0.7; savings=0.4 transport to work=0.5; transport to clinics=0.7; burial expenses=0.8; farming inputs=0.4; beer and recreation =0.2; school fees=0.6; income generating projects=0.4; Other =0.5	$X = (Y+Z) / 2$ (Discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
	21	Changes in household investment choices (4)	Use of additional resources indicate choices under vulnerability	Where would the household spend any additional financial resources if they were availed? Additional funds expenditure score (X), where the 2 main expenditure items (Y,Z) are weighted and summed. An indicator of hierarchy of need: Food= 1; non-food basic goods=0.8 health=0.7; savings=0.4 transport to work=0.5; transport to clinics=0.7; burial expenses=0.8; farming	$X = (Y+Z) / 2$ (Discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4

			inputs=0.4; beer and recreation =0.2; school fees=0.6; income generating projects=0.4; Other =0.5; none = 1, savings=0			
	22	Changes in household investment choices (4)	Purpose for selling harvests indicates levels of vulnerability.	For what purpose did the household use financial resources from sale of crops and livestock from the last season? Crop and livestock sales expenditure score (X), where the 2 main expenditure items (Y,Z) are weighted and summed. An indicator of hierarchy of need: Food= 1; non-food basic goods=0.8 health=0.7; savings=0.4 transport to work=0.5; transport to clinics=0.7; burial expenses=0.8; farming inputs=0.4; beer and recreation =0.2; school fees=0.6; income generating projects=0.4; Other =0.5	$X = (Y+Z) / 2$ (Discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
Social Capital (15)	23	Social support networks (12)	Households with limited numbers of quality support networks are more vulnerable.	In which areas does household get external support? What is the quality of this support? External support score X where all support sources Si=A-L are weighted by wi where Si= A=Food; B=Non-food basic; C=Health; D=Savings/Financial Services; E=Transport to work; F=Transport to clinic; G=Burial expenses; H=Farming inputs; I=Recreation sports equipment; J=School fees, uniforms, stationary; K=Income Generating Activity; L=Other ; And wi: w0=1=no support; w1=0.2= satisfactory support able to meet need, w2= 0.5=fair support , w3=0.8= support largely unsatisfactory;	$X = \Sigma Si wi / 12$ (Discrete)	Low: >=0.6 Moderate: 0.4-0.6 High: <=0.4
	24	Access to information (3)	Households with limited access to information are more vulnerable	Information usage score X where a proxy is used: How often does household discuss HIV/AIDS related issues? X:Rarely = 0.5, Regularly = 0, Never = 1.	X (Discrete)	Low: 0 Moderate: 0.5 High: 1

Livestock index

Attribute	Cattle	Goats	Poultry	Donkeys	Pigs	Sheep	Rabbits
Productivity (+)	3	1	1	2	1	1	1
Utility (+)	3	1	1	2	2	1	1

Security (risk(-))	-3	-1	-1	-1	-1	-1	-1
Holding cost (-)	-3	-1	-1	-1	-3	-1	-1
Life (+)	3	1	1	3	1	1	1
Convertibility (+)	-1	2	3	-3	2	2	3
Complementarity (+)	3	-2	-3	1	-3	-2	-3
Aggregate weight (importance)	**5**	**1**	**1**	**2**	**-1**	**1**	**1**

Notes
Productivity: normal productivity; variability; sensitivity to and resilience under different conditions; appreciation of asset value
Utility: normal utility; variability; sensitivity to and resilience under different conditions
Security: risk of theft, loss of control or access, susceptibility to pathogens or other natural event
Holding cost: cost involved in holding and using an asset for production or consumption
Life: expected period over which asset will be held: under normal conditions; variability under different conditions
Convertibility: various cost involved in converting or exchanging an asset
Complementarity: effects on and of other assets and their functions
Desirable situation: Higher productivity and utility, low holding cost, longer life, high complementarity; high convertibility, security high (low risk)

APPENDIX III. LOCAL VULNERABILITY INDEX (LVI) VARIABLES AND OUTPUTS

Table 2
Variables and data sources

Variable	Source of data
Total population, 1996-2005	Regional Economic Focus data from Global Insight
GDP growth (%), 1996-2005	Regional Economic Focus data from Global Insight
Population density, 1996-2005	Regional Economic Focus data from Global Insight
Urbanization rate(%), 1996-2005	Regional Economic Focus data from Global Insight
Proportion of primary production, 1996-2005	Regional Economic Focus data from Global Insight
Exports as (%) of GDP, 1996-2005	Regional Economic Focus data from Global Insight
Imports as (%) of GDP, 1996-2005	Regional Economic Focus data from Global Insight
Diversity in exports, 1996-2005	Matthee and Naudé (2007)
Distance from closest hub/market, 1996-2005	Naudé and Matthee (2007)
HDI, 1996-2005	Regional Economic Focus data from Global Insight
No. of people in poverty as (%) of total, 1996-2005	Regional Economic Focus data from Global Insight
Unemployment rate (%),1996-2005	Regional Economic Focus data from Global Insight
Volatility in income, 1996-2005	Regional Economic Focus data from Global Insight
Population growth rate (%), 1996-2005	Regional Economic Focus data from Global Insight
Total people HIV+, 1996-2005	Quantec Easydata, RSA Regional Market Indicators (2007)
Capital budget expenditure/ local municipalities (R '000)	Statistics South Africa
Average rainfall (annual mm), 1996-2005	Regional Economic Focus data from Global Insight
Degraded land (%) of total area, 1996-2005	Regional Economic Focus data from Global Insight
Total land cover km^2 (forests, waterbodies & wetlands)	Regional Economic Focus data from Global Insight
No. of population per bank branch	Naudé et al. 2008
GDP share of the financial services sector, 1996-2005	Regional Economic Focus data from Global Insight

Figure 11 From Naude et al.2008, p. 12

Table 3
Vulnerability of magisterial districts in South Africa according to the LVI

Location	Final LVI	Ranking	Location	Final LVI	Ranking
Panel A: Least vulnerable districts					
Goodwood	1.4	1	Randburg	2.1	11
Durban	1.6	2	Pretoria	2.1	12
Johannesburg	1.7	3	Pietermaritzburg	2.2	13
Cape Town	1.7	4	Krugersdorp	2.2	14
Bellville	1.8	5	Soweto	2.3	15
Kuilsrivier	1.9	6	Pinetown	2.4	16
Chatsworth	1.9	7	Boksburg	2.4	17
Umlazi	2	8	Stellenbosch	2.5	18
Port Elizabeth	2	9	Springs	2.5	19
Wynberg	2.1	10	Paarl	2.5	20
Panel B: Most vulnerable districts					
Hanover	7.7	1	Theunissen	6.9	11
Huhudi	7.5	2	Colesberg	6.8	12
Lady Grey	7.4	3	Fauresmith	6.8	13
Richmond	7.3	4	Philipstown	6.8	14
Amersfoort	7.2	5	Britstown	6.7	15
Bolobedu	7.1	6	Dannhauser	6.7	16
Hofmeyer	7.1	7	Elliot	6.7	17
Sekgosese	7.1	8	Koffiefontein	6.7	18
Barkley-West	7	9	Malamulela	6.7	19
Kudumane	6.9	10	Mpofu	6.7	20

Source: Authors' own calculations.

Figure 12 From Naude et al.2008, p. 13

Figure 1
Vulnerability of the magisterial districts in South Africa according to the LVI
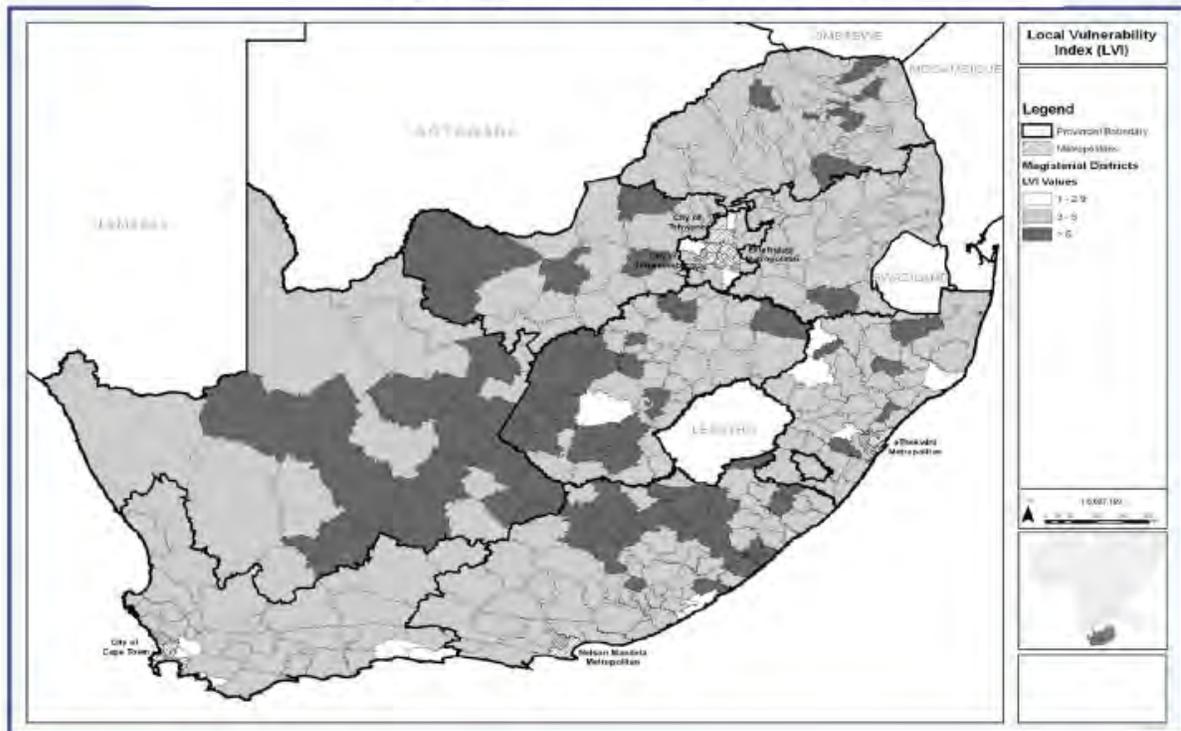
Source: Compiled for the authors, based on own calculations.

Figure 13 From Naude et al.2008, p. 14

APPENDIX IV. EXAMPLES OF VEP DATA OUTPUTS

From Chaudhuri et al.2002, Appendix
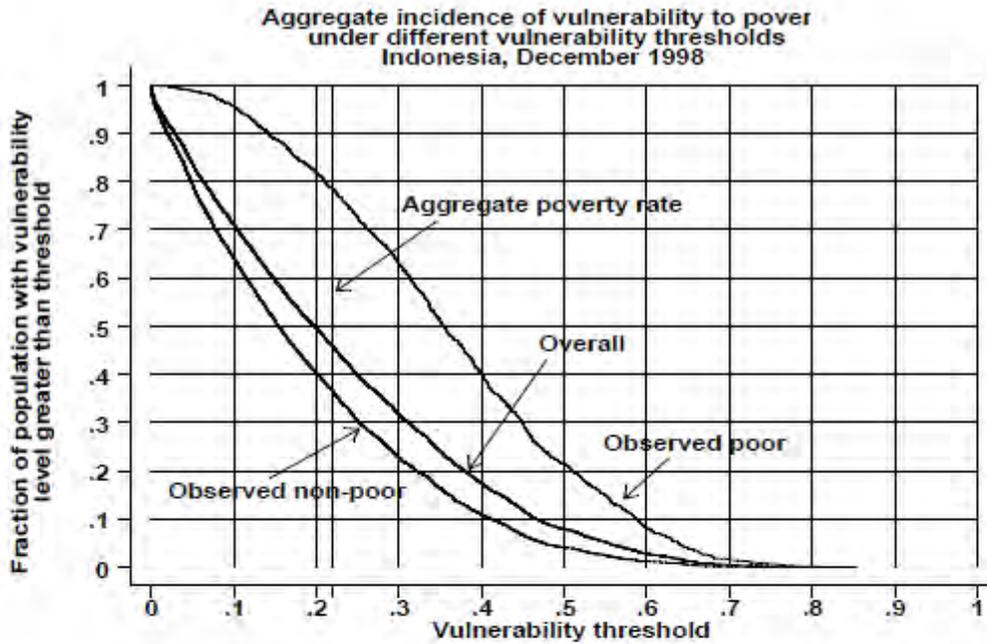
Figure 1
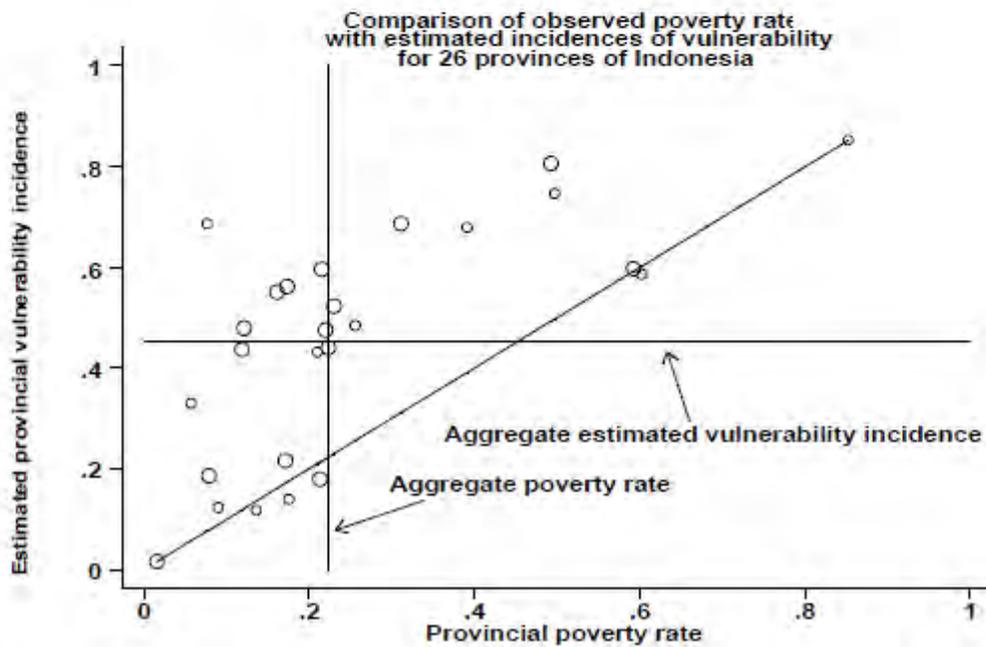
Figure 2

Figure 3

Figure 4

Non-poor in 1998 & 1999

Non-poor in 1998, poor in 1999

Poor in 1998, non-poor in 1999

Poor in 1998 & 1999
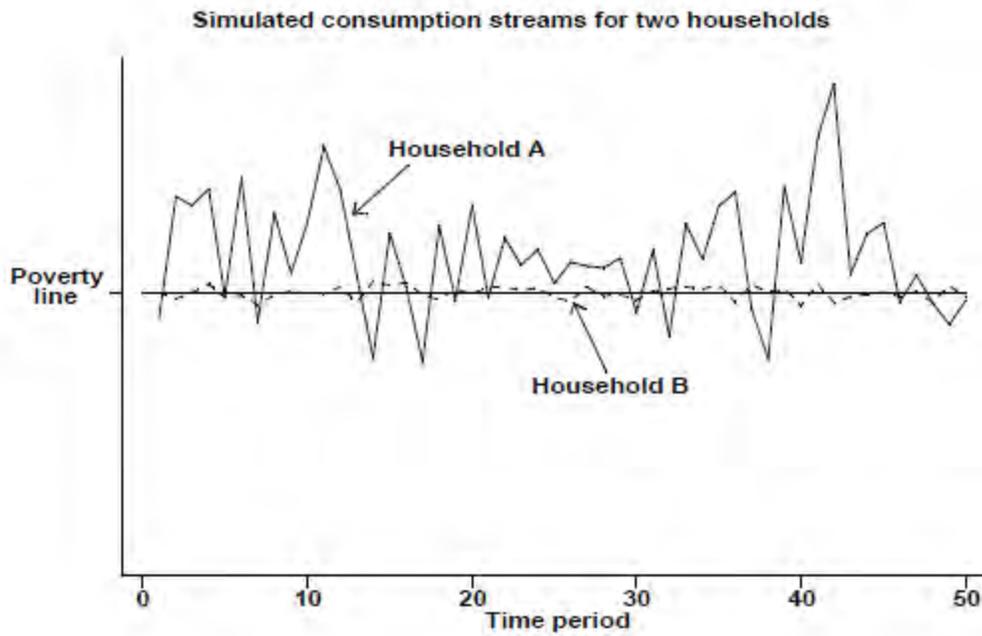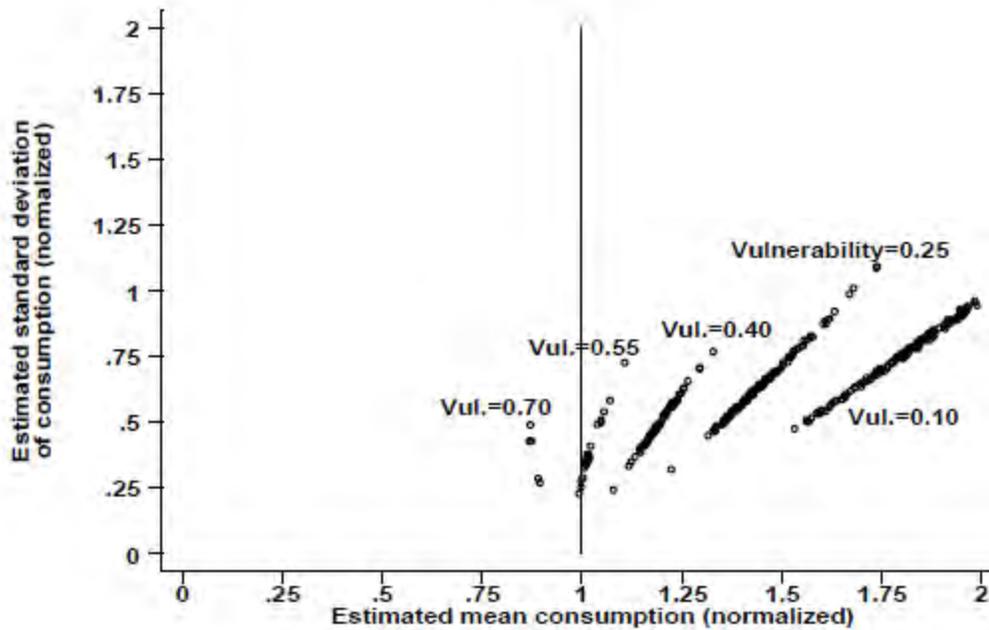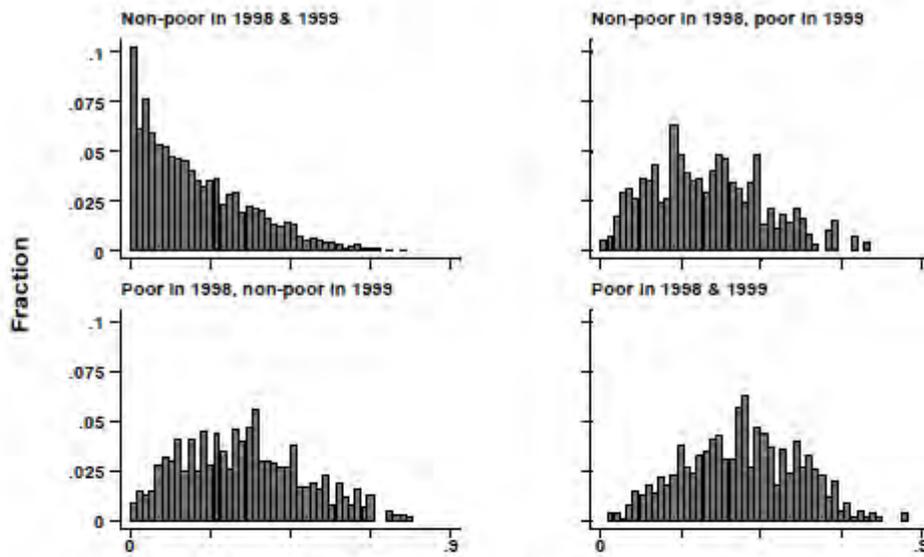
Distribution of vulnerability, estimated from 1998 data
for cells of 2-period poverty transition matrix
Indonesia, Mini-SUSENAS (1998,1999)

Figure 6

Predicted and actual 1999 poverty rates,
by deciles of 1998 vulnerability distribution

Predicted poverty rate

Actual poverty rate
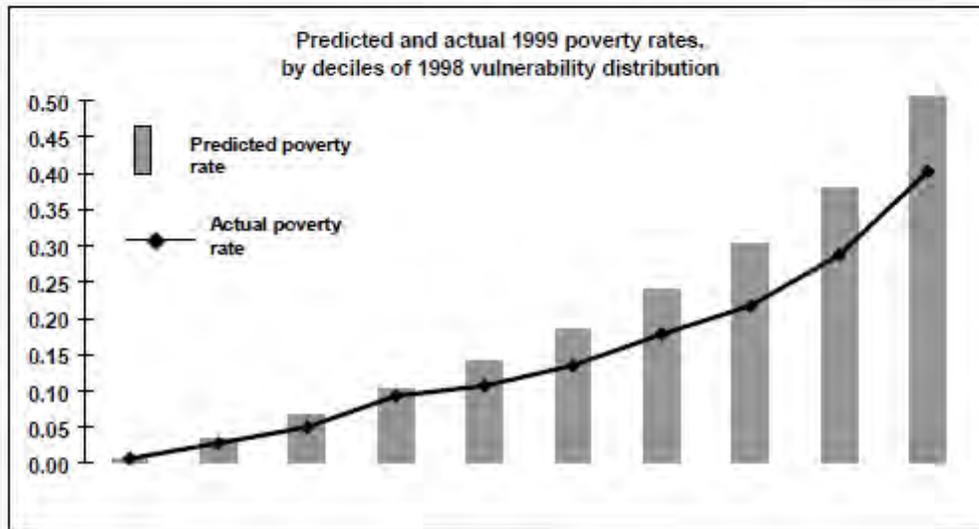
Figure 7

Table 1
Geographic domains and poverty lines (Rupiah per capita per month)

Cluster/Province	Rural	Urban	Cluster/Province	Rural	Urban
Sumatra			East Java & Bali		
Aceh	65426	69050	East Java	74256	78899
North Sumatra	71811	80493	Bali	87040	90164
West Sumatra	74091	80568	Kalimantan & Sulawesi		
Riau	81915	92510	West Kalimantan	83963	89114
Jambi	70535	78057	Central Kalimantan	81955	91461
South Sumatra	74140	79348	South Kalimantan	77642	81377
Bengkulu	73249	80821	East Kalimantan	86570	89450
Lampung	70034	79153	North Sulawesi	76743	81688
Jakarta			Central Sulawesi	73932	78215
Jakarta	...	96659	South Sulawesi	68200	77539
West Java			Southeast Sulawesi	76600	82660
West Java	81952	89936	Rest of Indonesia		
Central Java & Yogyakarta			West Nusa Tenggara	76714	79489
Central Java	73373	79497	East Nusa Tenggara	72262	78098
Yogyakarta	79289	86179	Maluku	85829	88081
			Papua	91002	82905

Table 2
Aggregate poverty and vulnerability profiles for Indonesia, December 1998

	Overall	Amongst the non-poor	Amongst the poor	Amongst the non-vulnerable	Amongst the vulnerable	Amongst the relatively vulnerable	Amongst the highly vulnerable
Mean per-capita expenditure (Rupiah/month)	138897	161061	65209	171797	97851	101693	82718
Fraction poor	0.22	0.00	1.00	0.09	0.40	0.34	0.63
Mean vulnerability	0.23	0.19	0.37	0.10	0.40	0.35	0.61
Fraction vulnerable	0.45	0.36	0.78	0.00	1.00	1.00	1.00
Fraction relatively vulnerable	0.37	0.32	0.57	0.00	0.80	1.00	0.00
Fraction highly vulnerable	0.08	0.04	0.21	0.00	0.20	0.00	1.00

Table 3
Poverty and vulnerability within different segments of the population, Indonesia, December 1998

	Population share	Share of poor	Share of vulnerable	Share of highly vulnerable	Fraction poor	Mean vulnerability	Fraction vulnerable	Vulnerability to poverty ratio	Fraction highly vulnerable
Overall					0.23	0.23	0.44	1.92	0.09
By location:									
Rural	0.61	0.80	0.82	0.91	0.30	0.30	0.60	1.99	0.13
Urban	0.39	0.20	0.18	0.09	0.12	0.13	0.20	1.66	0.02
Sumatra: urban	0.06	0.03	0.02	0.02	0.08	0.10	0.10	1.27	0.00
Jakarta: urban	0.05	0.00	0.00	0.00	0.02	0.03	0.02	1.00	0.00
West Java: urban	0.10	0.05	0.04	0.00	0.12	0.13	0.23	1.95	0.00
Central Java & Yogyakarta: urban	0.07	0.06	0.07	0.06	0.22	0.23	0.48	2.16	0.08
East Java & Bali: urban	0.06	0.02	0.01	0.00	0.08	0.11	0.12	1.52	0.00
Kalimantan & Sulawesi: urban	0.04	0.03	0.03	0.01	0.18	0.16	0.30	1.66	0.02
Rest of Indonesa: urban	0.01	0.00	0.00	0.00	0.08	0.13	0.21	2.59	0.00
Sumatra: rural	0.13	0.12	0.09	0.10	0.16	0.17	0.27	1.74	0.01
West Java: rural	0.12	0.16	0.16	0.20	0.31	0.30	0.62	1.98	0.16
Central Java & Yogyakarta: rural	0.12	0.17	0.20	0.17	0.34	0.35	0.78	2.30	0.14
East Java & Bali: rural	0.14	0.17	0.20	0.17	0.28	0.30	0.65	2.34	0.11
Kalimantan & Sulawesi: rural	0.09	0.12	0.13	0.20	0.31	0.34	0.69	2.22	0.21
Rest of Indonesa: rural	0.03	0.07	0.04	0.06	0.56	0.35	0.74	1.31	0.21
By education of household head									
No schooling	0.12	0.17	0.19	0.36	0.34	0.37	0.74	2.16	0.28
Primary	0.57	0.71	0.76	0.60	0.29	0.28	0.61	2.16	0.10
Junior	0.11	0.06	0.03	0.01	0.12	0.13	0.14	1.35	0.01
Secondary	0.16	0.05	0.02	0.02	0.07	0.08	0.03	0.55	0.01
More than secondary	0.05	0.01	0.00	0.01	0.01	0.03	0.00	0.00	0.00
By employment status of household head									
Unemployed/unpaid	0.13	0.11	0.12	0.12	0.19	0.22	0.43	2.23	0.08
Self-employed: no help	0.24	0.25	0.25	0.13	0.22	0.22	0.46	2.10	0.03
Self-employed: some help	0.31	0.37	0.39	0.43	0.27	0.28	0.57	2.11	0.12
Salaried (private & public)	0.32	0.27	0.24	0.31	0.19	0.19	0.33	1.78	0.08

Table 3 (continued)
Poverty and vulnerability within different segments of the population, Indonesia, December 1998

		Population share	Share of poor	Share of vulnerable	Share of highly vulnerable	Fraction poor	Mean vulnerability	Fraction vulnerable	Vulnerability to poverty ratio	Fraction highly vulnerable
By demographic categories										
Household head less than 60		0.86	0.86	0.85	0.83	0.22	0.22	0.45	2.00	0.08
Household head greater than 60		0.14	0.14	0.15	0.17	0.22	0.25	0.49	2.20	0.10
Female household head		0.08	0.08	0.09	0.13	0.22	0.24	0.46	2.07	0.13
Male household head		0.92	0.92	0.91	0.87	0.22	0.23	0.45	2.03	0.08
Household head not currently married		0.10	0.10	0.10	0.15	0.20	0.23	0.44	2.17	0.12
Married household head		0.90	0.90	0.90	0.85	0.22	0.23	0.45	2.02	0.08
Dependency ratio less than 0.25		0.79	0.81	0.79	0.81	0.23	0.23	0.45	1.99	0.08
Dependency ratio greater than 0.25		0.21	0.19	0.21	0.19	0.21	0.23	0.46	2.22	0.07
By community characteristics										
Transport facilities:	No	0.09	0.15	0.11	0.11	0.41	0.28	0.61	1.48	0.12
	Yes	0.91	0.85	0.89	0.89	0.21	0.22	0.44	2.13	0.08
Industry:	No	0.20	0.25	0.21	0.25	0.29	0.25	0.48	1.63	0.10
	Yes	0.80	0.75	0.79	0.75	0.22	0.23	0.44	2.02	0.07
Bank:	No	0.79	0.83	0.82	0.88	0.24	0.24	0.47	1.90	0.10
	Yes	0.21	0.17	0.18	0.12	0.18	0.20	0.37	2.04	0.05
Cooperative:	No	0.48	0.58	0.57	0.61	0.28	0.27	0.53	1.88	0.11
	Yes	0.52	0.42	0.43	0.39	0.18	0.20	0.37	1.99	0.07
Access to clean water	No	0.74	0.92	0.87	0.91	0.29	0.27	0.52	1.83	0.11
	Yes	0.26	0.08	0.13	0.09	0.07	0.14	0.22	3.01	0.03

Table 4
Sources of vulnerability for Indonesia, December 1998

	Overall	Amongst the non-poor	Amongst the poor	Amongst the non-vulnerable	Amongst the vulnerable	Amongst the high-volatility vulnerable	Amongst the low-mean vulnerable
Mean per-capita expenditure (Rupiah/month)	138897	161061	65209	171797	97851	100925	73168
Fraction poor	0.22	0.00	1.00	0.09	0.40	0.38	0.62
Mean vulnerability	0.23	0.19	0.38	0.10	0.40	0.37	0.60
Fraction vulnerable	0.45	0.36	0.78	0.00	1.00	1.00	1.00
Fraction high-volatility vulnerable	0.40	0.33	0.64	0.00	0.89	1.00	0.00
Fraction low-mean vulnerable	0.05	0.02	0.14	0.00	0.11	0.00	1.00

Table 5
Mean vulnerability level in 1998 by observed poverty status in 1998 and 1999

		Poverty status in 1999		
		Nonpoor	Poor	All
Poverty status in 1998	Nonpoor	.179	.299	.189
	Poor	.330	.398	.361
	All	.201	.359	.228

Note: Based on the Mini-SUSENAS panel of 7220 households

APPENDIX V. PAT SURVEY EXAMPLE

From USAID, 2010

Client Assessment Survey - Cambodia

Interviewer: Fill out the information below before the survey begins. Do not ask the respondent for this information.

Date of Interview : _____ (dd-mm-yyyy)	**Quality Control Checks**
Interviewer (code) : _____	*Field Supervisor*
Branch (code) : _____	*Date _____ Initials _____*
Region : ____	*Headquarters*
1=Phnom Penh 2=Coastal 3=Plateau/mountain 4=Plains 5=Tonle Sap	*Date _____ Initials _____*
Client Location : ____ Urban=0; Rural=1	*Data Processor*
Time in Program : ____ Months	*Date _____ Initials_____*
Client or ID # : _____	

Interviewer: Introduce the survey to the respondent. Say: "Hello. My name is ____. I work for the organization _____. We are trying to learn a little bit more about the clients we work with, and so I have a few questions I would like to ask today. It should only take us about 20 minutes, and the answers you provide will be put together with answers from other households. All of your answers are completely confidential and your name will not be given with your answers. Are you willing to take some time to answer these questions today?" After he/she agrees, proceed with the dialogue below.

Interviewer: "I would like to ask you some questions about the people in your household. Let me tell you a little bit about what we mean by 'household.' For our purposes today, members of a household are those that live together and eat from the "same pot." Each person contributes to and benefits from the household. It should include anyone who has lived in your house for 6 of the last 12 months, but it does not include anyone who lives here but eats separately. Do you have any questions about that?" Answer any questions the respondent has before proceeding.

Interviewer: Ask the respondent to list all members of the household, using the definition above. After completing Column A, then ask for the information in Columns B-E, filling out each row completely before moving to the next household member. Write the information down in the chart as he/she relays it to you. Say to the respondent: "Now I would like you to identify each person in your household and then answer some basic questions about each person."

A. Household Member	B. Sex	C. What is [NAME]'s relationship to the household head?	D. How old is [NAME]?	E. *For persons 5 years of age and older only* Can [NAME] read a simple message in any language?
1.	Female …0 Male ……1	Head……………1 Spouse………..2 Child……………3 Parent………….4 Grandchild……..5 Grandparent…...6 Other…………..7	(complete years)	No.......................0 Yes……………….1
1) Respondent				.
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10)				
11)				
12)				
13)				
14)				
15)				

2. Number of people living in household *(record number of members from Column A above):*

3. Sex of household head *(record sex from Column B for person who is identified as household head in Column C):*

4. Age of household head *(record age from Column D for person who is identified as household head in Column C):*

5. Number of people age 18 and older (excluding head) who can read *(record total number who answer 1 in Column E, excluding household head, who are identified as 18 years or older in Column D)*

6. What is the primary construction material of the roof of the housing/dwelling unit occupied by your household?

Thatch …………...…………….……….......1	Mixed but predominantly made of galvanized iron/aluminum,
Tiles ……………...………………...…….....2	tiles or fibrous cement ………….……………………….......…......7
Fibrous cement……...……………………....3	Mixed but predominantly made of thatch or salvaged materials ………..8
Galvanized iron or aluminum ……...…….…4	Plastic sheet…...……………………………………………………9
Salvaged materials ……..…………...……....5	Other …………………………………………………………...10
Concrete …..……….……..………….......….6	

7. What is your household's main source of lighting?

Publicly-provided electricity ……………...…..1	Kerosene lamp ………………………………………………….....4
Privately-generated electricity/Generator ..2	None ……………………………………………………………....5
Battery …………………………………….3	Other …………………………………………………………….6

8. Did your household boil or otherwise treat its drinking water last month?

Yes, always ………….....………………….....1
Sometimes …………….…………………....2
No, never ………………....…………………3

9. What type of fuel does your household mainly use for cooking?

Firewood …………..…………………….....1	Publicly-provided electricity ……………….…………………….....6
Charcoal ……………………………….....2	Gas and electricity …………….………………………………......7
Firewood and charcoal …………..……….3	Privately-generated electricity …………..………………………....8
Liquefied petroleum gas ………………....4	None/don't cook ……………………….…………………….....9
Kerosene ……………………………….....5	Other ………………….…………………………………………..10

10. How many televisions does your household own?
number

11. How many video tape players or video tape recorders does your household own?
number

12. How many motorcycles does your household currently own?
number

13. How many suitcases does your household own?
number

14. How many dining sets does your household own? By dining set, I mean a dining table with chairs.
number

15. How many wardrobes or cabinets does your household own?
number

16. How many times in the past 7 days did your household consume fish/fish paste, squid, shrimp and prawns, etc. at home?
number

17. How many times in the past 7 days did your household eat other meat, such as beef, pork, chicken, duck etc., at home?
number

APPENDIX VI. EXAMPLE OF PPI SCORECARD

From Schreiner, 2009

Figure 1: A simple poverty scorecard for Peru

Entity	Name	ID	Date (DD/MM/YY)
Member:			Joined:
Loan officer:			Today:
Branch:			Household size:

Indicator	Value	Points	Score
1. How many household members are 17-years-old or younger?	A. Four or more	0	
	B. Three	5	
	C. Two	9	
	D. One	16	
	E. None	24	
2. What is the highest educational level that the female head/spouse completed?	A. None, pre-school, or kindergarten	0	
	B. Grade school (incomplete)	5	
	C. Grade school (complete)	7	
	D. High school (incomplete)	9	
	E. High school (complete), non-university superior (incomplete) or no female head	10	
	F. Non-university superior (complete) or higher	16	
3. What is the main material of the floors?	A. Earth, wood planks, other, or no residence	0	
	B. Cement	2	
	C. Parquet, polished wood, linoleum, vinyl, tile, or similar	15	
4. What is the main material of the exterior walls?	A. Adobe, mud, or matting	0	
	B. Wattle and daub, stone with mud, wood, brick or cement blocks, stone blocks with lime or cement, other, or no residence	2	
5. Excluding bathrooms, kitchen, hallways, and garage, how many rooms does the residence have?	A. One	0	
	B. Two	1	
	C. Three, four, or five	5	
	D. Six or more	10	
6. What fuel does the household most frequently use for cooking?	A. Other	0	
	B. Firewood, charcoal, or kerosene	5	
	C. Gas (LPG or natural)	9	
	D. Electricity or does not cook	16	
7. Does the household have a refrigerator/freezer?	A. No	0	
	B. Yes	5	
8. How many color televisions does the household have?	A. None	0	
	B. One	3	
	C. Two or more	7	
9. Does the household have a blender?	A. No	0	
	B. Yes	3	
10. Does the household have an iron?	A. No	0	
	B. Yes	2	

Microfinance Risk Management, L.L.C., microfinance.com   **Total score:**

APPENDIX VII. PARTICIPATORY VULNERABILITY ASSESSMENT SUMMARY

From Chiwaka and Yates, 2004

Summary of the PVA multi-levelled approach: what is involved at each level?

Vulnerability analysis model Activities

Participatory

Community meetings
Discussion sessions and analysis
Training of local facilitators
Participatory and *Reflect* approaches

Community level analysis

Stakeholders and focal group meetings
Local level advocacy and lobbying
Documentation and liaison

District/project level analysis

Studies on selected issues
National level advocacy and lobbying
Exchange visits and monitoring
National level workshops

Regional/country level analysis

Co-ordination and documentation
Technical support to countries involved
Policy and advocacy work
International workshops

International level analysis

Figure 14 From Chiwaka and Yates 2004, p. 14

Phase 1:
Preparation

- Country level awareness-raising
- Defining purpose (TORs)
- Stakeholder analysis
- PVA team preparation

Phase 2:
Understanding the
Analytical Framework

Step-by-step guide
- Step1: situation analysis
- Step 2: analysing causes
- Step 3: analysing community action
- Step 4: drawing action from analysis

Phase 3:
Multi-levelled analysis

1. Community level analysis – conducting PVA in the selected areas using the step-by-step framework
2. District level analysis – analysing vulnerability at district level using the Step-by-Step framework
3. National level analysis – analysing vulnerability at national level using the step-by-step framework
4. International level analysis – feedback from national level analysis and action planning

Figure 15 From Chiwaka and Yates, p. 14

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APPENDIX VIII. PARTICIPATORY VULNERABILITY AND CAPABILITY ANALYSIS

From Christian Aid, 2011

Table 1. Disaster risk reduction activity table – example of list of activities

Problem/risk	What can be done?	Without external assistance	With some external assistance
	Immediately		
	Medium term		
	Long term		

Table 2. Example of an action plan

Problem/ vulnerability to reduce	Activities/tasks to carry out	Persons responsible for the task	Calendar	Resources required (internal/external)

Figure 56 From Christian Aid 2001, p. 15

Table 3. Example of an action plan used in Bramhangaon in Bangladesh by villagers and the Christian Aid partner Friends in Village Development in Bangladesh

Problems identified through priority ranking	Means of problem resolution	Availability of resources/facilities	Types of resources/facilities required	When required	Support needed from
River erosion	Riverbank protection work using sand-filled gunny bags. Removal of water blockage including all necessary work	Volunteer labour	Sand bags Bamboo	In the month of Falgun Chaitra	Villagers Friends in Village Development in Bangladesh (FIVDB) Local government Water Development Board
Water logging	Drain re-excavation	Volunteer labour Existing narrow drain	Labour for digging	In the month of Magh Falgun Chaitra	Villagers FIVDB
Water sanitation	Raise the base of existing tube wells and establish new ones. Establish ring slab latrine	Volunteer labour Masonry Existing tube well	Pipe Cement bricks Sand Ring slab	In the month of Agrahayan Chaitra	Villagers FIVDB UP
Lack of awareness	Building the capacity of the community on issue of disaster management. Providing first aid box. Organising training on healthcare and mothers' care during hazard and disaster	Participants	Training materials and trainers	Throughout the year	Villagers FIVDB
Unemployment	Providing training on alternative livelihoods	Willingness of the community	Training materials and trainers	Throughout the year	Villagers FIVDB

Figure 67 From Christian Aid 2011, p. 16

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APPENDIX IX. PARTICIPATORY WEALTH RANKING FORMS

From Simanowitz and Nkuna 1998, p. 27-38

APPENDIX - Forms and Assessment

TŠHOMIŠANO CREDIT PROGRAMME
WEALTH RANKING - FORM 1

BRANCH NAME:..................................

VILLAGE NAME:...............................

SECTION NAME:..................................

Card no.	Name	Score 1	Score 2	Score 3	Score 4	Average

TŠHOMIŠANO CREDIT PROGRAMME
WEALTH RANKING - FORM 2

BRANCH NAME:...................................   RANKING NUMBER:................
VILLAGE NAME:...................................
SECTION NAME:..................................   YOUR NAME:............................

1. DISCUSSION ON CONCEPTS OF POVERTY

What is a very poor person?

What makes someone poor but a bit better off?

What are the characteristics of someone who is doing OK?

TŠHOMIŠANO CREDIT PROGRAMME
WEALTH RANKING - FORM 3

BRANCH NAME:..................................... **RANKING NUMBER:**................
VILLAGE NAME:...................................
SECTION NAME:.................................. **YOUR NAME:**...........................

PROBLEM CARDS
Cards where there is disagreement in where to place it or a lot of discussion about the characteristics of that family/ person.

Card no.	Discussion

BRANCH NAME:.................................   RANKING NUMBER:...............
VILLAGE NAME:.................................
SECTION NAME:.................................   YOUR NAME:...........................

CHARACTERISTICS OF DIFFERENT PILES

PILE 1 (Poorest)
General characteristics

Additional information given during card sorting

PILE 2
General characteristics

Additional information given during card sorting

PILE 3
General characteristics

Additional information given during card sorting

BRANCH NAME:.................................   RANKING NUMBER:...............

VILLAGE NAME:...............................
SECTION NAME:................................   YOUR NAME:..............................

PILE 4
General characteristics

Additional information given during card sorting

PILE 5
General characteristics

Additional information given during card sorting

PILE 6
General characteristics

Additional information given during card sorting

BRANCH NAME:..................................   RANKING NUMBER:...............
VILLAGE NAME:..................................
SECTION NAME:..................................   YOUR NAME:............................

PILE 7
General characteristics

Additional information given during card sorting

PILE 8
General characteristics

Additional information given during card sorting

PILE 9
General characteristics

Additional information given during card sorting

Name.................................   Assessor.................   Date....................

Assessment Framework for Participatory Wealth Ranking - Facilitator

Task	Maximum	Score

	score	
1. Mapping		
1.1 Mapping - starting off the map	5	
- facilitation (including reducing time taken)	10	
- numbering, list, cards, map on paper	10	
- checking	5	
1.2 Setting up reference groups - time, location	10	
Sub-total	**40**	
2. Card Sorting		
2.1 Introductions to exercise/ getting people relaxed	10	
2.1 Initial discussion	10	
2.2 Skill in getting going	5	
2.3 Pile development (facilitating increasing no. of piles)	5	
2.4 Sensitivity (interaction with group; stop when tired etc)	10	
2.5 Note taking	15	
2.6 Handing over the process	5	
2.7 Checking piles correct and appropriate divisions	5	
2.8 Calculating scores for piles	10	
2.9 Identifying inconsistencies	10	
Sub-total	**85**	
TOTAL SCORE: *Reaction to problems bonus (+/- 20)*	**125**	

Name............................... Assessor............... Date..................

Assessment Framework for Participatory Wealth Ranking - Organiser

Task	Maximum score	Score
1. Preparations and Mapping		
1.1 General preparations - venue	5	
- attendance (representation from all sections)	10	
- materials	5	
1.2 Starting meeting; introduction; explanation	15	
1.3 Mapping - dividing into sections	5	
- starting off the map	5	
1.4 Supervision / organisation		
- assigning staff to sections (evenly divide sections between staff)	5	
- checking that all is well with all sections	5	
- reassigning staff when finished	5	
- organisation of reference groups: times to meet-back, list of where everyone is etc	10	
- sorting out problems (such as decisions on missing sections)	15	
1.5 Organisation of refreshments (where necessary) - must be a break not after	5	
Sub-total	90	
2. Supervision and Analysis of Reference groups		
3.1 Meeting staff and knowing what everyone is doing	10	
3.1 Checking scores	10	
3.2 Identifying inconsistencies	10	
3.3 Deciding on additional reference groups	10	
3.4 Calculation of average scores and data cleaning	10	
3.5 Assessment of staff according to facilitator check-list	25	
Sub-total	75	
4. Deciding on cut-off point and selection of member		
4.1 Choosing cut-off score from information	20	
4.3 Identifying inconsistencies to check if apply	5	
4.4 Identify borderlines - decide if include or check if apply	10	
Sub-total	35	
TOTAL SCORE:	200	

APPENDIX X: SCORE VULNERABILITY ASSESSMENT TOOL

USAID **SCORE Vulnerability Assessment Form ID No** ☐☐☐☐
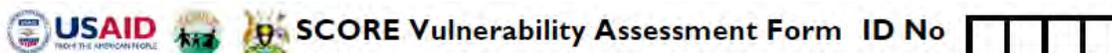
No.	QUESTIONS AND FILTERS		
1.	Interviewer Name and ID		☐☐
2.	Date of Interview (day /month/year)	d d ☐ m m ☐ y y y y	
3.	District Code		☐☐
4.	Sub – County/ Division Name		
5.	Parish Name	6. Village Name	
7.	Name of the Household Head		
8.	Name of Index Child		
9.	Date of Birth of the Index Child (day /month/ year)	d d ☐ m m ☐ y y y y DON'T KNOW.................... 2020	
10.	Sex of the Index Child	1. Female 2. Male	
	Did the Agency/CBO/NGO receive funding from USAID (Track 1 Project)? YES NO	Is the index child/household a former *Track 1* beneficiary? YES NO	

Section A: Protection		CODING CATEGORIES: (If yes to any of the category in the question, score 5, if no score 0)	Score
11.	Has the child been involved in the following: *(Ask the child/parent/guardian)*	Child Labor /Street child /Child Mother	
12.	Has the child been involved in the following forms of child abuse or neglect? *(Ask and observe the child)*	Psychological abuse / Physical abuse / Sexual abuse / Child Neglect	
13.	Has the child ever been involved in alcohol/ Substance consumption/use? *(Ask the child)*	Drinking Alcohol/Local Brew / Smoking / Petroleum sniffing / Drugs	
14.	Child has a chronic disease *(Ask the child/parent/guardian)*	HIV/AIDS / Sickle Cells / Epilepsy	
15.	Child has a Disability *(if the disability is physical/observable please don't ask)*	Deaf / Blind / Physical / Mental	
16.	Do you know anyone who can help you in case you need legal assistance for the following? If Yes, then ask them to list the places and tick the one where they go among the answers:	Child Neglect / Sexual Abuse / Property grabbing *(If yes score 0 and if No score 5)* Police__ , LC__, Probation and welfare office/CDO__, Human rights agencies__	

Section A: Total Score			

Section B: Food Security		CODING CATEGORIES	Score
17.	What does the child <u>usually</u> eat? *Usually means at least 3 times a week (Ask the parent/guardian and then a child to double check)* Applicable to children of all age bracket (Breast feeding children takes all the food values)	Energy foods: (potatoes, banana, oils, posho, millet, rice, maize, bread, cassava)(If Yes, score 0 & if No score 4)	
		Body building foods: (beans, meat, soya, peas, milk, eggs, chicken, fish)(If Yes, score 0 & if No score 4)	
		Protective and regulative foods: (tomatoes, oranges, pawpaw,mangoes, pineapple) (If Yes, score 0 & if No score 4)	
18.	How many times does the child have meals in a day? *(Ask the parent/guardian and then a child to double check)*	3 times a day *(if yes, score 0)*, Twice a day *(if yes, score 3)*, Once a day *(if yes, score 8)*, Not every day *(if yes, score 10)*	
19.	Are there times when your household/child goes without meals due to failure to get food?	Yes *(Score 5)* No *(Score 0)*	
20.	If Yes, how often does the household/child go without meals?	At all times *(if yes, score 3)* Irregularly *(if yes, score 2)* Very rarely *(if yes, score 0)*	

Section B- Total Score			

Section C: Economic Strengthening

21.	What is your household's <u>main</u> source of income?	1. Formal employment (*If Yes, score 0*) 2. Informal employment (truck driving, boda-boda, rental units, askari/guards, subsistence farming, petty trading)(*If Yes, score 6*), 3. Casual Labor(porter, builder) (*If Yes, score 8*), 4. Remittances (*If Yes, score 8*), 5. Unemployed (*If Yes, score 10*)	
22.	How many people live in your household? What is the current total monthly household income?	Number_____Total Income_____ *(Divide total income by total number of people in HH, if < 30 US dollars (UGX 75000) per person/per month then score the HH 15 & if it's > 30US dollars (UGX 75000) score 0)*	
23.	Who is the <u>main</u> contributor to household income?	- Children (if yes, score **5**) - Grand Parents (if yes score **4**,) - Relative(s) (if yes, score **3**,) - Mother (if yes, score **2**,) - Father (if yes, score **1**,) - Others (if yes, score **5**)	

Section C- Total Score			

Section D: Family Strengthening- Critical Services

24.	Parenthood Status for the index child	- Double orphan (if yes, score **6**) - Maternal Orphan (if yes, score **5**) - Paternal Orphan (if yes, score **4**) - Both Parents Absent (if yes, score **3**) - Mother Absent (if yes, score **2**) - Father Absent (if yes, score **1**) - Both Parents Alive (if yes, score **0**)	
25.	Guardian age/Parent age	Below 18 yrs(if yes, score **5**), Above 65 yrs(if yes, score **3**), Between 18-65 yrs(if yes, score **0**)	
26.	Guardians Health/Parents age	Has a disability (If Yes score **2**, if No **0**),	
		Has a chronic disease [e.g. HIV and AIDS, Diabetes, cancer etc that affects working capacity] (*If Yes to score 2, if No 0*)	
27.	What is the <u>main</u> source of <u>drinking water</u> for members of your household?	Piped/borehole/harvesting (*If yes, score 0*), Surface water (*If Yes score 5*)	
28.	Do you have Latrine facilities	Yes own (Score**0** for Yes), Shared (Score **3** for shared), No (Score **4** for No)	
29.	Does the index child go to school?	Yes (if Yes, score **0**) No (if No, score **3**)	
30.	If Yes, does the child absent him/herself from school for at least 1 month in a term	Yes (if Yes, score **2**) No (if No, score **0**)	
31.	When the index child is sick, what do you do?	1. Seek medical care/go to the Health Facility (score **0**) 2. Others (*If doesn't seek health care, score 3*)	

Section D: Total Score			

Section E: Assessors General Impression			*Score*
32.	- Good Situation [can manage without support](*If Yes score 0*) - Fair Situation [could be considered for support] (*If Yes score 2* - Bad Situation [should be considered for support] (*If Yes score 8*) - Critical Situation [eligible for support] (*If Yes score 10*)		

Total Child Score for sections A, B, C, D & E			