Vulnerability does not just fall from the Sky: Addressing a Vulnerability Conundrum

Jesse Ribot
Department of Geography and Geographic Information Science
Department of Natural Resources and Environmental Science
Department of Anthropology
University of Illinois
Ribot@Illinois.edu

Ribot, J. 2017. "Vulnerability does not Fall from the Sky: Addressing a Risk Conundrum," in R. Kasperson, K. Dow, and N. Pidgeon (eds.), Risk Conundrums: Solving Unsolvable Problems. London: Earthscan.

Pre-copy edited version. This is an updated and shortened version of:
Ribot, Jesse (2010) 'Vulnerability does not just fall from the sky: toward multi-scale pro-poor climate policy', in Robin Mearns and Andrew Norton, *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World*, Washington DC: The World Bank.
Https://openknowledge.worldbank.org/handle/10986/2689 License: CC BY 3.0 Unported.
Go to the full 2010 article if you are interested. You can also get a more detailed story in Ribot 2014 in the *Journal of Peasant Studies*.

Vulnerability does not just fall from the Sky: Addressing a Vulnerability Conundrum

Introduction

Climate crises occur when hazards and vulnerability converge (Blaikie et al. 1994; Wisner et al. 2004). The climate risk equation involves hazards *and* vulnerability. Without both there is no crisis. But, the climate change community focuses an awful lot of attention on the hazard side of the equation – framing risk reduction as protection from the hazard. Yet, risk requires vulnerability – without which the hazard is not even a hazard. So, why is it that the vulnerability side of the equation receives so little attention? Causal analysis of vulnerabilities presents a basic conundrum. Ideally, it can help answer where and how society can best invest in vulnerability reduction. Analysis may not motivate all decision makers to make those investments, but can give development professionals, activists, and affected populations fodder to promote or demand the rights and protections that could make everyone better off.

But, causal analysis of vulnerability is often occluded in climate change policy – which trains its attention on the hazards. Alternatively, despite there being a long history of thinking about vulnerability, the climate change community focuses its attention on 'adaptation' rather than 'vulnerability reduction' – seeming synonyms that hide great differences in how we see the relation between risk and response. Vulnerability analysis looks back at the causes of vulnerability – the correction or stemming of which would reduce risk. Adaptation[1] focuses on the present and how we adjust to it, without attending sufficiently to cause. As a biological Darwinian metaphor, adaptation is a response to the stimuli of stress (Ribot 2010). The cause of evolution toward security is the stress itself and not the causes of that stress. While human creativity may lead people to ask *why*, the adaptation frame looks forward toward *what to do*; *why* seems incidental, despite that is should be a starting point. This paper puts *why* first – presuming that cause helps identify solutions.

Climate variations and changes present hazards to individuals and to society as a whole. The damages associated with storms, droughts, and slow climate changes are shaped by the social, political, and economic vulnerabilities of people and societies on the ground. This chapter calls for evaluation of the relatively neglected social and political-economic drivers of vulnerability – it calls for a balancing of the risk equation. The basic objective of this paper is to present an analytic approach that considers a full range of vulnerability-reducing policy responses. It aims to expand a focus on adaptation as a response to static initial conditions – a given society with a given set of assets and protections and a given stratification of access to these entitlements – to

[1] For a beautiful history of this idea of adaptation, see Watts 2014.

a focus on the origins of those initial conditions, a focus on the generation of assets, protections and their distribution.

The world's poor are disproportionately vulnerable to loss of livelihood and assets, dislocation, hunger, and famine in the face of climate variability and change (Cannon, Twigg and Rowell n.d.:5; Anderson, Morton and Toulmin 2010; Heltberg, Jorgensen and Siegel 2010). Living with multiple risks, poor and marginalized groups must manage the costs and benefits of overlapping natural, social, political and economic hazards (Moser et al. 2010). Their risk-minimizing strategies can diminish their income even before shocks arrive, while shocks can reinforce poverty by interrupting education, stunting children's physical development, destroying assets, forcing sale of productive capital, and deepening social differentiation from poor households' slower recovery (Heltberg et al 2010). The poor may also experience threats and opportunities from development or climate action itself, such as efforts to reduce greenhouse-gas emissions in sectors such as household energy, land, and forest management (Turner et al 2003:8076; O'Brien et al 2007:84; ICHRP 2008:1-2; White et al 2010).[2]

The good news is that policy can drastically reduce climate-related vulnerability. While the best global data indicate human suffering and economic loss are worsening in the face of natural hazards,[3] the number of people per total population affected is declining (Kasperson et al 2005:151-2). This reduction in vulnerability is most pronounced in high-income countries, where higher levels of wellbeing along with better infrastructure, policy, and planning are successfully mediating the relation between climate trends or events and outcomes. Effective climate action can further widen this gap between climate stressors and the risk of hardship. The 150-fold reduction in fatalities between two similar-intensity cyclones, Bhola and Gorky, that hit the same coastline in Bangladesh in 1970 and 1991 (Frank and Husain 1971; Government of Bangladesh 2008). The reduced damage was due to hazard identification progrmas, community preparedness, evacuation planning, and integrated response efforts (CEDMHA 2007; Ministry of Food and Disaster Management of Bangladesh 2008; Bern et al 1993; Batha 2008). While there are notable policy successes, vulnerability of poor, marginalized, and under-represented people remains widespread. In cases like Bangladesh, women, the poor, and other marginalized groups remain disproportionately and unacceptably vulnerable (Mushtaque et al 1993). When facing droughts in Northeast Argentina, industry-dependent tobacco growers are more vulnerable than independent agroecological farmers, whose farms are more bio-diverse, more technologically equipped, less exposed to external markets, and have greater political negotiating power (Kasperson et al 2005:158-9). In Kenya, privatization of pasturelands has improved security of some while making the poorer and

---

[2] For instance, if adaptations or mitigation efforts (such as reduced emissions from deforestation and decreased degradation, REDD) increase inequality within or among regions or social groups (O'Brien et al. 2007:84).

[3] This trend holds even without counting the 2004 tsunami. Twice as many people were adversely affected by climate events in the 1990s as in the 80s, and over the past four decades great major catastrophes have quadrupled while economic losses have increased tenfold (Kasperson et al. 2005:151-2).

landless much more vulnerable (Smucker and Wisner 2008). In Northeast Brazil the poor remain vulnerable due to dependence on rain-fed agriculture combined with little access to climate neutral employment (Duarte et al 2007:25). Poorer people excluded from access to services, social networks, and land experience intensified climate-related vulnerabilities and losses due to unequal social relations of power and representation. These kinds of problems are also a target for climate action.

The vast differences in damages associated with similar climate stressors in the same place at different times, from place to place or among different social strata reflect the complex and non-linear relation between climate and outcomes. The damages associated with climate events result more from conditions on the ground than from climate variability or change. Climate events or trends are transformed into differentiated outcomes via social structure. The poor and wealthy, women and men, young and old, and people of different social identities or political stripes experience different risks while facing the same climate event (Wisner 1976; Sen 1981; Watts 1987; Swift 1989; Hart 1992; Agarwal 1993; Blaikie et al 1994:9; Demetriades and Esplen 2010; Moser and Satterthwaite 2010). These different outcomes are due to place-based social and political-economic circumstance. The inability to sustain stresses does not fall from the sky. It is produced by on-the-ground social inequality, unequal access to resources, poverty, poor infrastructure, lack of representation, and inadequate systems of social security, early warning, and planning. These factors translate climate vagaries into suffering and loss.

Poverty is the most salient of the conditions that shape climate-related vulnerability (Prowse 2003:3; Cannon, Twigg and Rowell n.d.:5; Anderson, Morton and Toulmin 2010; Heltberg, Jorgensen and Siegel 2010). The poor are least able to buffer themselves against and rebound from stress. They often live in unsafe flood- and drought-prone urban or rural environments, lack insurance to help them recover from losses, and have little influence to demand that their governments provide protective infrastructure, temporary relief, or reconstruction support (ICHRP 2008:8). Indeed, their everyday conditions are unacceptable even in the absence of climate stress. Climate stresses push these populations over an all-too-low threshold into an insecurity and poverty that violates their basic human rights (ICHRP 2008:6; Moser and Norton 2001).

Since the adaptation' side of climate action aims to reduce human vulnerability, it cannot be limited to treating incremental effects from climate change so as to maintain or bring people back to their pre-change deprived state (also see Heltberg et al 2010). As Blaikie et al (1994:3) point out, "despite the lethal reputation of earthquakes, epidemics, and famines, many more of the world's population have their lives shortened by unnoticed events, illnesses, and hunger that pass for normal existence in many parts of the world…" (also see Kasperson et al 2005:150; Bohle 2001) . It is this "normal" state that effective climate action must aim to eradicate if climate variation and change are to be downgraded from deadly threats to mere nuisances.

Following a brief review of vulnerability theory, this chapter frames an approach for analyzing the diverse causal structures of vulnerability and identifying policy responses that might reduce vulnerability of poor and marginal populations. The chapter argues that understanding the multi-scale causal structure of specific vulnerabilities—such as risk of dislocation or economic loss—and the practices that people use to manage these vulnerabilities can point to solutions and potential policy responses. Analysis of the causes of vulnerability can be used to identify the multiple scales at which solutions must be developed and can identify the institutions at each scale responsible for producing and capable of reducing climate-related risks.

There literature pays insufficient attention to the social causal factors that shape the needs for and potential elements of vulnerability-reduction interventions, policies and programs.[4] This chapter outlines a policy-research agenda on causal structures of multiple vulnerabilities in different environmental and political-economic contexts so that causal variables can be aggregated to help develop higher-scale vulnerability-reduction policies and strategies. The focus on causality builds on insights from successes of existing project approaches, such as social funds, social safety nets, or community-driven development (Heltberg et al 2010), and successful adaptation support based on coping and risk-pooling practices (Agrawal 2010; Anderson, Morton and Toulmin 2010). A focus on causal structure adds systematic attention to root causes at multiple scales. It identifies the proximate responses to risk, ordinarily conducted via projects and people's own coping arrangements, while also attending to the more distant social, political, and economic root causes of vulnerability. Vulnerability analysis and policy development are only first steps, of course, in a multi-step iterative governance process. The chapter concludes with a discussion of governance, arguing that to tilt decision making in favor of the poor will require systematic representation of poor and marginal voices in climate decision-making processes.

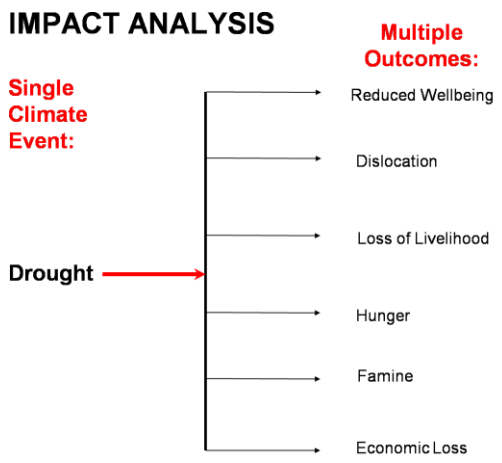

Figure 1: Impact Analysis

Linking Climate and Society: Theories of Vulnerability

Vulnerability analysis is often polarized into what are called risk-hazard and social constructivist frameworks (Füssel and Klein 2006:305; also see Adger 2006; O'Brien et al 2007:76). Risk-hazard is characterized as the *positivist* (or realist) school while the entitlements and livelihoods

[4] The US National Research Council (September 13, 2007:71-73), IPCC (2007:AR4-12.4, 17.2, 17.4), and 2006 Stern Review all acknowledge need for greater social science analysis.

approaches are lumped together as *constructivist*. I, however, will call this latter category entitlements or livelihoods approaches – since neither are founded on social constructivist perspectives.

The 'social constructivist' label here is a misnomer, falsely contrasting a positivist or 'realist' view, that these authors attribute to natural sciences, with a social constructivist view which these authors attribute to the social sciences. For the positivists, "risk…is a tangible by-product of actually occurring natural and social processes. It can be mapped and measured by knowledgeable experts, and within limits, controlled"; in social constructivist views, "risks do not directly reflect natural reality but are refracted in every society through lenses shaped by history, politics and culture" (Jasanoff 1999:137-9).

It is evident to any social scientist that both the risk-hazards and the entitlements and livelihoods approaches can be positivist as described above by Jasanoff. Both analyses can also be subject to or can integrate a social constructs view, which would certainly shed light on our understanding of risk and its assessment. If one distinguishes between constructivism as ontology, referring to the nature of things, and constructivism as a methodological stance, a constructivist analysis does not have to suggest that conditions and causes of vulnerability are not 'real' (Leach 2008:7). Indeed, there is no reason why a methodological constructivist approach cannot respect the phenomenology of vulnerability. It would also be perfectly positivist to assert that the socially constructed meanings that emerge from differently positioned actors shape causality (see Reboitier 2012). Clearly, what we believe and understand – whether or not it maps onto an empirical world – shapes what we do. More importantly, the meanings we make of things also shape our actions and reactions. Understandings and beliefs do real work in the real world. In short, we need to discard this false dichotomy introduced, it would seem, with the aim of discrediting social analysis.

One concrete distinction between the two schools, that has serious implications for policy, is that the risk-hazards models tend to evaluate the multiple outcomes (or "impacts") of a single climate event (see figure 1), while the entitlements and livelihoods approaches characterize the multiple causes of single outcomes (Figure 2) (Ribot 1995; Adger 2006) – both of which can, incidentally, be done in a positivist manner and/or applying a constructivist lenses. The risk-hazards traces a linear causal relation back to the environmental hazard itself while the entitlements and livelihoods approaches tend to trace cause to multiple social and political-economic factors. The entitlements livelihoods approach locates causality in agency and hence tends to see natural phenomena as playing a role but not as having 'caused' the risk of damage in the face of an event. A third category, integrative frameworks, has grown mostly from the entitlements and livelihoods approaches, yet treats environment as a causal factor. It locates cause in both hazards and society. Where analysts locate cause, of course, also indicates where interventions should be applied to reduce risk – shielding us from hazards and/or treating the multiple causes of crisis.

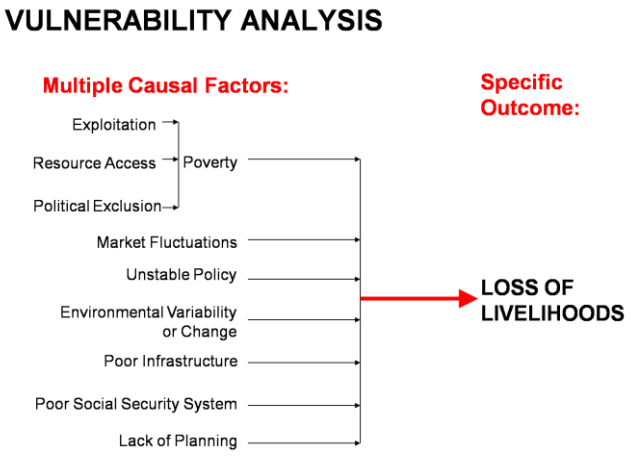

Figure 2: Vulnerability Analysis

The two archetypal approaches ask different questions. The risk-hazard approach, which defines vulnerability as a "dose-response relation between an exogenous hazard to a system and its adverse effects," (Füssel and Klein 2006:305) is concerned with predicting the aftermath or "impact" of a given climate event or stress, and estimating the increment of damage caused by an intensification from "normal" climatic conditions to the conditions expected under climate change scenarios. They view people as vulnerable *to* hazards—locating risk in the hazard itself. This approach is usually portrayed as inadequately incorporating social dimensions of risk (Adger 2006:270; also see Cannon 2000).

The entitlements and livelihoods schools are concerned with what causes vulnerability. They consider people to be vulnerable *to* undesirable outcomes – loss of a valued asset. They are also concerned with the likely aftermath of a climate event or trend. They view climate events and trends as external phenomena and view the risk of disaster and suffering as social, therefore they place the burden of explanation of vulnerability within the social system. They locate risk within society. The entitlements and livelihoods approaches are described as depicting "vulnerability as lack of entitlements" or a lack of sufficient means to protect or sustain oneself in the face of climate events where risk is shaped by society's provision of food, productive assets, and social protection arrangements (Adger 2006:270). The entitlements approach is often depicted as ignoring biophysical factors.

Integrative frameworks link these two views. These frameworks tend to borrow from entitlements and livelihoods models, rather than of being purely risk-hazard based. Integrative frameworks view vulnerability as depending on both biophysical and human factors. One views vulnerability as having "an external dimension, which is represented…by the 'exposure' of a system to climate variations, as well as an internal dimension, which comprises its 'sensitivity' and its 'adaptive capacity' to these stressors" (Füssel and Klein 2006:306). The IPCC views internal and external aspects as separate dimensions of vulnerability. These notions of external and internal aspects of vulnerability, however, are entirely contingent on how one draws the boundaries of the system under analysis.

Turner et al (2003; also see Blaikie 1985; Watts and Bohle 1993; Ribot 1995; 2014) avoid this boundary problem by tracing the causes of vulnerability from specific instances of crisis—explaining why a given individual, household, group, nation, or region is at risk of a particular set of damages (see Figure 2). By tracing chains of causality out from each unit at risk, their

model views the entire system as one integrated whole. Analyses of vulnerability must then account for all factors—biophysical and social—contributing to the likelihood of damage to the unit of concern (Kasperson et al 2005:159-161). This causality-based integrative approach to vulnerability informs the available integrative analytic approaches described in the next section. It allows a multi-scale multi-factor analysis of vulnerability.

Vulnerability Analysis

Two objectives of any vulnerability analysis for climate action are: to identify who is vulnerable and, how to best assist them. Analysts need to ask: *Where* should we spend public funds earmarked for climate adaptation, and *in what kinds of projects* should we invest in these places? The first question, how to target expenditures, requires identifying which regions (where), social groups (who), and things of value (what) are vulnerable. The question of what we need to invest in requires an understanding of the characteristics of their vulnerability and reasons (why) these places, people, and things are at risk, so we can assess the full range of means for reducing that vulnerability. *Where*, *who* and *what* are very different questions than *why*. Knowing *where, who* and *what* tells us how to target expenditures. Knowing *why* tells us what to modify or improve in these targeted places and communities. *Why* also indicates the complexity and cost of short- and long-term solutions to vulnerabilities associated with climate variability and change.

While risk-hazard impact assessments can indicate that a place might be affected by a predicted climate change under given static on-the-ground circumstances (a given level of exposure and ability to respond), it rarely tells us *why* the places and people or ecosystems are sensitive or lack resilience. Knowing likely "impacts" can help us target funding to particular places or to particular social groups or ecological systems. It cannot, however, tell us how to spend that money once we get there. Analysis of causes can help direct funds into vulnerability reducing projects and policies. Climate action should be guided by both types of analysis. Much attention has been given to impact assessment, indicators, and mapping for targeting.[5] This section trains our attention on the elements of an analysis of causal structures of vulnerability.

[5] On mapping and targeting, see Downing 1991; Deressa, Hassan and Ringler 2008; Adger et al 2004; Kasperson et al 2005:150.

The Causal Structure of Vulnerability

The two most common approaches to analyzing causes of vulnerability use the concepts of entitlements or livelihoods. These approaches analyze the sensitivity and resilience of individual, household, or livelihood systems, and in some instances, the linked human-biophysical system. They tend to bring attention to the most-vulnerable populations—the poor, women, and other marginalized groups. These approaches provide a starting point for analyzing the causes of climate-related vulnerability.

Sen (1981, 1984; also see Drèze and Sen 1989) laid the groundwork for analyzing causes of vulnerability to hunger and famine. Sen's analysis begins at the household level with what he calls *entitlements*. Entitlements are the total set of rights and opportunities with which a household can command—or through which they are "entitled" to obtain—different bundles of commodities. For example, a household's food entitlement consists of the food that the household can command or obtain through production, exchange, or extra-legal legitimate conventions, such as reciprocal relations or kinship obligations (Drèze and Sen 1989). A household may have an endowment or set of assets including: investments in productive assets, stores of food or cash, and claims they can make on other households, patrons, chiefs, government, or on the international community (Swift 1989:11; cf Drèze and Sen 1989; Bebbington 1999). Assets buffer people against food shortage. They may be stocks of food or things people can use to make or obtain food. In turn, assets depend on the ability of the household to produce a surplus that it can store, invest in productive capacity and markets, and use in the maintenance of social relations (cf Scott 1976; Berry 1993; Ribot and Peluso 2003).

Vulnerability in an entitlements framework is the risk that the household's alternative commodity bundles will fail to buffer them against hunger, famine, dislocation, or other losses. It is a relative measure of the household's proneness to crisis (Downing 1991; also see Downing 1992; Watts and Bohle 1993:46; and Chambers 1989:1). By identifying the components (that is, production, investments, stores, and claims) that enable households to maintain food consumption, this framework allows us to analyze the causes of food crises.[6] Understanding causes of hunger can shed light on policies to reduce vulnerability (Blaikie 1985; Turner et al 2003). Sen (1981, 1984; and Drèze and Sen 1989) take entitlements as a starting point – initial conditions – but, like good economists, they do not ask how these are generated (see Ribot 2014; Watts 2014). By analyzing chains of factors that produce household crises and that produce the set of entitlements that failed, a whole range of causes are revealed. This social model of how climate events might translate into food crisis replaces eco-centric models of natural hazards and environmental change (Watts 1983a). By showing a range of causes, environmental stresses are located among other material and social conditions that shape assets, social protections and household wellbeing. In Eastern Senegal, for instance, forest villagers go hungry due to derisively low prices for their

[6] See Gasper 1993 for an analysis of its limits to the entitlements framework.

products – caused by price fixing and collusive exclusion of farmers from lucrative forest-product markets (fieldwork by the author and Papa Faye – January 2016). Or, hunger may occur during a drought because of privatization policies that limit pastoral mobility making pastoralists dependent on precarious rain-fed agriculture (Smucker and Wisner 2008).

By locating environment (including climate) within a social framework, the environment may appear to become marginalized—set as one among many factors affecting and affected by production, reproduction, and development (also see Brooks 2003:8). But, this does not diminish the importance of environmental variability and change. Indeed, it strengthens environmental arguments by making it clear how important—in degree and manner—the quality of natural resources is to social wellbeing. These household-based social models also illustrate how important it is that assets match or can cope with or adjust to (as in buffer against) these environmental variations and changes so that land-based production activities are not undermined by and do not undermine the natural resources they depend on.[7] Leach, Mearns and Scoones (1999) later called these environmental inputs to household sustenance "environmental entitlements" (also see Leach, Mearns and Scoones 1997; and Leach and Mearns 1991).

"Environmental entitlements refer to alternative sets of utilities derived from environmental goods and services over which social actors have legitimate effective command and which are instrumental in achieving wellbeing" (Leach, Mearns and Scoones 1999:233). In this definition these authors expand Sen's concept of entitlements from an individual or household basis up to the scale of any social actors—individuals or groups. This enables analysis to be scaled to any relevant social unit (or exposure unit in the case of climate related analyses)—such as individuals, households, women, ethnic groups, organizations, communities, nations, or regions. Second, they introduce the notion of a sub-component entitlement, a set of utilities that a particular resource or sector contributes to wellbeing—e.g. environment. Leach, Mearns and Scoones (1999:233) third innovation also draws on Sen to show that "environmental entitlements enhance people's capabilities, which is what people can do or be with their entitlements." Lastly, they expand the idea of rights such that things may be "claimed" rather than just legally "owned." In this framing, claims may be contested—something Sen fails to capture. For example, when hunters near Mkambati Nature Reserve in South Africa are banned from the reserve by state law, they continue hunting based on customary rights that they view as legitimate. They claim their rights, contesting the state's claim (Leach, Mearns and Scoones 1997:9). Hence endowments such as natural resources that are not classically owned within a household can still be accessed through social relations that may introduce cooperation, competition, or conflict mediated by systems of legitimization other than state law. With this insight, they introduce the notion that rights, Sen takes as singular and static, may also be plural (a la von Benda-Beckman 1981; Griffiths 1986) and are based on multiple, potentially conflicting, social and political-economic relations of access (*a la*

[7.] Household models are often limited by their failure to account for intra-household dynamics of production and reproduction--but they do not have to be. See for example, Guyer 1981; Guyer and Peters 1987; Carney 1988; Hart 1992; Agarwal 1993; and Schroeder 1992.

Blaikie 1985; Ribot and Peluso 2003). Watts and Bohle (1993), by attending to the origins of assets and social protections, also place Drèze and Sen's (1989) analysis of household entitlements in a multi-scale political economy. They argue that vulnerability is configured by the mutually constituted triad of entitlements, empowerment, and political economy. Here, empowerment is the ability to shape the higher-scale political economy that in turn shapes entitlements. For example, democracy or human rights frameworks can empower people to make claims for government accountability in providing basic necessities and social securities (Moser and Norton 2001:xi). Drèze and Sen (1989:263) have observed the role of certain types of political enfranchisement in reducing vulnerability, specifically the role of media in creating crises of legitimacy in democracies. Watts and Bohle go far beyond media-based politics to show that empowerment through enfranchisement puts a check on the inequities produced by ongoing political-economic processes. While not outlined in their model, their approach indicates that direct representation, protests and resistance, social movement, union, and civil society pressures can all shape policy and political processes or the broader political economy that shapes household entitlements (Ribot 1995). Moser and Norton (2001:x) view mobilization to claim basic rights as an important means for poor people to shape the larger political economy.

Multiple mechanisms link micro and macro political economies to shape household assets. Deere and deJanvry (1984) identify mechanisms by which the larger economy systematically drains income and assets from farm households. These include tax in cash, kind and labor (corvée), labor exploitation, and unequal terms of trade. These processes make people vulnerable since the wealth they produce from their land and labor is siphoned off–with the systematic support of social, economic, and environmental policies. For example, forestry laws and practices in Senegal have prevented rural populations from holding onto profits from the lucrative charcoal trade (Larson and Ribot 2007) and foresters in Indonesia systematically extract labor from farmers and prevent them from trading forest products while allowing wealthy traders to profit (Peluso 1992). Scott (1976) also shows how peasant households are exploited in exchange for security. Peasants allow their patrons to take a large portion of their product or income in exchange for support during hard times.

Like entitlements analyses, livelihoods approaches (Blaikie et al 1994; Bebbington 1999; Turner et al 2003; Cannon, Twigg, Rowell n.d.:5) evaluate multi-scale factors shaping people's assets. They build on entitlements approaches, but shift the locus of analysis from the household to multi-stranded livelihood strategies that are also embedded in the larger ecological and political-economic environment. They also shift attention from a focus on vulnerability to hunger toward an analysis of multiple vulnerabilities, such as risk of hunger, dislocation and economic loss—a suite of factors closely related to the broader condition of poverty. In these approaches, vulnerability variables are connected with people's livelihoods, where a livelihood is "the command an individual, family or other social group has over an income and/or bundles of resources that can be used or exchanged to satisfy its needs. This may involve information, cultural knowledge, social networks, legal rights as well as tools, land, or other physical resources" (Blaikie et al 1994:9). Vulnerability in this framing is lower when livelihoods are

“adequate and sustainable” (Cannon, Twigg, and Rowell n.d.:5). Livelihood models also explicitly link vulnerability to biophysical hazards by acknowledging that hazards change the resources available to a household and can therefore intensify some people’s vulnerability (Blaikie et al 1994:21-22).

In short, entitlements and livelihoods approaches form a strong basis for vulnerability analysis. They differ in the scale of the unit of concern and analysis (exposure unit) and the scope of factors that analysts view as impinging on that unit at risk—with livelihoods approaches being much broader. When taken together they provide a powerful repertoire of analytic tools for vulnerability analysts. Both approaches 1) start with the unit at risk, 2) focus on the avoidable damages it faces, 3) take the condition of the unit’s assets to be the basis of its security and vulnerability, and then 4) analyze the causes of vulnerability in the local organization of production and exchange as well as in the larger physical, social and political-economic environment. Vulnerability analysis differs greatly from the risk-hazard approaches, which start with climate events and map out their consequences across a socially static landscape. Entitlement and livelihoods vulnerability approaches put vulnerability in social and political-economic context on the ground, enabling us to explain why specific vulnerabilities occur at specific times in specific places.

Toward Pro-poor Climate Action

Vulnerability to hunger, famine and dislocation are correlated with poverty (Prowse 2003:3; Cannon, Twigg and Rowell n.d.:5; Anderson, Morton and Toulmin 2010; Heltberg, Jorgensen and Siegel 2010). Women, minorities and other marginalized populations are also disproportionately vulnerable, sharing many vulnerabilities of the poor (Demetriades and Esplen 2010). For poor and marginalized vulnerable populations, vulnerability reduction is poverty reduction and basic development (Cannon, Twigg and Rowell n.d.:4; also see Prowse 2003:3). The weak within society tend to be of lower priority for those in power. Economically weak actors in urban slums or marginal groups far from the centers of power within semi-arid or forested zones may be of little importance to those in political office or big business. They are likely to be low priority for governments even in disaster planning. (Blaikie et al 1994:24; ICHRP 2008.) For instance, the extent to which slum dwellers are affected by extreme weather is both about settlement location and the level and quality of infrastructure and services such as water, sanitation, and drainage. These populations’ lack of assets reduces their ability to adapt to changing conditions and also prevents them from making political demands for investments to reduce their risk. (Moser and Satterthwaite 2010.)

Pro-poor Vulnerability Analysis

Entitlements and livelihood approaches evaluate the causes of asset failure and of negative outcomes in order to identify means to counter the causes (Downing 1991; Ribot 1995; Watts

and Bohle 1993; Turner et al 2003:8075). This focus on negative outcomes favors poor and marginalized groups because they are overrepresented in at-risk populations. This tilt in favor of the poor can also be enhanced, of course, by analytic efforts that choose to study outcomes of most concern to the poor such as hunger, dislocation or economic losses that push people over a threshold into poverty or extreme deprivation. The focus on causality can point toward solutions.

Vulnerability analysis most useful to policymakers starts from the outcomes we wish to avoid and works backward toward the causal factors (Turner et al 2003:8075; also see Blaikie 1985; Downing 1991; Füssel 2007). In addition to favoring the poor, focusing on outcomes and their causes has other advantages: 1) it best matches policy to valued attributes of the system that we wish to protect; 2) it enables policy makers to place hazards as one variable among many affecting those attributes, 3) it brings attention to the many variables at multiple scales affecting valued attributes, steering analysts toward the many possible means for reducing the probability of negative outcomes or enhancing positive ones; 4) it enables comparative analysis of the many causes of negative outcomes, helping to focus policy attention on the causes that are most important, most amenable to reforms and least costly to change—giving policy makers the biggest bang for their buck. Analyzing the "chains of causality" (Blaikie 1985), by showing how outcomes are caused by proximate factors that are in turn shaped by more distant events and processes, can tell us what kinds of interventions might stem the production of vulnerability at what scales and, where relevant, who should pay the costs of vulnerability reduction.

Vulnerability reduction measures, of course, do not only derive from understanding causes. Indeed, some causes may be (or appear) immutable, others no longer active, transient or incidental. Redressing direct causes may not always be part of the most effective solutions (Drèze and Sen 1989:34). The objective of vulnerability analysis is to identify the active processes of vulnerability production and then to identify which are feasibly amenable to redress. Other interventions can also be identified that are designed to counter conditions or symptoms of vulnerability without attending to their causes (such as support for coping strategies or targeted poverty-reduction disaster relief). All forms of available analysis should be used to identify the most-equitable and effective means of vulnerability reduction.

Identifying Multi-scale Vulnerability-Reduction Policies

Different outcomes that we hope to avoid—such as loss of assets, livelihood, or life—are risks for different sub-groups and have different associated causal structures (Drèze and Sen 1989; Watts and Bohle 1993; Ribot 1995; Roberts and Parks 2007). Different sectors will face different stresses and risks and will have different response options (IPCC 2007:747). Within each case, vulnerabilities of the poor, who have few resources to shield themselves or rebound from climate events and stresses, will be different from vulnerability of the rich who are able to travel to safety and draw insurance to help them rebuild. From understanding differences in the

causal structures of vulnerabilities, local, national, and international policies can be developed. Explaining difference will require an analysis of the multiple causal factors for a variety of vulnerabilities of concern (see Figure 3). These causal data must then be aggregated to evaluate the best point of leverage for vulnerability reduction with respect to specific vulnerabilities and overall (see Figure 4). Such an analysis should reveal the frequency and importance of different causes, pointing toward strategies to address the most salient and treatable causal factors.

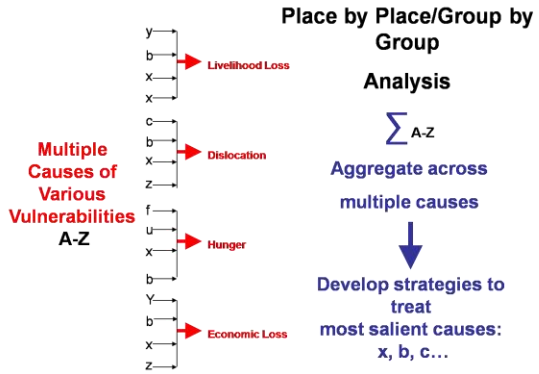

Figure 3: Identifying and Aggregating Multiple Causes of Vulnerability

Identifying causal structures of vulnerability and potential policy responses can be a basis for developing a broad vulnerability-reduction strategy. It involves the aggregation of causal structures over multiple cases of vulnerability of particular groups in particular areas to specific outcomes. This aggregation may have to be broken down by sectors, by eco-zones, or by hazard areas to make such an exercise manageable. Case studies can serve as the basis for generating recommendations for local policy. More broadly, multiple case studies can help us to understand the relative importance of different factors—both near and far—in producing and reducing vulnerability. These factors must be aggregated so as to identify the relevant scales and corresponding institutions for climate action. These steps set out a major research agenda for vulnerability reduction analysis.

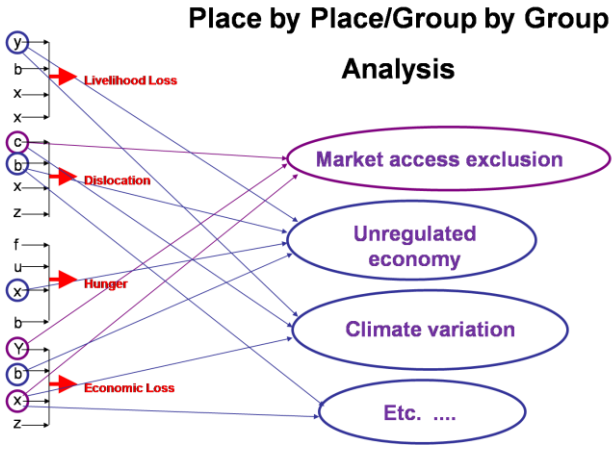

Figure 4: Identifying Vulnerability's Most-Salient Causes

For this agenda to counter the biases against poorer populations, all of these steps must be consciously pro poor. The cases where basic human rights such as health, livelihood, and life are at risk must take priority over the analysis of purely economic losses.

Indicators currently used to target poverty and vulnerability reduction interventions are a good starting point for identifying relevant study populations. Existing livelihoods approaches to vulnerability reduction already target the poor, strengthening their baseline nutrition, health, morale and addressing the underlying conditions of poverty, thus reinforce their abilities to confront stressors and bounce back after (Cannon, Twigg and Rowell n.d.:6). Vulnerability studies complement successful "self-help" and "social-protection" (see Heltberg, Jorgensen and Siegel 2010) coping and adaptation supports by indicating opportunities for higher-scale reforms.

Vulnerabilities and their causes are diverse. Responses to vulnerability must be developed from detailed understandings of specific problems in specific places—general principles and models are insufficient. Case studies inform us of a particular set of dynamics and opportunities for vulnerability reduction in a particular place. It is from case studies that viable solutions can follow—for specific places and more generally. To be complete, place-based approaches must take into account people's detailed knowledge of their social and production systems and the risks they face—experience with community driven development (CDD) provides this lesson (Mansuri and Rao 2003). To make results of an analysis relevant and the implication of recommendations feasible, investigations of vulnerability must consider local people's needs and aspirations and their knowledge of political-economic and social context in which any policy will have to be inscribed into law and translated into practice. Thus, while studies provide perspectives communities may not be able to generate, the steps in developing a vulnerability-reduction policy strategy must be informed and open to influence by local citizens and their representatives.

Any vulnerability case study should include an evaluation of existing vulnerability-reduction and a wide range of sectoral and regulatory policies (Burton et al 2002:154-7). Any given population at risk is deeply affected by existing policies. Some are aimed at assisting them. Among existing policies some may reduce vulnerability while others help produce vulnerable condition. Policies, like institutions or organizations (a la Agrawal 2010) can enable coping. They can also be systematically disabling (see Larson and Ribot 2007, Poteete and Ribot 2011). Policies or their unequal implementation can selectively favor some actors while making others more vulnerable. Policies from all sectors have deep distributional implications. Coudouel and Paternostro (2005) and the World Bank's Poverty and Social Impacts Analysis (TIPS) source book suggest methods for poverty and social impact analysis of policies for their distributional effects. Such guidelines can also be applied to evaluating the vulnerability implications of policies and interventions.

Knowledge of problems and policy guidance can inform popular mobilization and policy process. Proposing policy solutions, however, is a small part of the political struggle for change. Calls for change must be backed by political voice and leverage. Bringing poor and marginalized groups into decision making through organizing or representation can reinforce their claims for justice, equity, and greater security in the face of a changing environment (Ribot 2004; Moser and Norton 2001).

Conclusion: Confronting Conundrums

While vulnerability is always experienced locally, its causes and solutions occur at different social, geographic, and temporal scales. Identifying the causes of vulnerability points toward vulnerability-reduction measures and the scales at which they can best be implemented. It also helps attribute responsibility to people and institutions that structure risk—providing a basis for attributing liability and demanding compensation. Vulnerability-reduction or compensation

policies are developed, promulgated, and implemented through institutions. So are the many other sectoral, economic, and social policies that have implications for vulnerability via their effects on resource access, market access, political voice, poverty, and economic distribution (Ribot and Peluso 2003; Ribot 2014). Systematically identifying causes of vulnerability, identifying policy solutions, and mapping them to appropriate institutions at multiple scales is a process that vulnerability-reduction analysts and activists must yet conduct.

Institutions play several important roles in wellbeing and vulnerability. Leach, Mearns and Scoones (1999:236) view institutions as mediating vulnerability by shaping access to resources (a part of endowment formation), the relation between endowments and entitlements (rights and opportunities with which a household can command different commodity bundles), and the relation between entitlements and capabilities (the range of things people can do or be with their entitlements). Agrawal (2010) emphasizes the role of institutions, showing how rural institutions structure risk and sensitivity in the face of climate hazards by enabling or disabling individual and collective action. He argues that rural populations protect themselves by risk pooling via storage (over time), migration (over space), sharing assets (among households), and diversification (across assets). Exchange (via markets) can substitute for any of these risk-pooling responses. Rural institutions play a role in enabling each of these risk-reducing practices. Of course, we need to also ask what enables institutions to play their roles – they do not just form out of the luminiferous aether of polycentricity (Ostrom 2010). Rural institutions are shaped in a larger political economy (Ribot, Chhatre and Lankina 2008). Many rural institutions are able to enable because they are recognized and supported by the central state and by international donors.

The institutions responsible for and capable of responding to vulnerability are the locus of vulnerability governance. Governance (following World Bank 1992:3, 1994:xiv; Leftwich 1994) is about the political-administrative, economic and social organization of authority—its powers and accountabilities. It is about how power is exercised and on whose behalf. As the global climate warms, decisions are being made at every level of social and political-administrative organization to mitigate climate change, take advantage of its opportunities, and dampen associated negative consequences—from global conventions to the decisions of local governments, village chiefs or NGOs. Multiple decisions at multiple scales affect the livelihoods of the urban and rural poor. What principles of governance should guide decisions at each of these decision-making nodes? Who will decision-making bodies represent and how? What distributions of decision-making powers and what structures of accountabilities will provide the most leverage for positive change and the checks and balances to protect poor urban and rural people's basic well being and rights? These questions remain open.

Principles to govern climate action must be designed around the processes that shape vulnerability and the actors and organizations with authority and power to make decisions that can change these processes. The first step will be aggregating case-based analyses of causality, coping and the role of institutions. This process can be tilted in favor of poor marginalized populations by analyses that explain causes of asset and entitlement failure. To translate learning into action will be a long-term iterative process to negotiate the reshaping of policies and practice. All policies change distribution and, therefore, have advocates and meet

resistance. Decision-making processes that are accountable and responsive to affected populations may at least tilt policies to favor the most vulnerable—due to their shear numbers. This means the development of and engagement with representative decision-making bodies to ensure a modicum of influence by those most in need.

For researchers, representation might mean incorporating the voice of local populations in their understanding of who is at risk, the problems they face and possible solutions, as well as sharing findings with affected populations and policy makers. For development professionals and policy makers it will mean working with representative bodies and insisting that these bodies incorporate local needs and aspirations into the design of projects and policies. In global negotiations it may mean requiring negotiators to engage in public discussions within their countries or for national groups to organize and monitor their nation's negotiators. In local and national contexts it may mean helping to mobilize the poor and marginalized to make demands and to vote. Such governance practices may help avoid negative outcomes of climate action and could make climate actions more legitimate and sustainable. Representing and responding to the needs of the most vulnerable populations might promote development that can widen the gap between climate and distress. Moving people away from the threshold of destitution by building their assets, livelihoods and options, will dampen their sensitivity, enhance their flexibility, and enable them to flourish in good times, sustain through stress and rebuild after shocks.

But while emancipation is one good aim, there are other obvious policies to pursue. In January 2016 I interviewed the families of young men who drown when their boat from Libya sank before reaching Italy. Two hundred of these men had migrated from villages in Tambacounda, Senegal. They migrated due to hopelessness of ever having meaningful work or sufficient income at home. They migrated because they could not stand to see their parents suffer. They migrated because they could not feed or send their children to school. They migrated to send back remittances to support the people they care about. They migrated from a place that now has a hungry season before each harvest. The people of Tamba live below subsistence because they are paid too little for the cotton, millet, corn, charcoal, and other goods they produce. The wealth they generate is taken from them by classic means: taxes in cash, kind and labor (corvée), labor exploitation, and unequal terms of trade (Deere and deJanvry 1984). The policies and practices of Senegal's government and powerful merchants systematically drain income and assets from rural households (Faye 2015; Larson and Ribot 2007). It is no mystery why these people go hungry when there is a little dry period. They are already on the threshold of disaster. One dry spell will push them over (see Scott 1976). The policy is obvious – pay them more for their labor so they get a decent (non-derisive) share of international or urban prices for their products, allow them to sell their goods in the city, stop blocking their access to markets, tax the goods they sell and use that tax for local investments. Some solutions are obvious. But, we are not allowed to talk about them – tax is a dirty word. Wages that don't feed people are just the going rate. Nothing can be done about this? Nonsense.

References

Adger, W. Neil. 2006. Vulnerability, *Global Environmental Change,* Vol. 16, pp. 268-281.

Adger, W Neil, Nick Brooks, Graham Bentham, Maureen Agnew, and Siri Eriksen. 2004. "New Indicators of Vulnerability and Adaptive Capacity," Tyndall Center for Climate Change Research Technical Paper no. 7, January.

Agarwal, Bina. 1993. "Social Security and the Family: Coping with Seasonality and Calamity in Rural India," *Agriculture and Human Values*, pp. 156-165, Winter-Spring 1991.

Agrawal, Arun. 2010. "Local Institutions and Adaptation to Climate Change," Ch. 7, pp. 173-198 in Robin Mearns and Andrew Norton (eds.) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World.* Washington, DC: The World Bank.

Anderson, Simon, John Morton and Camilla Toulmin. 2010. "Climate Change for Agrarian Societies in Drylands: Implications and Futures Pathways," Ch. 9, pp. 199-230 in Robin Mearns and Andrew Norton (eds.) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World.* Washington, DC: The World Bank.

Batha, Emma. (2008). "Cyclone Sidr would have killed 100,000 not long ago" AlertNet, November 16, 2007, http://alertnet.org/db/blogs/19216/2007/10/16-165438-1.htm (accessed December 5, 2008).

Bebbington, A. (1999) "Capitals and capabilities: A framework for analysing peasant viability, rural livelihoods and poverty." *World Development* . Vol. 27, No. 12, pp. 2021-44.

Bern, C. et al (1993) "Risk factors for mortality in the Bangladesh cyclone of 1991." Bulletin of World Health Organization, Vol. 73 pp.72-78.

Berry, Sara. 1993. *No Condition is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa*. Madison: The University of Wisconsin Press.

Blaikie, Piers. 1985. *The Political Economy of Soil Erosion in Developing Countries*. London: Longman Press.

Blaikie, Piers, T. Cannon, I. Davis, Ben Wisner. 1994. At Risk: *Natural Hazards, People's Vulnerability and Disasters.* London: Routledge.

Bohle, Hans-G. 2001. "Vulnerability and Criticality: perspectives from social geography" IHDP Update 2/01, 3-5.

Brooks, Nick. 2003. "Vulnerability, risk and adaptation: a conceptual framework" Working Paper 38, Tyndall Centre for Climate Change Research, Norwich UK.

Burton, I. S. Huq, B. Lim, O. Pilifosova, and E.L. Schipper. 2002. "From Impact Assessment to Adaptation Priorities: The Shaping of Adaptation Policy", *Climate Policy* 2:145-149.

Cannon, Terry. 2000. "Vulnerability Analysis and Disasters." In Floods. Ed. D.J. Parker. Routledge.

Cannon, Terry. John Twigg, Jennifer Rowell. N.d. Social Vulnerability, Sustainable Livelihoods and Disasters. Report to DFID, Conflict and Humanitarian Assistance Department and Sustainable Livelihoods Support Office.

Carney, Judith. 1988. "Struggles over Land and Crops in an Irrigated Rice Scheme," in J. Davidson (ed.) *Agriculture, Women and Land: The African Experience*. Boulder: Westview Press

Carter, T. R., M.L. Parry, H. Harasawa, S. Nishioka. 1994. *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptation*, University College, London, and Centre for Global Environmental Research, Tsukuba, Japan.

CEDMHA (Center for Excellence in Disaster Management and Humanitarian Assistance). (2007). "Cyclone Sidr Update", http://www.coe.dmha.org/Bangladesh/Sidr11152007.htm

Chambers, Robert. 1989. "Vulnerability, Coping and Policy", in Chambers, Robert (ed.) Vulnerability: How the poor cope, I.D.S. Bulletin Vol. 20, No. 2, pp. 1-7.

Chhatre, Ashwini. 2007. Political Articulation and Accountability in Decentralization: Theory and Evidence from India. *Conservation and Society*. Vol. 6, No. 1, 2008.

Coudouel, Aline and Stefano Paternostro. 2005. *Analyzing the Distributional Impacts of Reforms: A Practitioner"s Guide to Trade, Monetary and Exchange Rate Policy, Utility Provision, Agricultural Markets, Land Policy, and Education.* Washington: The World Bank.

Gasper, Des. 1993. 'Entitlement Analysis: Concepts and Context', Vol. 24, pp. 679-718.

Davies, S. 1993. 'Are Coping Strategies a Cop Out?' *IDS Bulletin* Vol. 24, No.4, pp. 60-72.

Deere, Carmine Diana and Alain deJanvry. 1984. "A Conceptual Framework for the Empirical Analysis of Peasants," pp. 601-611, Giannini Foundation Paper No. 543.

Demetriades, Justina and Emily Esplen. 2010. "The Gender Dimensions of Poverty and Climate Change Adaptation," Ch. 5, pp. 133-144 in Robin Mearns and Andrew Norton (eds.) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World.* Washington, DC: The World Bank.

Deressa, Temesgen, Rashid M. Hassan, Claudia Ringler. 1008. "Measuring Ethiopian Farmers' Vulnerability to Climate Change Across Regional States" IFPRI Discussion Paper 00806, Environment and Production Technology Division October. Washington DC: IFPRI.

Downing, Thomas E. 1992. "Vulnerability and Global Environmental Change in the Semi-arid Tropics: Modelling Regional and Household Agricultural Impacts and Responses," Presented at ICID, Fortaleza-Ceará, Brazil, January 27 to February 1, 1992.

Downing, Thomas. 1991. "Assessing Socioeconomic Vulnerability to Famine: Frameworks, Concepts, and Applications," Final Report to the U.S. Agency for International Development, Famine Early Warning System Project, January 30, 1991.

Drèze, Jean and Amartya Sen. 1989. *Hunger and Public Action*. Oxford: Clarendon Press.

Duarte, Mafalda, Rachel Nadelman, Andrew Peter Norton, Donald Nelson, and Johanna Wolf. 2007. "Adapting to Climate Change: Understanding the Social Dimensions of Vulnerability and Resilience," *Environment Matters*, June-July 07. Pp. 24-27.

Faye, Papa. 2015. 'Choice and Power: Resisting Technical Domination in Senegal's Forest Decentralization' *Forest Policy and Economics* Vol. 60:19-26.

Frank, Neil L. and S.A. Husain. "The Deadliest Tropical Cyclone in History?" *Bulletin of American Meteorological Society*, Vol. 52, No 6, 1971.

Füssel, Hans-Martin. 2007. "Vulnerability: A Generally Applicable Conceptual Framework for Climate Change Research", *Global Environmental Change* Vol. 17, No. 2, pp. 155-167.

Füssel, Hans-Martin, and Richard J.T. Klein. 2006. "Climate Change Vulnerability Assessments, An Evolution of Conceptual Thinking", *Climate Change* Vol. 75, pp. 301-329.

Government of Bangladesh. 2008. "Cyclone Sidr in Bangladesh: Damage, Loss, and Needs Assessment for Disaster Recovery and Reconstruction."

Griffiths, J. 1986. "What is Legal?" *Journal of Legal Pluralism* 24:1-55.

Guyer, Jane. 1981. "Household and Community in African Studies," in *African Studies Review*, Vol. 24, Nos. 2,3.

Guyer, Jane and Pauline Peters. 1987. "Introduction," to special issue on households of *Development and Change*, Vol. 18, pp. 197-214.

Hart, Gillian. 1992. "Household Production Reconsidered: Gender, Labor Conflict, and Technological Change in Malaysia's Muda Region," *World Development*, Vol. 20, No. 6, pp. 809-823.

Heltberg, Rasmus, Paul Bennett Siegel, and Steen Lau Jorgensen. 2010. "Social Policies for Adaptation to Climate Change," Ch. 10, pp. 259-276 in Robin Mearns and Andrew Norton (eds.) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World.* Washington, DC: The World Bank.

ICHRP (International Council on Human Rights Policy). 2008. *Climate Change and Human Rights: A Rough Guide*. Geneva: ICHRP [Stephen Humphreys and Robert Archer eds.].

IPCC (Intergovernmental Panel on Climate Change). 2007. Summary for Policy Makers, *Climate Change 2007: the Physical Science Basis*. Contribution of Working Group I to *the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. eds. Solomon S, Qin D, Manning M, Chen Z, Marquis M, Averyt KB, Tignor M and Miller HL Cambridge: Cambridge University Press.

IPCC (Intergovernmental Panel on Climate Change). 2007a. Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Forth Assessment Report of the Intergovernmental Panel on Climate Chagne, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson, Eds., Cambridge: Cambreidge University Press.

Kasperson, R.E., K. Dow, E. Archer, D. Caceres, T. Downing, T. Elmqvist, S Eriksen, C. Folke, G. Han, K. Iyengar, C. Vogel, K. Wilson, G. Ziervogel. 2005. "Vulnerable Peoples and Places", pp. 143-164 in R. Hassan, R. Scholes, and N Ash, eds. *Ecosystems and Human Wellbeing: Current State and Trends*. Vol. 1, Washington, D.C.: Island Press.

Larson, Anne, and Jesse C. Ribot. 2007. "The Poverty of Forestry Policy: Double Standards on and Uneven Playing Field." *Journal of Sustainability Science*. Vol. 2, No. 2.

Leach, Melissa. 2008. Pathways to Sustainability in the forest? "Misunderstood dynamics and the negotiation of knowledge, power, and policy" *Environment and Planning A*, Vol. 40, pp. 1783-95.

Leach, M., and R. Mearns (1991). "Poverty and Environment in Developing Countries: an Overview Study." Report to UK ESRC (Society and Politics Group & Global Environmental Change Initiative Programme) and ODA. Brighton: IDS, University of Sussex.

Leach, M., R. Mearns and I. Scoones. 1999. "Environmental Entitlements: Dynamics and Institutions in Community-based Natural Resource Management", *World Development* Vol. 27, No. 2, pp. 225-247.

Leach, M., R. Mearns and I. Scoones (eds.). 1997. "Community-Based Sustainable Development: Consensus or Conflict?" IDS Bulletin. Vol. 28 No. 4.

Leftwich, Adrian. 1994. "Governance, the State and the Politics of Development," *Development And Change* Vol. 25, pp. 363-86.

Mansuri, Ghazala and Vijayendra Rao. 2003. "Evaluating Community Driven Development: A Review of the Evidence." First Draft Report, Development Research Group, The World Bank. February 2003.

McGray, Heather, Anne Hammill, Rob Bradley, E. Lisa Schipper and Jo-Ellen Parry. 2007. *Weathering the Storm: Options for Framing Adaptation and Development*. Washington: World Resources Institute.

Ministry of Food and Disaster Management of Bangladesh. 2008. "Super Cyclone Sidr 2007: Impacts and Strategies for Interventions."

Mortimore, Michael and W.M. Adams. 2000. Farmer Adaptation, Change and "Crisis" in the Sahel," *Global Environmental Change*, Vol. 11, Pp. 49-57.

Moser, Caroline and David Satterthwaite. 2010. "Toward Pro-Poor Adaptation to Climate Change in the Urban Centers of Low-and Middle-Income Countries," Ch. 9, pp. 231-258 in Robin Mearns and Andrew Norton (eds.) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World.* Washington, DC: The World Bank.

Moser, Caroline and Andy Norton (with Tim Conway, Clare Ferguson and Polly Vizard). 2001. *To Claim our Rights: Livelihood Security, Human Rights and Sustainable Development. London: Overseas Development Institute.*

Mushtaque, A., R. Chowdhury, Abbas U. Bhuyia, A. Yusuf Choudhury, Rita Sen. 1993. "The Bangladesh Cyclone of 1991: Why So Many People Died", *Disasters* Vol. 17, No. 4, Pp. 291-304.

O'Brien, K., Eriksen, S., Nygaard, L. P. and Schjolden, A. 2007. Why different interpretations of vulnerability matter in climate change discourses. *Climate Policy,* 7, pp. 73–88.

Ostrom, Elinor. 2010. 'Beyond Markets and States: Polycentric Governance of Complex Economic Systems' *American Economic Review* Vol. 100:1–33.

Peluso, Nancy Lee. 2002. *Rich Forests, Poor People: Resource Control and Resistance in Java.* Berkeley: University of California Press.

Poteete, Amy and J. Ribot. 2011. 'Repertoires of Domination: Decentralization as Process in Botswana and Senegal' *World Development* Vol. 39, No. 3.Prowse, Martin. 2003. "toward a clearer understanding of "vulnerability" in relation to chronic poverty" CPRC Working Paper No. 24, Chronic Poverty Research Centre, University of Manchester, Manchester, UK.

Raleigh, Clionadh and Lisa Jordan. 2010. "Climate Change and Migration: Emerging Patterns in the Developing World," Ch. 4, pp. 103-132 in Robin Mearns and Andrew Norton (eds.) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World.* Washington, DC: The World Bank.

Rebotier, Julien. 2012. "Vulnerability Conditions and Risk Representations in Latin-America: Framing the Territorializing of Urban Risk." *Global Environmental Change*. Vol. 22, No. 2, pp. 391-398.

Ribot, Jesse. 2014. "Cause and Response: Climate Vulnerability in the Anthropocene." *Journal of Peasant Studies*. Vol. 41, No. 5, pp. 667-705.

Ribot, Jesse. 2010. "Vulnerability does not fall from the sky: Toward multi-scale pro-poor climate policy," in Robin Mearns and Andrew Norton (eds.), Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World. Washington, DC: The World Bank.

Ribot, Jesse. 1995. "The Causal Structure of Vulnerability: Its Application to Climate Impact Analysis", *GeoJournal*, Vol. 35, No. 2.

Ribot, Jesse. 2004. *Waiting for Democracy: The Politics of Choice in Natural Resource Decentralization*. Washington: World Resources Institute.
Ribot, Jesse. and Nancy Lee Peluso. 2003. "A Theory of Access: Putting Property and Tenure in Place." *Rural Sociology*. Vol. 68.
Ribot, Jesse., Antonio Rocha Magalhães and Stahis Panagides (eds.). 1996. *Climate Change, Climate Variability and Social Vulnerability in the Semi-Arid Tropics*. Cambridge: Cambridge University Press.
Schroeder, Richard A. 1992. "Shady Practice: Gendered Tenure in The Gambia"s Garden/Orchards," Paper Prepared for the 88th Annual Meeting of the Association of American Geographers, San Diego, CA, April 18-20.
Scott, James. 1976. *The Moral Economy of the Peasant*. New Haven: Yale University Press.
Sen, Amartya. 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Oxford University Press.
Sen, Amartya. 1984. Rights and Capabilities. In Sen, Amartya (ed). *Resources, Values and Development*. Oxford: Basil Blackwell.
Smucker, Thomas A. and Ben Wisner. 2008. "Changing household responses to drought in Tharaka, Kenya: Vulnerability Persistence and Challenge" Journal Compilation, Overseas Development Institute. Oxford: Blackwell.
Swift, Jeremy. 1989. "Why are Rural People Vulnerable to Famine?" *IDS Bulletin* Vol.20, No.2, pp. 8-15.
Turner II, B.L., Pamela A. Matson, James J. McCarthy, Robert W. Corell, Lindsey Christensen, Noelle Eckley, Grete K. Hovelsrud-Broda, Jeanne X. Kasperson, Amy Luers, Marybeth L. Martello, Svein Mathiesen, Rosamond Naylor, Colin Polsky, Alexander Pulsipher, Andrew Schiller, Henrik Selin, and Nicholas Tyler. 2003. "Illustrating the Coupled Human-Environment System for Vulnerability Analysis: Three Case Studies", Proceedings of the National Academy of Sciences US 100, 8080-8085.
von Benda-Beckmann, K. 1981. "Forum Shopping and Shopping Forums: Dispute Processing in a Minangkabau Village in West Sumatra," *Journal of Legal Pluralism* 19:117-159.Watts, Michael J. 1983. "On the Poverty of Theory: Natural Hazards Research in Context," In Ken Hewitt (ed.) *Interpretations of Calamity*. London: Allen Unwin.
Watts, Michael J. 1987. "Drought, Environment and Food Security: Some Reflections on Peasants, Pastoralists and Commoditization in Dryland West Africa." In Michael H. Glantz (ed.) Drought and Hunger in Africa. Cambridge: Cambridge University Press.
Watts, Michael J. and Hans Bohle. 1993. "The Space of Vulnerability: The Causal Structure of Hunger and Famine," *Progress in Human Geography*, Vol. 17, No. 1, March, pp. 43-68.
Now and Then: the origins of political ecology and the rebirth of adaptation as a form of thought. In James McCarthy and Thomas Perrault (eds)., *Handbook of Political Ecology*. London: Routledge, pp.19-50. 2015
White House 2006. "The Federal Response to Hurricane Kathrina." February 2006. Available at http://www.whitehouse.gov/reports/katrina-lessons-learned.pdf (accessed December 5, 2008).
Wisner, Ben. 1976. "Man-Made Famine in Eastern Kenya: The interrelationship of Environment and Development," Discussion Paper No. 96, Institute of Development Studies at the University of Sussex, Brighton, England.
World Bank. 1992. *Governance and Development*. Washington: The World Bank.
Yohe, Gary and Richard S.J. Tol. 2002. "Indicators for Social and Economic Coping Capacity—Moving Toward a Working Definition of Adaptive Capacity," *Global Environmental Change*. Vol.12, Pp. 25-40.

Acknowledgements

Many thanks to Arun Agrawal, Tom Bassett, Ashwini Chhatre, Floriane Clement, Roger Kasperson, Heather McGray, Robin Mearns, Andrew Norton, Ben Wisner and several anonymous reviewers for their challenging constructive comments on drafts and in discussions. Thanks also to Robin Mearns for permission to reprint this article, which first appeared as: Ribot, Jesse (2010) 'Vulnerability does not just fall from the sky: toward multi-scale pro-poor climate policy', in Robin Mearns and Andrew Norton, *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World*, Washington DC: The World Bank. Https://openknowledge.worldbank.org/handle/10986/2689 License: CC BY 3.0 Unported. I have modified this reprint by cutting it down updating some arguments. For an expanded version of this paper see Ribot 2014.