

ICARUS IV ABSTRACTS

Causes of Vulnerability & Livelihoods of the Poor

7 – 9 May 2015

Presenter	Paper Author(s)	Paper Title	Abstract
A.K. Iftekharul Haque	Iftekhar Haque and Melissa Marschke	Are Social Safety Nets Addressing Climate Risks?: Evidences from Bangladesh	Social Safety Nets programs (SSNPs) are generally used as strategies of social risk management in developing countries by governments and development partners. Researchers and development practitioners became increasingly concerned about using SSNPs as a mechanism to reduce risk and mitigate the impact of stresses and shocks to livelihoods of population vulnerable to climate change. This paper attempts to explore whether SSNPs in Bangladesh are addressing climate change related vulnerabilities. Using Bangladesh's National Household Income and Expenditure Surveys of 2005 and 2010, this paper first constructs a districtwise Livelihood Vulnerability Index (Hahn et al, 2009) for Bangladesh, and then using national social protection data investigates whether existing SSNPs are addressing vulnerabilities of population living in regions affected by climate change related hazards. Preliminary findings suggests that the majority of these programs, designed decades ago, are inadequate for addressing new forms of vulnerabilities emerging with changing environmental patterns.
April Colette	April Colette	In the Urban Underbelly: Floods, Risk and the Role of Invisible Infrastructure in Shaping Vulnerability	Infrastructure like bridges, dams and embankments play an important role in reducing the risk of fluvial and coastal flooding. Standing as visible achievements of state power, they transform the urban landscape often in unintended ways. Yet, pivotal to the reduction of pluvial flood risk are the invisible infrastructure—those that lie beneath the city. These infrastructures, such as stormwater drains and sewers, drain excess rain and groundwater from urban surfaces, thereby reducing flood risk. But cities in the Global South struggle to keep up with the expansion of drainage infrastructure particularly in newly urbanized areas, which results in uneven effects of infrastructure across socio-spatial boundaries. Drawing on ethnographic data from Santa Fe, Argentina – a

			city with a long history of flooding – I examine the crucial role stormwater drains play in shaping the fabric of the city as well as citizens’ views of the state. I argue that in addition to the physical effects of uneven infrastructure development, there are affect-based effects as well. I show that residents’ vulnerability is shaped not only by the lack of drainage infrastructure, but in what that lack represents – abandonment and the lack of state protection.
Anand Patwardhan	Archana Patankar and Anand Patwardhan	Impacts, uninsured losses and ability to respond in the aftermath of an extreme flood event for poor households in Mumbai	Extreme weather events lead to significant physical, economic and social impacts. While the insured losses associated with public and private capital get measured and compensated, the uninsured losses suffered by the poor households, are not measured, recorded and compensated in the developing world. This paper describes the empirical study carried out in Mumbai to characterize the vulnerability and impacts on poor households due to an extreme flood event. The study uses primary data collected from a survey of households in the affected areas and disaggregates the losses into monetary damage to property, physical assets and appliances as well as loss of income and disruption of normal life. In the absence of insurance or government assistance, these are out-of-pocket expenses for the poor that put a severe burden on their limited resources. Given the limited livelihood opportunities, their ability to respond to floods also gets restricted and increases their vulnerability significantly.
Bejoy K. Thomas	Bejoy K. Thomas, Meghana Eswar, Sanjeev D. Kenchaigol, Veena Srinivasan, Sharachandra Lele	Enhancing resilience or furthering vulnerability? Farm household responses to water stress in an urbanizing basin in Southern India	Urbanizing areas in developing countries face multiple stressors, including climate induced ones. We examine the case of water stress in agriculture in Arkavathy basin in Southern India, a rapidly urbanizing landscape, including a part of the megacity of Bangalore. Drawing upon a survey of about 400 farm households covering 16 villages in the basin, supplemented by evidence on climate and groundwater use, we show that the changes in agriculture are not driven by climate change, as rainfall and temperature have remained relatively unchanged. The changes are driven by rapid increase in irrigation through the expansion of borewell technology, followed by dropping water tables leading to significant agricultural stress. The shortage of agricultural labour caused by urbanisation and industrialisation has compounded the farmers’ difficulties. Groundwater use may enhance resilience of farm households in the short run, but over extraction

			reduces sustainability of the resource, furthering household vulnerability in the long run.
Bethany B. Cutts	Bethany B. Cutts	Understanding social vulnerability in watershed based planning	While indicators of social vulnerability and its distribution have been extremely useful to adding social justice dimensions to environmental planning in the US, they tend to be static and therefore unable to capture the ways that time can entrench, transform, or generate vulnerability. To illustrate the shifting dynamics of social change, we pair interviews with a multi-year index of social and demographic change. Our analysis focuses on exploring how the causal mechanisms identified in interviews compare with patterns of change from 1980 and 2010 Wisconsin's Milwaukee River Basin. Findings from our analysis show that the social and demographic characteristics of the regional watershed not only changed over time, but also evolved in their complexity. We discuss the importance of the causal pathways elicited in interviews and temporal vulnerability measures to climate change planning efforts.
Brian Dill	Brian Dill	Sustainable energy (poverty): The impact of distributed generation (DG) systems	Although the relationship between access to modern energy services and development is well established, efforts to address Africa's energy poverty are shaped by the imperative to do so without increasing global carbon dioxide emissions. Those who perceive a conflict between increasing energy access and confronting climate change promote the spread of small-scale, localized energy generation systems that primarily utilize renewable energy sources. Known as distributed generation (DG), these small-scale systems are located close to where the electricity is being used and are an alternative to the traditional, centralized, large-scale grid electric power system. In contrast, skeptics argue that DG systems will fail to meet Africa's immediate and future energy demands and thus amount to little more than 'poverty management.' The rush to install DG systems may lock poor communities into low-carbon, low-energy, and low-development futures. This paper examines the energy access and development outcomes of DG projects in Africa.
Brian Thiede	Andrew M. Simons and Brian Thiede	Weather shocks, coping strategies and human capital investment: evidence from Indonesia	This paper examines educational outcomes in response to weather-related shocks. We focus on how temperature and rainfall shocks affect schooling investments and outcomes among Indonesian children. Our study places attention on the link between moderate one-off shocks, vulnerability, and an outcome—education—with

			<p>long-term development implications. We draw upon a combination of high-resolution weather data from NASA and four rounds of the Indonesian Family Life Survey (IFLS). We estimate regression models with random effects and event history models to estimate weather effects on household educational investments and school enrollment, respectively. We identify differences in the effect of weather shocks on school enrollment across correlates to vulnerability at the household and community levels. These include gender, wealth, and community setting.</p>
Carol Medaly Burga	Carol Medaly Burga	Running the Risk Of Undermining Livelihoods while Mitigating Climate Change. REDD and Micropolitics in the Peruvian Amazon	<p>The present study illustrates the changes brought in local representation by preparatory activities for REDD, a climate change mitigation strategy, in indigenous communities of the Peruvian Amazon. Based on data from interviews in two communities, I examine the mechanisms for democratic participation and representation, and the rules and institutions that are being created and changed in the process. Results show that during the negotiation of entry, consent and development of the activities, communities used existing governance structures and mechanisms for decision-making and distribution of benefits, which may reproduce exclusion, inequality and elite capture where governance is weak. The creation of new rules for social order and access to resources influenced by REDD may cause people to lose important assets and freedoms. The study sheds light on the need for the development of social protections not only to avoid adverse outcomes, but also to contribute to poverty alleviation.</p>
Claudia Rodriguez	Claudia Rodriguez and Forrest Fleischman	Can payments for ecosystem reduce farmers' climate vulnerability?	<p>In Calakmul, Biosphere Reserve farmers are experiencing climate, economic and environmental shocks. Calakmul is a priority area for payments for ecosystem services (PES). PES allows farmers to cope and in some cases provides resources to invest in alternative economic activities that reduce vulnerability to climate shocks. PES can thus become a conservation and adaptation policy if farmers choose to invest the payments instead of consuming the money paying for bills. This paper analyzes data from 250 farmers nested in 26 communities to understand what factors explain why some farmers choose to use PES to reduce their vulnerability while others only to cope. The findings suggest that farmers' participation in decision making councils and empowerment within their communities provide farmers access to information and political capital</p>

			upon which they can draw to invest their PES in productive assets that reduce their vulnerability.
David Ivan Fleischer	David Ivan Fleischer	Living in drought: how grassroots groups are transforming livelihoods in the Brazilian Sertão	The Brazilian semi-arid region has been affected by significant climate variability in the past years with extended droughts and decreasing precipitation. This has increased the vulnerability of rural livelihoods. To contend with the changing environment, some rural communities have developed effective adaptation strategies through the introduction of new technologies of water management and agroecological production. This paper will discuss how the communities learned to understand the causes of vulnerability, and how they developed innovative grassroots adaptation strategies that effectively improved rural livelihoods. The paper will focus on three specific areas: the semi-arid regions of the states of Ceará, Paraíba and Alagoas and draw from the hazards, vulnerability and entitlements literature. Some specific questions to be addressed are: (a) how democratic governance and social entrepreneurship were crucial for the success of adaptive strategies; and (b) in what ways did the changing ecological conditions contribute to building stronger and more resilient communities.
Edward Onumah	Christophe Béné, Ramatu M. Al-Hassan, Oscar Amarasinghe, Patrick Fong, Edward Onumah, Joseph Ocran, Rusiata Ratuniata, Truong Van Tuyen, J. Allister McGregor, and David J. Mills	Is resilience socially constructed? Empirical evidence from Fiji, Ghana, Sri Lanka, and Vietnam	The objective of this paper is to better understand the contextual factors that influence households' ability to respond to shocks and stressors. One of our hypotheses is that resilience is not simply reflecting the mechanistic effects of quantifiable factors such as level of assets, or even less quantifiable processes such as peoples propensity to learn, but is also determined by some more subjective dimensions related to the perception that people develop about their own ability to cope, adapt or transform in the face of change. To investigate this hypothesis, our research relies on empirical data collected over two years in fishing communities in four countries. In addition to this empirical insight into the subjective dimension of resilience, the paper also revisits some of the assumptions which underlie the literature on vulnerability and adaptive capacity such as the importance of wealth or the role of individual and collective social capital.
Emmanuel Nuesiri	Emmanuel Nuesiri	Representation in UN-REDD: Who Speaks for Vulnerable Local People	The "Reducing Emissions from Deforestation and Forest Degradation" (REDD) plus Conserving and Enhancing Forest Carbon Stocks, and Sustainably Managing Forests (REDD+) is part of the solutions to the global climate change crises. The United Nations REDD (UN-REDD) Programme is presently funding REDD+ readiness in Cross River State,

			<p>Nigeria. Poverty rate in the forest dependent local communities in Cross River State is above seventy percent. REDD+ may exacerbate poverty by restricting access to the forest. The UN-REDD commits to strengthen local democracy as a safeguard to protect local people's interests in REDD+. This paper presents results of a study examining local political representation in UN-REDD international policy board and in its funded Nigeria-REDD programme. It finds that local representation is via symbolic representatives, non-governmental organizations and customary authority, this weakens local democracy. The paper concludes with recommendations on how UN-REDD can achieve substantive representation of local people's interests.</p>
Gabriela Marques di Giulio & Wagner Ribeiro	Gabriela Marques Di Giulio, Wagner Costa Ribeiro, and Maria da Penha Vasconcellos	Climate change, risks and adaptation in the megacity of São Paulo: A perspective from Human Sciences	<p>Megacities have an important role in debating new paradigms to build adaptive capacity to respond to climate change for two reasons: (1) lifestyles associated with urbanization are the drivers of climate change; (2) cities are more susceptible to risks and severe impacts related to this phenomenon. The megacity of São Paulo, Brazil, where more than 11 million people live (15% live in precarious settlements), is a good example of this. Models and projections of climate change in this city point out that climate issues may bring a set of environmental hazards that would worsen urban problems. In this talk, we will examine our preliminary results of an empirical research that seeks to comprehend: (i) how this megacity has been mobilized to deal with climate risks and threats; (ii) how people perceive their capacities to respond to climate risks, and how they imagine that climate risks exacerbate their vulnerabilities.</p>
Ibidun Onikepo Adelekan	Ibidun Adelekan and Tosan Fregene	Flood Risks and Livelihoods of Artisanal Coastal Fishing Communities in Southwest Nigeria	<p>Flood risks as a consequence of changing rainfall patterns and increasing frequency of storm surges in Nigeria's coastal zone is a significant stressor to the livelihoods of the large population of rural communities living on the coast. The paper examines the vulnerabilities of key livelihood groups and households to flood risks in two artisanal fishing communities in a coastal area of south west Nigeria. A mix of quantitative and qualitative methods involving the active participation of community members in semi-structured interviews, key-informant interviews and focus group discussions were employed to gain detailed understanding of the local context-specific vulnerabilities to flood risks. The adaptive strategies employed by different livelihood</p>

			groups, and at the individual and household levels to cope with identified risks were further examined. Factors that limit effective adaptation are also discussed.
Jacques Pollini	Jacques Pollini	REDD in real: The impacts of REDD and proto-REDD projects on rural landscapes in DR-Congo and Cameroon	REDD is a policy framework adopted by a large number of conservation projects in tropical countries, yet little is known about the changes triggered by REDD projects in the rural landscapes they target. Based on quick ethnographies conducted in the Congo basin, this article shows that REDD projects share the same modus operandi and have similar impacts. They reduce local deforestation rate in the short term, at the cost of reducing opportunities for livelihood improvement. They create new institutions in charge of managing the forest with mostly conservation purposes, at the cost of weakening current institutions that manage the land with multiple purposes. They serve as a transmission belt for the top down planning of land uses by experts, which reduces the freedom of local economic actors. This situation can be conducive to pauperization, a loss of social cohesion, and the failure of REDD mitigation objectives, through leakage and non-permanence.
Jaime Jo Coon	Jaime Jo Coon	Women Scientists, Gendered Environmental Movements, and Climate Change Vulnerabilities: A Call for Public and Private Empowerment	Rachel Carson, Jane Goodall, and Wangari Maathai are women scientists from three continents who publically challenged environmental degradation. All three experienced gendered criticism, including credentialism and accusations of impaired objectivity due to involvement in activism. Here, I narrate how women remain unacknowledged in environmental research and juxtapose this with women's disproportionate exposure to environmental problems. I use ecofeminist discourse to explore gendered environmental vulnerabilities, employing climate change as a model. Global temperature increases are associated with water and fuel scarcity, increased disease prevalence, crop and fisheries failures, and conflict and sexual violence. The root cause of women's susceptibility to these problems is social construction of the domestic sphere. Despite increased vulnerability, women are less involved in environmental movements than men. I explore reasons for this using the gendered nature of environmental movements, policy, and science, and provide examples showing how to shift from women as victims toward women as actors.
James William Morrissey	James William Morrissey	Reconsidering causation: Understanding the	Recent analyses of the relationship between climate change and human migration have

		linkages between climate stress and human migration	highlighted the complexity of the relationship. This has resulted in a shift in language which previously described climate migration, to a focus on understanding migration in a context of climate change. This shift implies dissatisfaction with simple, linear models of cause and effect, in preference for more complex accounts describing contributing factors and different effects; rooted in socio-political institutions. This abstract proposes an integrative paper. It speaks to theme 2, describing the findings from original comparative work exploring the nexus of environmental stress, migration and human rights. The work describes how vulnerability is managed or manifest, as (im)mobility is adopted as a livelihood strategy, when environmental stresses interact with a host of socio-political factors. The paper also speaks to theme 1, offering a space to explore alternative models for describing causation between biophysical forcings, livelihood outcomes and vulnerability.
Jamie Allison Haverkamp	Jamie Allison Haverkamp	The Reproduction of Vulnerability: A Case Study of Institutional Responses to Climate Change in Hampton Roads, Virginia	This paper presents research results from a case study investigating institutional responses to climate change within the coastal, urban, and industrialized context of Hampton Roads, Virginia. Through the lens of political ecology, I investigated the socio-political landscape in which institutional adaptation activities (e.g. planning and decision-making) unfolded, seeking to understand how the needs of those previously identified as the most vulnerable to climate change impacts were being addressed. Data gathered from semi-structured interviews with key institutional actors, direct participant observation at regional adaptation forums, and content analyses of local and federal adaptation planning documents, produced empirical evidence that regional adaption planning efforts were producing and reproducing social vulnerability to climate change for the region's most vulnerable, the poor. This transpired through dominant institutional attitudes of fear, insecurity, and uncertainty and their materialization in processes of inclusion and exclusion, institutional discourse, and the prioritization of adaption projects.
Jinlong Liu	Jinlong Liu, Hexing Long, Minghui Zhang	Climate change, biodiversity conservation and livelihood vulnerability: a case of the Momoge National Nature Reserve, China	This paper explores how climate change influences interactions between biodiversity conservation and livelihood of the poor. Drawing on a case of Momoge National Natural Reserve (NNR) in agro-pastoral transition zone of northern China, we firstly examine direct impact of climate change on vulnerabilities of wetland ecosystem

			and community livelihood. More importantly, we illustrate intensified ecological and social tension between NNR authority and local people on their exclusive adaptive strategies: increasing intensive adaptation practices devised by NNR authority has driven local people shifting from traditional diversified livelihoods to irrigation agriculture, which has exerted enormous pressure on underground water resource that makes biodiversity and livelihood become more vulnerable to climate change. The tension, intertwine with inequities in resource distribution and fragmented political power, make collective action difficult. Without successful collaboration to improve fragmented governance, individual rational climate adaptive strategies between biodiversity conservation and livelihood may result in lose-lose ecological and social outcomes
Joyce V. Millen	Joyce V. Millen, Amadou T. Fofana, and William Harper	Transnational Survival Strategies: A Case Study and Critique	Danthiady is a difficult-to-access, severely drought prone, agriculturally fragile Peul village in northeastern Senegal. Yet despite its multiple forms of vulnerability, the village has become a model of resilience. While the intersecting dilemmas of climate disruption and economic decline previously threatened the lives of Danthiady residents, today the village is thriving in ways unseen since before the most severe drought hit the region in the 1970s. Danthiady's survival strategy relies heavily on outmigration of young men, especially to France, and transnational circulatory movements and associated remittance-sending of these young men. Though this strategy is by no means unique to the region, people of Danthiady have leveraged their diasporas and hometown associations in particularly productive ways. This paper presents results of a recent NSF-funded, multi-sited research study, and offers Danthiady as an illustrative case study focused on the potentials and pitfalls of relying on diaspora public giving as a survival strategy.
Julia Elise Viktoria Wernersson	Julia Wernersson and Iben Nathan	Power and Identity Construction in Land Use: Developing a Framework for Analysing Disempowerment in Arid and Semi-Arid Lands.	Land use in arid and semi-arid lands has gone through several forms of understanding and misunderstanding and has now, it seems, reached full circle, acknowledging the resilience and sustainability of pastoral management in non-equilibrium systems. Consequently, donors are pushing to introduce participatory and community-based management methods. However, the former misunderstandings of pastoralists have not only stirred the science and policy world. My research in West Pokot, Kenya

			<p>indicates that pastoralist themselves have to a degree succumbed to the misunderstanding that pastoralists themselves are the cause for degradation and vulnerability. I examine this problem by identifying the effects of power at multiple levels on identity construction and disempowerment in relation to land use. I use a theoretical framework combining social structures and individual agency within place and space-making to illuminate power dynamics that shape knowledge construction as well as perceptions of possibilities and problems, ultimately aiming to contribute to sustainability.</p>
Krishna Malakar	Krishna Malakar, Trupti Mishra and Anand Patwardhan	Determinants of households adaptation decisions: A case study of the Koli community in Mumbai	<p>The Koli community in Mumbai, whose primary means of livelihood is fishing, faces a number of climate and non-climate related stresses, including changing patterns of extreme weather events, dwindling fish population and increasing pollution. In response to these changes, some community members have adopted strategies such as spending more time in the sea, investing in mechanized boats/trawlers and going long distance into the sea. This study attempts to evaluate the factors that influence the decisions to adopt such response measures. A binary logistic regression model is estimated to assess the contribution of such factors to the probability of deciding to adapt. The results indicate that past experience in the profession, availability of social networks like relatives and institutional facilities like availability of subsidies are important determinants of adaptation decisions. These results provide useful insights for the design of adaptation interventions to support the livelihood of the Koli community.</p>
Lisa Schipper & Ed Carr	Lisa Schipper and Ed Carr	'The Poorest are the Most Vulnerable': Deconstructing Popular Beliefs about Vulnerability to Climate Change	<p>Robert Chambers noted in a seminal paper that vulnerability should not be equated with poverty (Chambers, 1989). Chambers was not referring specifically to climate change, which at that time was hardly in the mainstream, and certainly not an area of research that easily invited social scientists to the table. The idea has been cited by countless papers on climate change and vulnerability, as a means to justify looking at the myriad of other factors that drive vulnerability. Yet in the last few years, this observation appears to have become unlearned. New papers, policy documents and even the Intergovernmental Panel on Climate Change employ the notion that the 'poorest are the most vulnerable'. This paper looks at the source of the phrase and its evolution in literature to reveal how this idea has evolved</p>

			over time. We focus on how the notion is misleading when over-simplified and why the link between poverty and vulnerability should be revisited with a critical eye.
Lou Turner	Lou Turner	Transit Equity and Environmental Equity Matters	In the aftermath of Hurricane Katrina, in 2005, it was reported that 1-in-4 households were without automobiles in the largely African American lower 9th Ward of New Orleans. The nexus between social vulnerability and natural disasters became a pivotal moment in the nation’s political discourse when then-U.S. Senator Barack Obama chided Bush Administration disaster relief officials for criticizing black residents for not heeding calls to evacuate. Senator Obama responded sardonically, What does the Administration expect them to evacuate in – their SUVs! Environmental Justice Index is an indicator of areas with high concentrations of minority (non-white and/or Hispanic) and low-income populations (earning below 80% of Area Median Income) which have greater social needs at the regional level and are priority areas for locating transit investments because high proportions of low-income and minority populations tend to be transit users. Minority and low-income populations are more likely to require transit to access jobs and other resources, as well as to evade the impact of natural disasters and social stress. Livable Community Index is an indicator of areas with high concentrations of unhealthy economic, housing and environmental conditions that are in greater need regionally and should be prioritized for locating transportation investments. This paper examines the intersection of social vulnerability, environmental (in)equity and transportation resources on the far South Side of Chicago where the same ratio of poor households without automobiles reside as found in New Orleans’ 9th Ward on the day that Hurricane Katrina made landfall.
Mark Purdon	Mark Purdon	The Comparative Turn in Climate Change Adaptation and Food Security Governance Research	Concepts and methods of comparative politics can shine light on political factors important for catalysing positive change on the governance climate change adaptation and food security in the developing world. I first introduce comparative politics, including discussion of epistemological and methodological issues, before reviewing three salient groups of political and economic factors: institutions, ideas and interests, as well as highlighting the important relationship between international and domestic politics. This draws attention to important gaps in the existing

			literature, which tends towards a form of normative analysis that privileges institutions. The paper closes by making five recommendations for future research: the need (i) to identify new dimensions for institutional research, (ii) to conduct governance research beyond institutions, (iii) to embrace more rigorous comparative methods, (iv) to address the dependent variable problem in climate change adaptation research and (v) to come to grips with good enough climate governance.
Marta Berbes-Blazquez	Marta Berbes-Blazquez, Carrie L. Mitchell, and Sarah L. Burch	Framing vulnerability, adaptive capacity and resilience in research on climate change and water in the global South	Research on climate change adaptation offers valuable insights vulnerability, adaptation and resilience. In Canada, the International Development Research Centre (IDRC) has a long tradition of funding research dealing with climate change and water. Projects supported by the IDRC are particularly powerful as the organization funds Southern partners to find solutions relevant to the local context and boost local research capacity. However, research agendas respond to a variety of pressures and embody assumptions that are rarely articulated explicitly. This paper presents preliminary findings from performing frame analysis (Goffman, 1974) in over 100 cases of research in climate change adaptation in Africa, Latin America and Asia between 2006 and 2014. It is a rare opportunity to glimpse into how vulnerability, adaptive capacity and resilience are constructed by researchers in different geographical regions of the developing world. This paper unpacks underlying assumptions, strengths and possible blind spots from alternative framings of climate change adaptation research.
Nancy Phoeb Rapando	Rapando, Nancy Phoeb; Ngunjiri, Mary, Masafu, Erick; Kiragu, Gibson	An Assessment of Climate Change Coping Mechanisms as Building Blocks for Development of Adaptation Strategies for Kenyan Pastoralists. (The Case of Wamba Community, Samburu County, Kenya).	An analysis of rural communities in Arid and semi-arid lands of Kenya show that they do experience extreme climate change and variability effects. Designing adaptation actions therefore requires that we consider existing coping mechanisms and understand associated climate change vulnerabilities. Yet, there is still inadequate information on pastoral coping practices and how they can be used to adapt to climate change in the longer term. Our research uses Participatory Rural appraisal methodologies and considered key livelihood sectors among pastoralists that include water, food security and livestock and health. An analysis of key vulnerabilities, coping mechanisms, potential adaptation options, potential barriers and required institutions to enhance adaptation was done and all fitted in an adaptation strategy. From the research, we

			conclude the need for a comprehensive analysis to consider ecological as well as economic and social impacts of the different practices.
Natalia Andrea Rodriguez	Natalia Rodriguez, Hallie Eakin, and Candida de Freitas Dewes	Understanding Perceptions of Drought among Maize Farmers in Mexico	Perception of climate variability and change reflects local concerns and the actual impacts of climate phenomena in people's lives. Perceptions influence people's decisions to act, and suggest what adaptive measures should be taken. In this study, I identify the factors that contribute to the perceptions of changing drought frequency among Mexican maize farmers in the states of Chiapas, Mexico, and Sinaloa. Using data from a survey of 1092 maize producing households in the three states, I conducted Chi-square tests and Logit regression analyses, demonstrating that a number of variables, including indigenous identity, credits/loans, and maize type planted, were significantly associated with perceived increase in drought frequency. These results indicate maize farmers' perceptions are affected by a complex combination of cultural, agro-ecological and institutional factors. These results suggest adaptation policy will need to consider the social and institutional context of decision-making as well as agronomic options for smallholders.
Netra B. Chhetri	Netra B. Chhetri, Pashupati Chaudhary, Bishnu Dhital and Milan Shrestha	Climate-resilient pathways through grassroots innovation, engagement, and knowledge co-creation: Building robust socioecological systems in Nepal	Nepal's coupled crop-livestock based livelihoods of millions of smallholder farmers are affected by both climatic and non-climatic factors. At a macro level, declining crop production and rising cost of living are forcing migration of an estimated 30,000 Nepalese per month to other countries. Out-migration of the able-bodied workforce has burdened already-overworked women, creating greater gaps in response to climate and other changes. This phenomenon, commonly known in the region as the increasing feminization of agriculture coupled with the challenge of climate change, is weakening the entire socio-ecological system. Absent a science-based and community-driven model of innovation, the coupled crop-livestock system - once considered sustainable - is at risk. Using the household level data, I demonstrate the intersection of the risks emanating from climatic and non-climatic factors to livelihoods options. In doing so, this paper also highlights the adaptation gap in response to climate change.
Victor Wang	Ramesh Kumar, Paolo Gardoni, Colleen Murphy, and Victor Wang	Which Consequences Matter in Risk Analysis for Natural Hazards	Natural hazards (e.g., earthquakes and tsunamis, hurricanes and floods) have a complex multi-faceted impact on the well-being of individuals in a society affecting physical, financial, and social aspects. For gauging the impact of a hazard, it is

			critical to first determine which consequences should be considered (measured for disasters and predicted for future events.) The capability approach offers a rational framework for assessing the impact of natural events on the well-being of individuals. However, it is essential to select appropriate capabilities that are inputs to this approach. This paper first discusses the selection criteria for the selection of capabilities. Then it proposes a general list of capabilities for assessing the impact of natural events that meets the selection criteria. The selection process is based on the dimensions of well-being specified based on a concept of basic human values, and the characteristics of natural events and the affected communities.
Papa Faye	Papa Faye	Exploitation and Subordination: Explaining Social Vulnerability in Eastern Senegal.	Climate events cause damages when people are vulnerable. Vulnerability, the predisposition to damage, is caused by unequal access to social protections and assets. Vulnerable people in the drylands of Senegal worry less about climate hazards than the state and market structural violence, exploitation and subordination that make them vulnerable. This paper explains the extractive apparatus that continuously takes wealth from poor forest villagers in Eastern Senegal. In this case, foresters continuously invent restrictions to take back the gains of forest villagers and to mute the voices of their representatives, despite the progressive legislation and the participatory and democratic decentralization discourses. Here, disempowerment, the inability of vulnerable people to influence the political economy that shapes their assets and social protections, is a critical link in the causal chain of vulnerability.
Quinn Andreasen Bernier	Quinn Bernier, Patti Kristjanson, and Ruth Meinzen-Dick	What does it take to see transformative adaptation? Evidence from sub-Saharan Africa	Throughout Africa, farmers are already adapting to climate change, often in small, incremental ways. Encouragingly, we see some farmers taking up transformative practices that contribute to diversified livelihoods, buffer the household against climate changes, increase assets, and have a longer-term time horizon, but also require investments of time, labor, or cash. Transformative adaptations are technological and behavioral and may require an adjustment in how resources are allocated, changing priorities, and norms. This paper analyzes the social, behavioral, and institutional determinants of transformative adaptations in Kenya, Uganda, and Senegal, including perceptions and experiences of climatic risk and shocks, and identifies differences

			between men and women in terms of developing and promoting adaptive capacity. This information will help practitioners and policymakers identify barriers and manage tradeoffs in adaptation options, as well as ensure that both men and women have the capacities and resources to adapt to long-run climate change.
Róger Madrigal-Ballestero	Róger Madrigal-Ballestero	Adaptive capacity, droughts and the performance of community-based drinking water organizations in Costa Rica and Nicaragua.	Community-based drinking water organizations (CBDWO) are the most important providers of water in rural areas of Latin America and the Caribbean and play a key role in decentralization and democratization processes. The rich background of historical responses that CBDWO have given to drought phenomena is an essential starting point for understanding both processes and limitations to adapt to future adverse climatic events. Using primary information from 130 CBDWO and 5000 household surveys from the driest areas of Costa Rica and Nicaragua, this research aims to identify the factors that influence the performance of CBDWO in the context of droughts; enumerate the adaptation measures implemented by CBDWO to deal with these disturbances and to analyze the conditions facilitating the implementation of these measures. This study also analyses the role for development assistance in supporting adaptive capacity of CBDWO, considering potential perverse incentives on dependency and underinvestment in climate change preparedness.
Safiétou Sanfo	Safiétou Sanfo, Françoise Gérard, Martine Antona, Abigail Fallot, and Paul G. Vlek	Resilience of Small Farms Facing global change: The Case of the Ganzourgou Province, Plateau Central, Burkina Faso.	The study examines the mechanisms of the resilience and adaptation strategies of Sahelian farming systems. A recursive dynamic mathematical programming model reproduces the decisions of farmers. The socio-ecological system of the Ganzourgou province has been chosen as emblematic of the situation of millions of poor Sahelian households, facing difficult agro-climatic conditions with high climatic risk and widespread poverty. Three household categories have been defined in the model: very poor, poor and less poor. The model assessed the immediate and delayed impacts of farmers' decisions on incomes, consumption stocks of production factors and natural resources. Two scenarios are simulated. A climate shocks and climate shock combine with prices shocks. The approach allows discussing alternative adaptation paths and the impact of small cumulative changes for given variables, for instance: available cash, dramatic changes on livelihoods (income, consumption), and capacity to deal with further shocks in the futures.

Shakil Bin Kashem	Shakil Bin Kashem, Suman Kumar Mitra, and Mohammad Aminur Rahman	Exploring the riddle of livelihood and housing practices in a contested space: A study of hazard-prone rural Bangladesh	Disaster-resilient housing practices are widely promoted in developing countries as an integral part of climate adaptation efforts, particularly in rural hazard-prone areas. But, how the existing housing practices are intertwined with rural livelihood and how those practices materialize in a contested marginal space, these key issues concerning social vulnerability seldom get an adequate focus. This paper explores these questions through case studies of two hazard-prone rural areas in Bangladesh. Both of these areas are populated by people who were displaced by floods and cyclones and in absence of any formal land tenure are still facing the threat of any impending disaster. Struggling for their livelihoods in those contested spaces, safe housing practices are always coming to them as a tertiary concern. It demands for a reorientation in the present approaches for climate adaptation which need to be more responsive to the prevailing social vulnerability of people.
Shikha Lakhanpal	Shikha Lakhanpal	The politics of sustainable development and its consequences for local livelihoods	Increasing emphasis on reducing carbon emissions and global climate change concerns are driving sustainable development across regions. Two such manifestations of this global discourse are conservation and biodiversity efforts and renewable energy expansion. Local livelihoods that are vulnerable and threatened in these contexts have to resort to opposition. The resistance, however, is compounded when renewable energy projects are located near areas of conservation concern. Employing a multi-scalar analysis of local opposition to small hydro projects near the Great Himalayan National Park, I show 1) How conservation politics can enable local resistance to development projects 2) The dynamic nature of local resistance that is ensconced within and relies upon the broader yet changing politics of conservation and development. This paper has implications for understanding how and why the politics of sustainable development can enable or foster local livelihoods.
Sonia Ferdous Hoque	Sonia Ferdous Hoque and Claire Quinn	Livelihood strategies in changing farming systems: Insights from salinity prone south-western coastal Bangladesh	In south-western Bangladesh, brackish-water shrimp cultivation, initially viewed as an adaptation to the natural salinity, has exacerbated the water/soil salinity and aggravated the effects of climate change. Even within similar vulnerability contexts, differential resource endowments cause households of different socio-economic categories to adopt different livelihood strategies. This paper uses evidence from two

			villages to illustrate how households manage their constraints/opportunities to gain optimum livelihood outcomes. In the first village, where protests by local farmers have stopped shrimp farming since 2008, small/medium farmers are diversifying their livelihoods through freshwater prawn-fish-crop integration, while large landowners favouring the quick cash incomes from extensive shrimp cultivation are planning to shift towards intensive methods. In the second village, where dry season shrimp cultivation has forced farmers to replace wet season paddy with white fish, poor farmers are suffering from lack of subsistence crops while richer ones are facing dwindling profits due to deteriorating soil quality.
Sumana Datta	Sumana Datta	(Re)visiting Rural Livelihoods for Negotiating Climate Risks: A Case Study from India	The unprecedented variability and change in global climate is expected to have severe impact on tropical forest areas adversely affecting the livelihoods of forest dependent communities. The proposed paper uses ethnographic case studies of two forest villages from India along with 294 household surveys to analyse the dynamics of resource dependence, livelihood options and daily diets across various wealth classes. It shows how climate variability such as drought affects the livelihoods of various economic groups leading to increasing demand for cash income for meeting subsistence requirements from market. Wage work is used by the government as the main mechanism for providing additional cash supply in such distress circumstances. However, the empirical evidences show that the poorest families became marginalised in such situation as the rich and medium households had a disproportionate access to government patronage benefits, such as wage work and other cash transfer including monetary shares from timber felling.
Susan Chomba	Susan Chomba	Where there is a right there is a way? How land tenure underpins rural vulnerability.	For rural households in many developing countries, property rights underpin food production, facilitate usufruct exchanges and offer social and financial security. Disparities in land tenure rights constrain the capacity of households to produce food and affect claims and interests of different groups to various environmental entitlements. Formalizing private land rights, often acts to exclude marginalized groups, and thereby increase their vulnerability. Drawing from case studies on community based forest management (CBFM) and REDD+ in Kenya, this paper explores the risks of overlaying benefit distribution mechanisms on pre-existing property

			rights, especially when they are highly skewed, privatized and historically contested. By mapping benefit sharing models onto unequal tenure arrangements, the interventions reinforce pre-existing inequalities and vulnerability. The conclusions highlight the need for understanding the nexus of tenure, benefits and vulnerability in framing forest and climate change interventions and specific measures to ensure that contemporary interventions reduce rather than aggravate vulnerability.
Timothy Julian Forsyth	Timothy Julian Forsyth	Acknowledging social vulnerability and access to livelihoods within the institution design of community-based adaptation: evidence from Myanmar	This paper will report the preliminary findings of fieldwork on social vulnerability and community-based adaptation to climate change (CBA) at two sites in Myanmar. The paper argues that vulnerability is controlled by institutions offering access to livelihoods through land tenure, markets, and waged employment—all of which are changing rapidly in Myanmar. The paper will report on three themes—how local institutions are changing in the face of Myanmar’s rapid socio-economic transitions; the apparent threats to vulnerability and livelihoods arising from these changes; and how different cases of CBA integrate socio-economic changes with projections of future climate change. Lessons will then be drawn for identifying design principles of CBA as deliberative institutions incorporating diverse causes of social vulnerability and access to livelihoods alongside physical projections of climate risk. The paper will also consider how far participatory forms of evaluation can also enhance the effectiveness of CBA.
Tom Evans	Tom Evans, Kelly Caylor, Lyndon Estes and Justin Sheffield	Mid-Season Farmer Adaptation to Climate Variability in Africa	The potential for smallholders to adapt to changes in the amount and distribution of rainfall is particularly acute in dryland ecosystems. Much of the large-N research on farmer adaptation has relied on post-harvest surveys conducted at the end of a growing season. Yet farmers make a multitude of decisions within the growing season that affect their food security. At what point do farmers realize their crop production may be inadequate and how do they then respond? Post-harvest surveys are inadequate to capture such mid-season dynamics. We present results from a mobile-phone based method deployed in Kenya and Zambia to capture high-frequency information from smallholder farmers. We examine how a farmer’s expected harvest changes through the growing season and compare to their actual harvest. Through this methodology we identify tipping points in the seasonal food

			production cycle and gain a better understanding of how farmers respond to different seasonal precipitation patterns.
Yuanyuan Xie	Yuanyuan Xie	The evolution of the live standard among Aoluguya people	Due to the years deforestation and government various relocation policies for Aoluguya people to protect limited forest conservation, Aoluguya people cannot get access the previous abundant resources to exchange for other living materials as before. The additional aids from local government cannot maintain the living standard. Compared with other area around for booming economy, the relative live standard gets deteriorated. Young Aoluguya people either get educated and look for job in big cities, or keep the traditional reindeer raising life and survive in a poor condition. For those left behind, less inter-marriage with other outside families and the shorter lifespan due to the alcohol consumption among young Aoluguya people, the population of Aoluguya people cannot sustain itself and this old treasured people is disappearing. This research will try to give an explanation for the live standard change of this group by using the concept of decentralization from the historical perspective.
Yvonne Su & A.K. Iftekharul Haque	Craig Johnson, Iftekharul Haque, Kristy May, and Yvonne Su	At the Water's Edge: Mainstreaming Climate Change Resilient Policies in Urban Planning in Dhaka and Ho Chi Minh City	Asian cities of Ganges-Brahmaputra Basin and Mekong Delta are particularly vulnerable to climate change. Recent studies confirm that the impacts of climate change are already being seen and felt in major Asian cities. Large population and influx of climate migrants from vulnerable regions have increased the risk of potential climate impacts in these cities. To combat the impacts of climate change, Asian city governance needs to mainstream climate change resilient policies in urban planning. This paper explores the preparedness of city governance of two major Asian cities - Dhaka (Bangladesh) and Ho Chi Minh City (Vietnam), to deal with climate change related vulnerabilities with special focus on accommodating climate migrants. This paper evaluates the urban policies of these cities and compares to what extent the city governments are committed to climate friendly policies and practices.
Zhao Ma & Morey Burnham	Morey Burnham, Zhao Ma	Situating climate change perceptions and adaptations in the context of social-ecological change: Lessons learned from Chinese smallholder farmers	The contribution of climatic and non-climatic factors to adaptation decision making is determined by interactions between decision makers, existing institutional structures, and ongoing social-ecological processes at various scales. Within this context, we combine qualitative and quantitative research methods with climate data analysis to gauge the climatic

			<p>changes smallholder farmers in northwestern China have perceived and experienced over the last 30 years, and to understand what and how particular adaptations have been adopted and reproduced within and across households. We found that some agricultural practices render certain short-term weather patterns and/or long-term climatic changes visible to some smallholders but not to others. We also found that the success and failure of particular adaptations over time relate to not only technological fitness, environmental appropriateness, investment returns, and market risks, but also how they fit into existing social relations and the ways that smallholder farmers structure their livelihoods through migration and wage work.</p>
--	--	--	---