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BUILDING RESILIENCE IN JAMAICA – COMMUNITY EXPERIENCES AT THE INTERSECTION OF THE FOOD SYSTEM, CLIMATE CHANGE AND NATURAL DISASTERS IN A SMALL ISLAND DEVELOPING STATE

by

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A dissertation submitted to the

Graduate School – New Brunswick

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

For the degree of

Doctor of Philosophy

Graduate Program in Geography

Written under the direction of

Professor J. Kenneth Mitchell

And approved by

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New Brunswick, New Jersey

May 2017

ABSTRACT OF THE DISSERTATION

Building Resilience in Jamaica – Community Experiences at the Intersection of the Food System, Climate Change and Natural Disasters in a Small Island Developing State

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J. Kenneth Mitchell

Food security has emerged as a national priority in Jamaica because double exposure to global and economic stressors threaten long term domestic food production, short term food supply and general food prices. This qualitative study examines how citizens in three different Jamaican communities that are customarily perceived as sites of vulnerability have sought to build resilience to food system insecurities, especially those that are induced by periodic natural hazards such as hurricanes and droughts. The histories of resilience building projects undertaken by local community members and external aid giving organizations are identified, compared and contrasted. Focus groups and interviews with residents and officials reveal perceptions of factors that have constrained or facilitated these initiatives as well as opinions about future alternatives. It is concluded that strengthening social capital and attachments to place are essential first steps that create the contexts in which hazard reduction measures have the best chance of succeeding, and without which they are likely to fail.

Acknowledgements

This dissertation would not have been possible without the guidance and support of many. First, I express thanks and gratitude to Prof. James Kenneth Mitchell who patiently guided and provided invaluable insight throughout this process. Thank you is also due to the members of my dissertation committee for their timely feedback and input in this project study: Prof. Robin Leichenko, Dr. Kathe Newman and Prof. Balfour Spence. In addition, the completion of this dissertation was greatly aided through funding provided by the LASPAU Fulbright Foundation and Rutgers University, and the untiring assistance of the administrative staff of the Geography Department, Rutgers. To all the participants in the various communities, governmental, economic and civil society groups – thank you.

I also extend a big thank you to my family, friends and colleagues who walked the journey with me over the years, providing emotional and health support, child care support and encouragement. This list is by no means exhausted and those I neglect to call by name it's not because your contribution was any less appreciated but rather a senior moment on my part: Drs. Tanya Lopez-Marrero, Donna P. Hope, Guy White, Beverly Cameron, Misses Ariele Baker, Ekatrina Bezborodko , Annette Royal, Crissy Foster, Professors Trevor Munroe, Professor Elizabeth Thomas-Hope, Marilyn Anderson, Mr. Paul Andrew Bourne, Mr. Yaneke Watson, Mses. Shareel Dixon, Debbie Findlay-Clayton, Nadeen Campbell, Viviene Dyer , Ruth Edwards, Messrs. Michael Ulett, Desmond Thompson, Steve Lawrence, Andrew O. Johnson, The Harbour View, University Heights and Lake Nelson SDA congregations, Vendalyn and the late Linton

Moulton, Karen and Stredwick Watson, Debie and Chris Christie, Nadia and Osiris, Mrs. Sonia Lewis, Lena “Aunty Tatty” and Gary Nembhard.

Dedication

For Balwin & Leonie Sharpe
Jeffrine, Suzette and Tousaint
Jr and Zx'vana-Lee
Jon Ari-Luec

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Acronyms

ACP Africa Caribbean and Pacific

ADB Agriculture Development Bank

AIR Agency for Inner-city Renewal

AOSIS Alliance of Small Island States

CaFAN Caribbean Farmers' Network

CARICOM Caribbean Community

FAO Food and Agriculture Organization

CABA Caribbean Agribusiness Association

CAP Common Agriculture Policy

CARDI Caribbean Agriculture and Research Development Institute

CBO Community based organization

CCCCC Caribbean Community Climate Change Center

CCDRMF Canada Caribbean Disaster Risk Management Fund

CDB Caribbean Development Bank

CDEMA Caribbean Emergency and Disaster Management Agency

CDM Caribbean Disaster Management Strategy

CFNI Caribbean Food and Nutrition Institute

CIDA Canadian International Development Agency

CNFO Caribbean Network of Fisherfolks Organization

CRFM Caribbean Fisheries Mechanism

EDADU Export Development and Agriculture Diversification Agency

EU European Union

GoJ Government of Jamaica

HFLACI Hunger Free Latin America and the Caribbean Initiative

IADB Inter- American Development Bank

IICA Inter-American Institute for Cooperation on Agriculture

IFAD International Fund for Agriculture Development

IPCC Inter Governmental Panel on Climate Change

JTFA Jeffrey Town Farmers Association

LAC Latin America and Caribbean

MLSDP Manchester Local Sustainable Development Plan

MOA Ministry of Agriculture

NAMDEVCO National Marketing and Development Company of Trinidad and Tobago

NCD Non communicable Diseases

NGO Non-governmental organization

ODPEM Office of Disaster Preparedness and Emergency Management

OECS Organization of Eastern Caribbean States

PIOJ Planning Institute of Jamaica

PISLM Partnership Initiative for Sustainable Land Management

PC Bank People's Co-operative Bank

POA Plan of Action

RADA Rural Agricultural Development Authority

RFNAP Regional Food and Nutrition Action Plan

SCCBS Social Capital Community Benchmark Survey

SDC Social Development Commission

SIDS Small Island Developing States

TTABA Trinidad and Tobago Agribusiness Association

UNDP United Nations Development Programme

UWI University of the West Indies

WINFA Windward Islands Farmers Association

WRA Water Resources Authority

Chapter 1

Disaster-related Food Crises in Jamaica

Introduction

One of the main concerns of the Caribbean, a region of Small Island Developing States (SIDS), is its predisposition to climate related hazards, especially hurricanes, floods, storm surges, and droughts (Mimura et al., 2007; Planning Institute of Jamaica [Planning Institute of Jamaica], 2013). The region's geographical location in a belt frequented by tropical cyclones, the exposure of its social and economic assets in coastal areas and its low adaptive capacity make it particularly vulnerable (Forster, Schuhmann, Lake, Watkinson, & Gill, 2012; Kelman, 2014; Méheux, Dominey-Howes, & Lloyd, 2007; Rampengan, Boedhihartono, Law, Gaillard, & Sayer, 2014).

During the period 1980–99 there were 38 major droughts, floods, hurricanes, tropical storms, landslides, earthquakes, volcano eruptions and El Nino episodes (Inter-American Development Bank [IADB], 2000; Skoufias, 2003) that impacted the region. In the future, climate changes are expected to worsen these hazards. Some of the most profound and direct impacts will likely be on the agricultural sector and on food systems (Brown & Funk, 2008, p. 2). Prolonged climate-related disasters may trigger food system security crises.[1] Marooned communities may lose access to some or all food commodities and require external food aid (Black, 1992; Davis, 1971; Iwuagwu, 2012; Seaman & Holt, 1975; Young, Borrel, Holland, & Salamas, 2004; Young, 2000).

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[1] Food security is said to exist "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

Jamaica, a 4,250 square mile island with a population of 2.8 million, was impacted by 10 hazard events between 2001 and 2010. This cost the economy approximately $111.81b (Planning Institute of Jamaica, 2008) stymieing current and future agricultural and overall development goals. Additionally, by 2010, approximately 25% of the most arable lands on the island were transformed and zoned into permanent non-agricultural uses (housing, mining and industrial development), further threatening domestic food production and the island's food security (Williams-Raynor, 2010) Hazard events not only reduce short-term domestic food production and supplies but also threaten future production and have a direct negative effect on foreign exchange earnings needed to purchase food (Campbell & Beckford, 2009; Henry, 2012; McGregor, Barker, & Campbell, 2009). Jamaica's food import bill for 2012, for example, was estimated at US$1 billion, up from US$400 million in 2003 (Easthope, 2004).

The island's experience with Tropical Storm Gustav (August 28-29, 2008) is illustrative of hazard impacts. This event wreaked differentiated socio-economic and environmental devastation on myriads of communities. The Planning Institute of Jamaica (PIOJ) reported that:

> While the entire population experienced some impact from the storm, close to 450,000 residents in 76 communities were most directly affected with the impact ranging from isolation of communities due to damaged bridges and impassable roads; destruction of property including houses, crops and livestock; loss of livelihood; and loss of life. (p. vi)

At the time of the storm Jamaica was experiencing a number of societal dislocations that greatly exacerbated its impact. First was a sharp increase in world food prices; the UN's Food and Agricultural Organization (FAO) reported they had escalated by 45% twelve (12) months prior to the storm. Second was a dramatic transition in

governance because of a switch between ruling political parties that pursued strikingly different agendas. In 2007 the right-wing Jamaica Labour Party (JLP) government had taken the reins of power from the left-wing People's National Party (PNP) that had previously enjoyed an unprecedented 18-year rule. Third, Jamaica had also recorded its highest inflation in twelve (12) years. In addition to being caught in the turbulent global financial, fuel and food crises that began in 2007 Jamaica continued to be affected by dilemmas that are common to most Small Island Developing States (SIDS): small physical size; proneness to natural disasters and climate extremes; extreme openness of their economies; and low adaptive capacity – all characteristics which enhanced vulnerability and reduced resilience to climate variability and change as well as exacerbating economic dependency, collapsing their agricultural sectors and increasing food insecurity (Alliance of Small Island States [AOSIS], 2009; Mimura et al., 2007; Pelling & Uitto, 2001).

People and communities were hurting and confused and trying to cope with and/or adapt to numerous longer term stressors while at the same time also trying to recover from the disastrous onslaught of the tropical storm. Access to and availability of a stable supply of affordable and nutritious food had become a challenge that rendered a number of communities food insecure and unhealthy. It is crucial to note that though communities shared the same sets of stressors and perturbations their responses were nevertheless differentiated. Subsequently they exhibited quite different levels of food insecurity with the worst occurring in poor inner city areas and remoter rural communities.

Making sense of the variations in coping capabilities cannot be done in abstract. Giving voice to these differentiated and all-encompassing community experiences demands close inspection of specific communities and the contexts in which they operate. This allows for spatial analyses of contextual factors - viewpoints, places, community connectedness - at a scale that could assist hazard and disaster research communities, policy makers and non-governmental organizations to distinguish among the diverse accounts and processes of constructing resilience, including those that have enjoyed success as well as those that have not. Without such an approach vulnerability factors might be excluded, viewpoints silenced and resilience strategies for community pre-disaster recovery and health overlooked (Pickerill, 2009; Winchester & Rofe, 2010).

As noted by Rose et al. (2011, p. 482), very little research on post-disaster food access disparities had been done prior to the impact of Hurricane Katrina (2005) on New Orleans. While long running disparities were often well documented, little was known about how disasters influenced them. In Jamaica however much was already known about related topics such as: the adaptive strategies of small farmers to hurricanes and droughts (Barker, 1993; Barker & Bailey, 2007; Spence, 2009) relationships among local knowledge, climate change and agriculture (Beckford & Barker, 2007; Gamble et al., 2010; McGregor et al., 2009); sustainability and modelling of small scale agriculture (Davis-Morrison, 1998; Ishemo, Semple, & Thomas-Hope, 2006; Spence & Thomas-Hope, 2007; Spence, 1999) community disaster risk reduction good practices (Climate Studies Group Mona [CSGM], 2013); and globalisation, neoliberalism and food supply and reforms (Rhiney, 2009; Thomas-Hope & Jardine-Comrie, 2007; Weis, 2004).

The present research takes account of the foregoing studies but addresses a further (unexplored) facet of the food access and disaster problem, namely, the roles of social capital and place attachment in building resilience for food systems security. It focuses on three sites in Jamaica: one urban inner city community, Trench Town in the capital city of Kingston and two rural communities – Prospect in the parish of Manchester and Jeffrey Town in the parish of St. Mary.

The oral testament of individuals and focus groups within the three sites exposed the differing perspectives and multiple meanings of similar climatic perturbations, processes and events experienced by all as they worked to establish better pre-disaster plans, build food security, reduce hazards loss and achieve community health. The qualitative geographical research approach employed in my study allowed for in-depth telling of the multiple meanings of these events and for the interrogation of places and people's attachment to places through the lens of resiliency outcomes. What emerges is a portrayal of the three places as sites of resilience, rather than sites of vulnerability, as they are customarily portrayed.

Outline of Chapters

Chapter Two reviews the scholarly literatures and theoretical frameworks that guide the dissertation. It adopts an interdisciplinary approach to the study of resilience that highlights its human dimensions. Concepts of social capital and place attachment are introduced and the scarcity of literature linking them to food security is underlined. A model of resilience that integrates these components as they are manifest in Small Island Developing States, is proposed.

Chapter Three focuses on research questions and methodology. It begins with a brief introduction of the qualitative research process used herein, before chronicling the author's "voyage" and the pull of the "moments" that birthed each of the research questions. A further section details the process of collecting the data qualitatively. Each phase of the methodology is featured, starting with the research participants, followed by the multiple sources of information that were employed - semi-structured interviews, direct and participant observations, archival records, documents and audio-visual materials. The last section provides reflections on the methodological experience.

Chapter Four introduces the communities that served as field sites for this research as well as the wider spatial context within which they are situated. It details the socio-economic characteristics of Jamaican society and traces governmental attempts to secure the nation's food supply long before the country began to grapple with the contemporary reality of climate change. Flaws inherent in the predominantly short-term responses of the national government and NGOs to issues of food security during the context of disasters are identified. Each of the study communities – Trench Town, Prospect and Jeffrey Town - is analysed in detail, paying particular attention to its demographic and natural hazards profiles.

Chapter Five addresses the need for a nuanced understanding of food security issues in Small Island Developing States because of the diverse ways in which this concept has been understood by different researchers, organizations and agencies. It presents the views of Jamaican stakeholders from government, the economic sector, civil society and local communities.

Chapter Six, refocuses attention on local perceptions of food-related problems posed by hurricanes and droughts as they are manifested among residents of the case study communities and others who have responsibilities for these places. It analyses these views, not just as they pertain to specific natural hazards, but also in the context of Jamaica's "double exposure" to environmental and economic changes taking account of the different spatial scales at which these processes express themselves.

Chapter Seven examines the strategies that have been devised to minimize risks of immediate hazard-forced food insecurity in the urban community of Trench Town. The development of resilience within that society is shown to be dependent on its ability to nurture and share consensus within its citizenry as well as its ability to maintain a critical set of community led social connections over a sustained period of time.

Chapter Eight examines the social capital mechanisms that have been deployed by the two rural communities (Jeffrey Town & Prospect) in response to the perceived threats to food security associated with hurricanes and droughts. It interrogates social connections and social capital's role in building food system security and unpacks the set of social connections that has proved helpful to building food system resilience.

Chapter Nine brings together the contributions of food system security, place attachment and scale (spatial and temporal) to human responses to hazards. It demonstrates that failure to emphasise the importance of place attachment to resilience may result in a "blinkered view of the challenges and possibilities ahead" (Bailey, 2008, p. 424). It explains the transformation of zones of exclusion into zones of opportunities for building resilience and the role of double exposure in shaping place attachment and food system resilience.

Chapter Ten summarizes the findings and resituates them in the broader context food security problems that face SIDS everywhere. It concludes with a set of recommendations on the way towards achieving food security and on future research priorities.

Chapter 2

Literature Review & Theoretical Framework

Introduction

It is well known that short-term humanitarian aid delivered after floods, storms and other extreme events dominates public policy responses in many parts of the world but does little to prevent future disasters. Such disasters typically affect a wide range of societal systems including those that supply and distribute food. Given the fundamental importance of food to human health, the large number of people who are dependent on agriculture for income as well as sustenance, the narrow margins of food adequacy that characterize many developing countries, and the increasing prevalence of extreme natural events, such places need to devise disaster-resilient food systems. ***Resilience is defined as the ability of an individual or collective actor to cope with or adapt to stress, to bounce back*** (Briguglio, Cordina, Farrugia, & Vella, 2008; Dodman, McGregor, & Barker, 2009; Pelling & Uitto, 2001). The cultivation of resilience presently lies at the heart of international and national efforts to reduce disaster losses and improve public health. For example, the Hyogo Framework for Action 2000-2015 and its successor, the Sendai Framework for Disaster Risk Reduction 2015-2030 are global initiatives that subscribe to that principle.

A major value of the resilience concept is its versatility when applied to different communities of practice at different scales and within nuanced spaces (Béné, Wood, Newsham, & Davies, 2012; Frankenberger & Nelson, 2013). It is context specific and therefore reflects attributes of the places to which it is applied and the degree to which humans are attached to them. It is also connected with networks of mutual support

among hazard-affected populations (i.e. social capital). It can therefore be useful in helping policy makers and practitioners understand factors that influence household and community level responses and devise appropriate supporting measures (Frankenberger & Nelson, 2013). As a practical construct, however, resilience has proven to be complex with diverging definitions and varying methodological approaches (Burton, 2012; Cutter, Ash, & Emrich, 2014; Zhou, Jing'ai, Jinhong, & Huicong, 2009). These have created what Zhou et al. (2009) describe as a "confused lexicon of meanings and approaches" (p. 22). This chapter addresses the professional literature of resilience, social capital and place making as they pertain to food security in the face of disaster.

Defining the Resilience Concept

The definition of resilience provided above is one of many that emerged from the discipline of ecology in the 1960s and 70s through studies of interacting populations like predators and prey and their functional responses in relation to ecological stability theory (Folke, 2006; Walker, Carpenter, Anderies, Abel, Cummings &Pritchard., 2002). The term was first introduced by Holling in his 1973 original work, 'Resilience and Stability of Ecological Systems', which formed the foundation for and influenced most studies' understanding of the resilience concept (Bhamra, Daniab, & Burnarda, 2011; Burton, 2012; Walker, Anderies, Kinzing, & Ryan, 2006; Walker, Holling, Carpenter, & Kinzig, 2004; Walker & Salt, 2006). Holling (1973) defined resilience as the capacity to persist in the face of change; it is a measure of how far the system could be disturbed without shifting to a different regime as opposed to how fast the system returns to an equilibrium state after a disturbance, as was proposed by Pimm (1991), another ecologist. However, when the concept of resilience was exported to other disciplines the capability to return to

a stable state after a disruption became of central importance (Bhamra et al., 2011; Burton, 2012). This dominant engineering perspective assumes a stable and infinitely resilient environment where self-repair would result in a state of equilibrium when the stressors and disturbance are removed. However, as Adger (2006) notes, when a system is vulnerable the size of the disturbance is irrelevant because very small disturbances may cause serious social consequences.

The resilience concept has improved the conceptual framing of hazards research (Amaya, 2014; Burton, 2012; Cutter et al., 2008a, 2008b; Klein, Nicholls, & Thomalla, 2003) but there remain many areas of ignorance. For example, we know little about how resilience is measured, enhanced or maintained at the community level (Burton, 2012; Cutter et al., 2008a, 2008b). Furthermore, most of the literature on resilience reflects concerns of engineers with matters like robustness, redundancy, resourcefulness, and rapidity of measures to reduce the probability of failures (Bruneau et al., 2003; Tierney & Bruneau, 2007).

Yet these frameworks often fail to capture antecedent social factors that occur at the most local levels (Cutter et al., 2008b), for example poverty and the processes that alleviate or exacerbate poverty. This points to a need for more locally focused research (Bhamra et al., 2011; Cutter et al., 2008a). Furthermore, resilience tends to have been studied mostly in developed states where there is ample secondary data suitable for the construction of baselines. In developing countries secondary datasets are usually absent, incomplete or unreliable (Alinovi, Marco, Erdgin, & Donato, 2010; Amaya, 2014; Burton, 2012; Frankenberger, Langworthy, Spangler, & Nelson, 2012). Moreover, the collection of primary data is time consuming and sometimes not consonant with the

needs of public agencies. Finally, the absence of the skills required to collect data is frequently a barrier (Amaya, 2014). In circumstances like these a qualitative approach to data gathering can be a useful first step in identifying components of resilience, place attachment and the like.

Resilience: The Natural Hazards Context. Klein et al. (2003) credit Timmerman (1981) as possibly the first researcher to use the resilience concept in relation to natural hazards and disasters. Following Zhou et al. (2009) and Amaya (2014) we shall make use of three approaches to hazard-related resilience.

The first approach focuses on specifying systems attributes of resilience and highlights the value of diversity. Diversity of biological systems and functional diversity of technological systems are of particular interest to ecologists and engineers (Elmqvist et al., 2003; Folke, 2006; Zhou et al., 2009). Economists too have embraced diverse interpretations; they previously assumed the existence of a single stable state (Alinovi, Erdgin, & Donato, 2010) but are now identifying multi-stable states that follow different paths to varied outcomes at different scales (Alinovi et al., p. 9).

Other social scientists have added diverse indicators of resilience that reflect migration patterns and the connectedness that is engendered by social networks, social memory and trust. Adger (2000) sees social system resilience as the ability of human communities to withstand external shocks to their social infrastructure, while Anderies, Janssen, and Ostrom (2004) use the concept “robustness” to indicate how some characteristics of a system are maintained despite fluctuations and changes in its components or its environment.

This kind of robustness is associated with factors like diversity of economic activities; dependency on a single resource renders a community less resilient (Adger, 1997; Freudenburg, 1992; Peluso, Humphrey, & Fortmann, 1994; Zhou et al., 2009). The resilience rubric has also been applied to coupled social–ecological or human-environment systems (Adger, 2000; Carpenter, Walker, Anderies, & Abel, 2001; Folke, 2006; Manyena, 2006) that exhibit interactions among system components and feedback loops that permit it to persist through perturbations.

From this perspective stressed communities are able to learn from crises, live with change and uncertainty and use different kinds of coping knowledge (ranging from the indigenous, traditional knowledge to the scientific, modern ways of knowing) (Cash & Moser, 2000; Tompkins & Adger, 2004). While social indicators of resilience are recognizable in theory and in practice, the challenge of measuring them and operationalizing the concept at the community level remains.

A second approach to understanding resilience involves distinguishing between adaptation and resistance (CARRI, 2013). From one perspective resilience is the amount of disturbance that can be withstood (by resisting) without collapsing or without fundamental and dramatic changes occurring (Anderies et al., 2004; Ott & Döring, 2004). For those who prefer the metric of adaptation the time it takes a community to return to normal is often of central concern (Amaya, 2014; Bruneau et al., 2003; Burton, 2012; Klein et al., 2003; Timmerman, 1981). Norris et al. (2008) argues that adaptation is not an outcome nor does it equate with stability. It is the process that allows a system to be continuously engaged in transformation in the face of change.

A third approach to understanding resilience focuses on process, traits, and outcomes (Zautra, 2010) with a view to achieving predictions. Herein, resilience is not seen as a given but as a capacity that develops over time in the context of person-environment interactions. It is probable that communities and/or individuals show differentiated resilience across a range of circumstances and with a range of outcomes (Egeland, Carlson, & Sroufe, 1993; Rutter, 2012; Zautra, 2010)

From a hazards research perspective, resilience as process is linked with the notion of hazard risk-reduction and continual learning which opens the door to a non-deterministic role for communities in the recovery and mitigation process (Twigg, 2009). Properly operationalized, this view should result in communities making better decisions about hazards (Center for Community Enterprise, 2000; Cutter et al., 2008b; Norris et al., 2008; Sonn & Fisher, 1998). Yet, the converse is often seen; some researchers have found resilient processes to be present in a community without healthier outcomes (Zautra, 2010).

Outcome resilience is therefore an emergent social process (Butler, Morland, & Leskin, 2007). However, many engineers ignore the social component of resilience and emphasize factors that determine the level of damage infrastructure can withstand without failing (Bruneau et al., 2003; Gunderson, Holling, Peterson, & Pritchard, 1997; Kahan, Adrew, & Justin, 2009).

Finally, psychologists tend to view resilience as a trait of individuals that is mobilized in stressful situations and might be predictable (Jacelon, 1997; Li & Nishikawa, 2012; Rutten et al., 2013). By extension, they argue that a community could also exhibit trait resilience. Further research is needed to establish this claim.

In summary, hazard researchers generally agree that resilience encompasses the capability of communities to bounce back and recover after perturbation; however, there is no common agreement on the structure or components of resilience that would make it suitable for use as a policy or management tool (Amaya, 2014; Klein et al., 2003).

Food security and resilience. The application of the concept of resilience to food is a recent development; here resilience is defined as "the ability of the household to maintain a certain level of well-being (for example, food security) withstanding shocks and stresses, depending on the options available to the household to make a living and its ability to handle risks" (Alinovi et al., 2009, 2010). The household and the community are conceived as a part of a bigger system – the food system – which is interlinked with nature (soil and agriculture, weather and climate) and society (distributors, consumers' market chains, built environment and others (Cutter et al., 2008b).

In 1974 the World Food Summit defined food security as: "availability at all times of adequate world food supplies of basic foodstuff to sustain a steady expansion of food consumption and to offset fluctuations in production and prices" (Food Agriculture Organization, 1996; United Nations, 1975). This definition was subsequently modified during the 1996 World Food Summit as follows : "Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food Agriculture Organization, 1996). It is noteworthy that these definitions do not explicitly mention resilience.

Amaya (2014) divides the food security literature into three overlapping groups. The first of these foregrounds the concept of food insecurity and the broad societal forces that foster vulnerability – urbanization, globalization, and poverty (Løvendahl, Knowles, & Horii, 2004; Alinovi et al., 2010; Amaya, 2014; Carter et al., 2007; Doocy et al., 2006; von Braun, 2007). The second group focuses on food security within the context of natural disasters and climate change; it addresses the promotion of disaster risk management/strategies and climate change adaptation and mitigation strategies (Brown, & Funk, 2008; Campbell & Beckford, 2009; Food and Agricultural Organization, 2011; Food and Agricultural Organization, 2005; International Federation of Red Cross and Red Crescent Societies, 2006; Ingram & Brklacich, 2002). In the third group, food security is embedded within complex crises and linked with the pursuit of improved humanitarian responses and food aid (Maxwell, 2007; Seaman & Rivers, 2012; Sharp, 2007). Taken together these varied approaches have supported certain practical responses including: (a) reducing vulnerability through sustainable agriculture; (b) developing guidelines, enforcing laws and regulations; (c) strengthening early warning, vulnerability information and forecasting systems; (d) establishing collaborative partnerships and institutional arrangements; and (e) adopting quantitative risk and impact assessment procedures (Food and Agricultural Organization, 2005). Each of these approaches is usually nested within one or more of the following broad strategies that are pursued by different public constituencies: improving livelihoods; reducing disaster risks and coping with climate change.

The livelihoods approach focuses on improving access to productive assets in the context of existing institutions. It has had some success when employed by the UN Food

and Agriculture Organization (FAO) (Frankenberger & Nelson, 2013). However some researchers have questioned the centrality of food within the full spectrum of poor people's concerns (Maxwell & Smith, 1992). Disaster risk reduction (DRR) emphasizes ways of intervening in the disaster cycle (for example, preparedness, prevention, response and recovery activities).

FAO has developed a framework titled the Disaster Risk Reduction for Food and Nutrition Security Framework Program that strives to assist countries implement the five Priorities for Action of the Hyogo Framework for Action in their agricultural sectors (Food and Agricultural Organization, 2013, p. viii). The climate change adaptation (CCA) approach shares similar features with DRR, but goes beyond it by "giving careful consideration to potential threats caused by the loss of biodiversity and a decrease in ecosystem services" (Frankenberger & Nelson, 2013, p. 31).

Many NGOs and other actors have sought to understand resilience to food insecurity and to assess the impact of their own resilience programs within different communities. The FAO, for example has collaborated with the World Food Program (WFP) to develop a Shock Impact Simulation (SIS) Model that supports food intervention decisions (Frankenberger & Nelson, 2013). USAID has developed a Feed The Future (FTF) program, that rests on the assumption that investing in resilience is less expensive than humanitarian assistance (Frankenberger & Nelson, 2013). Oxfam has initiated a program that identifies the characteristics of households or communities that restrict ability to cope or adapt to shocks. However, many of these programs rely on perceptual evidence that is difficult to measure or standardize and therefore cannot be systematically transformative of food challenged populations.

In short it seems that a human-environment perspective on resilience offers a way of thinking that provides valuable insights for exploratory research (Folke, Colding, & Berkes, 2002); when improved it might encourage the adoption of resilient processes that will lead to positive outcomes. There is however, an alternate "vulnerability-focused" framework that allows for an integrative understanding of human environment interaction in the wake of natural hazards and holds considerable promise for improving food security if properly constituted (Campbell, 2009).

Why not a vulnerability framework? Although resilience and vulnerability both pivot around notions of risk, vulnerability is about (inherent?) susceptibility to damaging constraints (Cutter et al., 2008a, p. 599) while resilience is about opportunities that are birthed because disturbances open new pathways (Folke, 2006).

Islands are frequently perceived as vulnerable places and SIDS are no exception (Shea, 2003, p. 4; Gamble et al., 2010). The Intergovernmental Panel on Climate Change (IPCC) describes them as "among the most vulnerable countries" (Mimura et al., 2007, p. 650) because of their joint susceptibility to climate change risks and economic risks; many climate experts inside and outside the Caribbean have accepted this as a framing device for SIDS[2] (Pam & Henry, 2012).

An intersecting discourse on global economic change or globalization also portrays islands as vulnerable (Pelling & Uitto, 2001; Gamble et al., 2010; Girvan, 1997), this time to shocks of rising food prices, food insecurity and famine (Food and

[2] For example, Dr. Leonard Nurse of the Centre for Resource Management and environmental Studies at UWI, Cave Hill, and Dr. Abraham Anthony Chen, professor emeritus of Physics at the University of the West Indies (UWI), Mona Campus, Jamaica, contributed to the 2007 Fourth Assessment

Agricultural Organization, 2013; 2014, ECLAC, 2008). Political privilege is also a contributory factor; ideas about the denial of human access to socially defined food "entitlements" have challenged explanations that identify physical processes, like floods and droughts, as the primary causes of food insecurity (Adger, 2006; Bohle, Downing, & Watts, 1994; Commonwealth Heads of Government Meeting, 2005; Devereux, 1993; Hess, Malilay, & Parkinson, 2008; Sen, 1981; Swift, 1989; Wisner, 2004; Wisner & Gaillard, 2010). Finally, the concept of "double exposure" - which combines physical and human stressors - is particularly well illustrated in small island developing states (Campbell, 2009; O'Brien & Leichenko, 2000; Pam & Henry, 2012; Thomas, 2012). Given the prominence of vulnerability as a general discourse about SIDS, it is no surprise that discussions about food security in the Caribbean have been analysed through the lens of vulnerability (Baker, 2012; Beckford & Bailey, 2009; Campbell & Beckford, 2009; McGregor et al., 2009; Rhiney, 2009; Spence, 2009).

By contrast an alternative view holds that islands have long been sites of resilience that have only recently become vulnerable. Campbell (2009, p. 86) says that they possessed "traditional disaster reduction measures" that reduced the effects of natural extremes. Many of these practices existed as everyday features of community and household life (Campbell, 2009, p. 86). He argues that we should not assume they were "developed as purposeful adaptations to hazardous environments" but may instead have been "incidental adjustments" that "just happened to help ameliorate the effects of environmental extremes" (Campbell, 2009, p. 86). In essence these social practices may "not have existed primarily as disaster responses but emerged and were sustained for

myriad reasons" (Campbell, 2009, p. 86). One of the factors that led to their decline was government's embrace of disaster relief as a preferred response.

From this perspective vulnerability is a symptomatic process, not simply a state of being (Kelman, 2008). A consensus develops around the notion that small island developing states are inherently vulnerable and this idea seeps into the collective psyche of their citizens too, affecting among others things the discourse about food security. (Barker, 2012; Campbell& Beckford, 2009; Spence, 2009). This dissertation contests that view by placing the emphasis on the resilience of small island developing states – a process that includes the capacity for renewal, the capacity for re-organization and the capacity for sustainability (Folke 2006; Gunderson & Holling, 2002; Mihaylov & Perkins, 2013). In other words resilience provides adaptive capacity (Cutter et al., 2008a; Smit & Wandel, 2006) that allows for continuous development.

Folke (2006) further points out this is made possible by the self-organizing capacity of a complex adaptive system to draw on measures that exist at temporal and spatial scales above and below itself. The general ability to persist after a disturbance captures only one aspect of resilience. Other features include the amount of disturbance a system can absorb without change, the degree to which it can self- organize and the degree to which it can increase the capacity for learning and adaptation. (Carpenter et al., 2001; Folke, 2006). In summary, the mechanisms by which food system resilience develops are complex and cannot all be addressed in this dissertation. Here the focus is on place attachment and social capital.

Place Attachment

Place attachment is an emotional bonding leading to positive feelings about the place (Hildalgo & Hernandez, 2001; Manzo, 2005). Place attachment should not be conflated with place identity. As Lewicka (2008) posits, persons may have positive feelings for a place but may not feel a part of that place. The converse may also be true, where a person may define self in terms of a place and yet does not have positive feelings towards that place and may not want to be bonded to that place.

While place is at the core of Geography as a discipline (Fouberg, Murphy, & Blij, 2012; Tuan, 1974), most recent literature about the roles of place and attachment to place in disasters has emerged from other fields of research, especially psychometrics (Gaillard, 2008; Kaniasty, 2012; Quinn, 2014; Mishra, Mazumdar, & Suar, 2010;Ruiz & Hernandez, 2014). For example, sociologists and psychologists view attachment to place as a motivation for people to become more neighbourly, socializing and engaging with each other, sharing concerns and community problems and networking to produce meaningful solutions to their problems (Giuliani, 2003; Kyle, Graefe, Manning, & Bacon, 2004; Lewicka, 2008, 2010; Rollero & Di Piccoli, 2010; Semken & Freeman, 2008; Williams & Roggenbuck, 1989). These include a variety of threats (including disasters) that erode the very attachments that had led to community bonding and engagement in the first place (Brown & Perkins, 1992; Manzo & Perkins, 2006; Mihaylov & Perkins, 2013).

The present study adopts a simple definition of place as the local area in which one lives. Natural disasters may disrupt not only the physical communities but also human attachments to them. Like resilience, the conceptual and methodological

approaches to understanding place attachment have been complex, diverse and multi-disciplinary (see Table 1). "Although sense of place resists a simple definition, there are different ways of explaining and probing this concept" (Shamai, 1991, p. 348).

Table 1

Reviews of selected research in place attachment and related concepts (modified from Lewicka, 2011

Authors	Conceptualisation of Place attachment
Tuan (1974)	Place is a center of meaning constructed by experience; bond in the lived experience of people with place
Relph (1976)	bonding of people to meaningful spaces
Low and Altman (1992)	The bonding of people to places
Lalli (1992)	Place identity understood as place attachment (and its relevance to urban identity).
Giuliani & Feldman (1993)	An affective bond of attachment developed with a place. An attachment bond with any object, and thus also with the home, may be defined as i) the state of psychological well-being experienced by the subject as a result of the mere presence, vicinity or accessibility of the object and, conversely, ii) the state of distress set up by the absence, remoteness or inaccessibility of the object.
Jordan (1996)	Place attachment is seen more as less as territorial identity (geographical dissertation in German)
Giuliani (2003)	Emotional bonding, positive feeling about place
Twigger-Ross, Bonaiuto, and Breakwell (2003)	Place identity is an important aspect of place attachment. A place is a "membership group" that provides identity and social status. Therefore people will prefer places that contain physical symbols that promote positive self-esteem, and, where possible avoid places that projects a negative impacts on the self-esteem
Bott, Cantrill, and Myers (2003)	Belonging to a particular place
Easthope (2004)	A sense of place, a connection between place and identity
Manzo and Perkins (2006)	People's emotional connection/relationship with place
Gustafson (2002)	People's positive emotional and other ties with places
Nicotera (2007)	Place attachment depends on the environment–place duality using verbal and non-verbal measures of neighbourhood.
Trentelman (2009)	Place attachment as bonding to a community therefore community attachment.
Scannell and Gifford (2010)	Place attachment as a multidimensional concept constituting person, psychological process, and place dimensions.
Quinn (2014)	Land is more than a place to grow crops; farms are locations with history, symbolic meaning, and repositories of emotion. Place attachment to farms includes a physical and emotional bond.

Geographers like Tuan (1974, pp. 75, 77) and Relph (1976) began to study place through the lens of the lived experience (Trentelman, 2009) and to frame the bonding of people to meaningful spaces as a fundamental universal human need (Mihaylov & Perkins, 2013; Relph, 1976; Tuan 1975, p. 77). Tuan (1974) noted that "place is a center of meaning constructed by experience… most places are unnamed for to name a place is to give it explicit recognition, that is, to acknowledge it at the conscious, verbalizing level, whereas much of human experience is subconscious" (pp. 152, 153).

Brown and Perkins (1992) have indicated that "positively experienced bonds sometimes (occurred) without awareness" and these bonds provide "a framework for …community aspects of identity and have both stabilizing and dynamic features" (p. 284). Place attachments involve deep rooted affective, emotional bonds between people and their surroundings as well as the cognitive traits (memory and knowledge) that inform their sense of identity, create meaning in the lives, lead to community formation, and influence community action (Manzo & Devine-Wright, 2013). It is the meanings people attach that distinguish place from space (Tuan, 1977).

Place can also be considered a cross-section of space (Massey & Jess, 1995). While social relations are stretched out in space they come together over time in a particular place (Massey & Jess, 1995; Fouberg et al., 2012). Emotions are triggered by the experience of leaving the place of attachment – fear, pain, anxiety, tension, uncertainty, alarm (Ruiz & Hernandez, 2014). Loss of place represents the most catastrophic impact of natural disasters on persons and may explain some persons' reluctance to be involved in evacuation exercises (Diaz & Dayal, 2008; Ruiz & Hernandez, 2014).

Two global forces have presented a clear and imminent threat to place attachments in small island developing states (SIDS). The first is globalization which can erode the social relations of a place by encouraging the emergence of a new normal of borderlessness, sameness and placelessness (Fouberg et al., 2012; Gustafson, 2013; McClay & McAllister, 2014; Rosen, 2014; Toth, 2014). The second is global environmental change that alters the physical landscape referents that humans use to characterize a place (Gregror et al., 2009; Pelling & Uitto, 2001; Rhiney 2015).

As a result of these twin trends (i.e. double exposure) people are at risk of losing place attachments (Barker, 2012; Leichenko & O'Brien, 2008; Thomas, 2012). A number of studies by Caribbean researchers since 2000 have pointed to this "double exposure" problem as a factor in food insecurity (Beckford & Barker, 2007; Gamble et al., 2010; McGregor et al., 2009; Rhiney, 2015). But no study, until now, has applied the concept of place attachment to the analysis of food security and resilience at the level of the community.

The PPP (person-place-process) framework accommodates a broad vision of place attachment that includes natural, social and symbolic connotations (see Figure 1). As proposed by Scannell and Gifford (2010) it includes a personal dimension that highlights individually or collectively determined meanings of a place, a psychological dimension that adds affective, cognitive and behavioural factors, and a spatial dimension that reflects social and physical characteristics of a place. The spatial dimensions are the ones most closely examined in this dissertation as manifested in the mechanisms used by three Jamaican communities to build resilience to food insecurity induced by natural hazards.

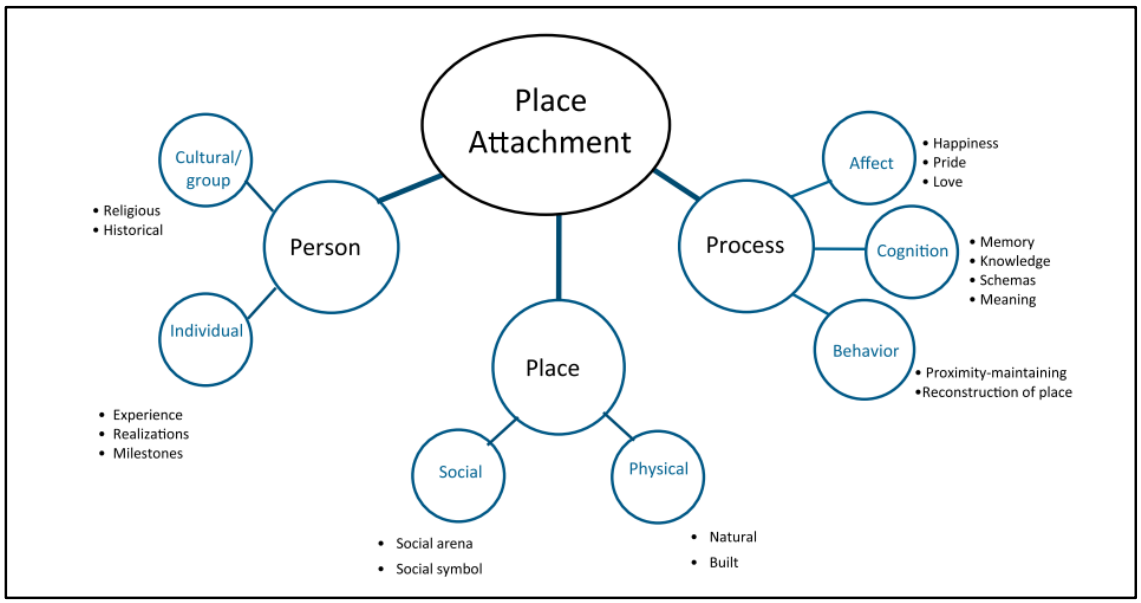

Figure 1. Scannell and Gifford (2010) Tripartite Model of Place Attachment

Scannel and Gifford's model (2010) foregrounds peoples' *feelings* toward place. But, as Relph points out (1976) in assessing attachment it is also necessary to take account of locational factors and levels of personal involvement. In relation to natural hazards, food insecurity can be viewed as "location specific" given that types of risk and levels of exposure are both closely tied to specific places. The effects therefore of natural hazards on food security spatially are not uniformly distributed (Hess et al., 2008). So an examination of place attachment brings attention to motivations, meanings and bonds that are important for building resilience to food insecurity. Likewise, identifying locations that lie at the intersection of resilience building, food security and natural hazards are germane to the advancement of place attachment research.

Shamai (1991) suggests the use of an empirical scale spanning three general phases of place attachment. The first is belonging to a place, the second is attachment to a

place and the third is commitment to the place (1991, p. 349). These three phases can be further subdivided using an ordinal scale with seven levels ranging from zero (0) (i.e. not having any sense of place) to, six (6) (being willing to sacrifice for the place) (see Figure 2). These designations signal distinctions about levels of attachment but they do not give much insight into how meanings are associated with them. Shamai's (1991) scale was modified by the researcher to accommodate a qualitative approach to data gathering (see Interview Schedule Appendix A). The qualitative modification of the scale was applied to Scannell and Gifford's (2010) PPP framework. The aim is to probe the role of place attachment in building social connectedness for food security resilience and hazards management at the community level.

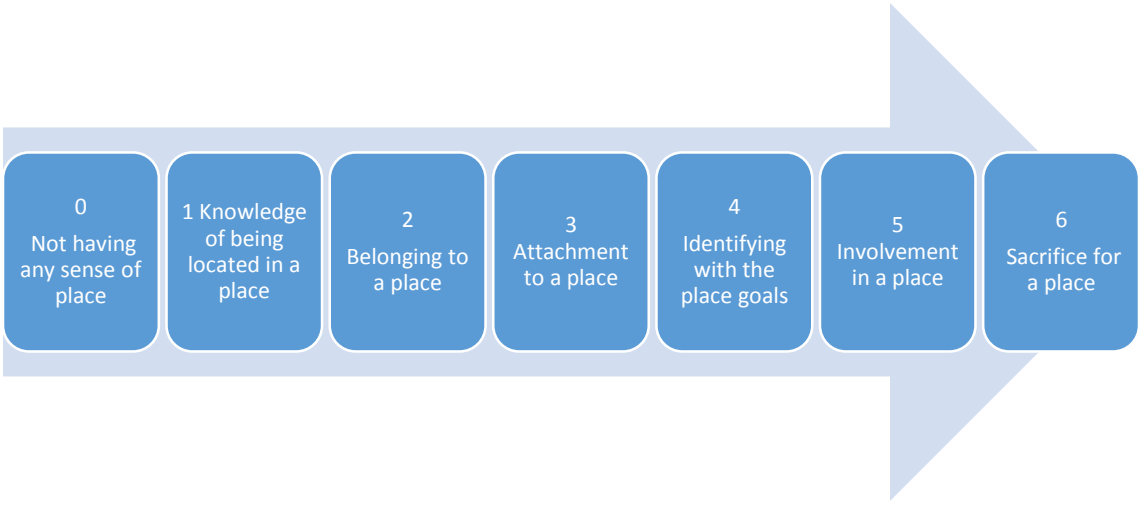

Figure 2. Shamai (1991) Levels of Sense of Place Ordinal Scale

Social Capital

Like place attachment, social capital is an important concept employed in this study. And like resilience, the concept has been transferred from one discipline to another with a variety of definitions and critique of definitions (Bourdieu, 1977; Coleman, 1990

Norris et al., 2008; Putnam, 1993; 2000) again resulting in conceptual confusion and controversy (Misselhorn, 2009; Schaefer-McDaniel, 2004).

Pierre Bourdieu, James Coleman and Robert Putnam are recognized as the founding fathers of social capital theory (Schaefer-McDaniel, 2004). Bourdieu is credited as the earliest theorist to define the concept identifying two dimensions (a) social networks, and (b) sociability (Portes, 1998; Morrow, 2001; Schaefer-McDaniel, 2004). James Coleman defined social capital in relation to its function and foregrounded reciprocity and trust as facilitating factors (Coleman, 1990; Schaefer-McDaniel, 2004). Robert Putnam defined social capital in relation to neighbourhoods and communities as a societal, collective asset for the good of the public. (Bourdieu and Coleman had interpreted it as a private good that is the property of individuals). Putnam recognized three types of social capital – bonding, bridging and synergy (Putnam, 2000). Bonding social capital binds the community together. Bridging social capital enables community groups to networking with other (outside) groups. Synergy is achieved when government and communities partner to achieve the same goals. Individuals invest, access, and use resources embedded in social networks to gain returns (Lin, Cook, & Burt, 2001). Some social capital theorists debate the roles of self-interest and status attainment and whether social capital should be conceived as an individual, collective, or multi-level asset (Wellman & Frank, 2001). Theorists have also debated the extent to which people actively aim to increase their social capital (through investment) or whether, conversely, it arises from structural positions, families, and friendships (Kadushin, 2004).

The concept of social capital has gained wide attention since the 1990s (Coleman, 1990; Collier, 1998; Pawar, 2006; Putnam, 1993) with government and international

policy makers as well as community activists advocating facilitation of meaningful relationships and social networking within and between families, groups and communities for purposes of eradicating poverty, building personal wellbeing, resilience and community health. Since food security is also identified as a key component of community well-being, it is germane to this study (see World Bank's Social Capital initiative working paper series, at http://www.worldbank.org/socialdevelopment)

Social capital, place attachment, natural disasters and food security.

Schaeffer-McDaniel (2004) noted that place attachment has "gained very little recognition in the social capital literature" (p. 11). She further noted that "Putnam mentions sense of belonging to a community in his social capital definition (Putnam, 1993) but neglects to explain or integrate this concept into his overall theory" (2004, p. 11). Nevertheless, Mihaylov and Perkins (2013) identified a strong link between place attachment, social capital and disruptions (see Figure 3). In their formulation the type of change (or disruption) is not as important as how it is interpreted and evaluated (Mihaylov & Perkins, 2013, p. 64). The resulting response might either lead to or hinder resilience.

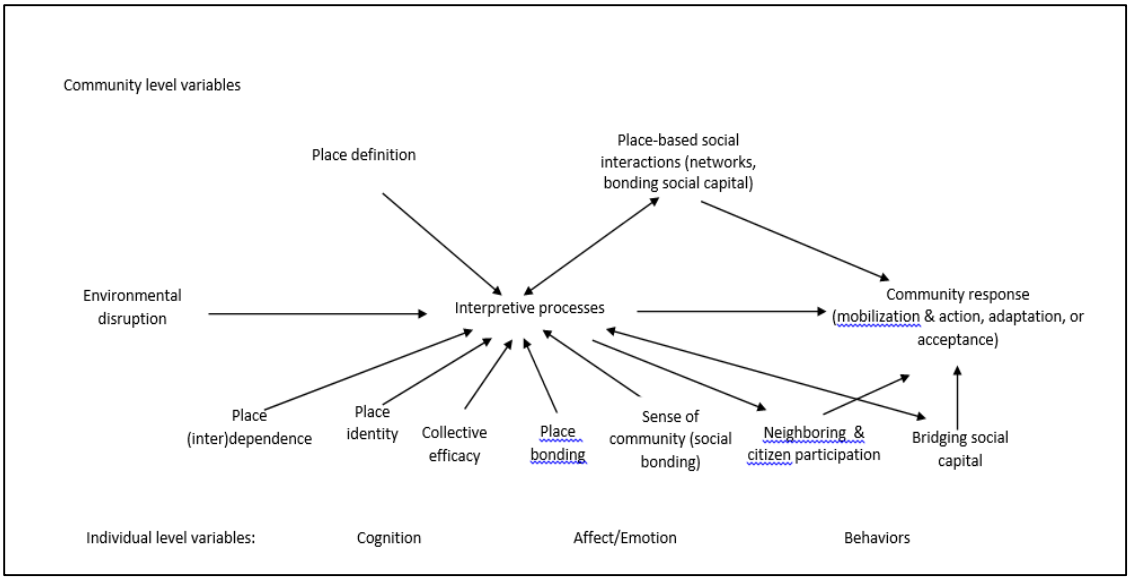

Figure 3. *Mihaylov and Perkins (2013) Framework*

Others have connected deficiencies of social capital with lack of post-disaster recovery in the wake of storms and floods (Brinkley, 2006; Hartman & Squires, 2006; Park & Miller, 2006) and a few have suggested that it also hampers food security (Misselhorn, 2009).

Social capital has been explored by various research communities examining disaster risk reduction, emergency management, hazard management, risk analysis, and climate change at the intersection of various disciplines in the social and natural sciences, especially following Hurricane Katrina in the USA, the 2004 Indian Ocean Tsunami, the 2009 Bangladesh Flooding and the 2010 Haitian Earthquake (Aldrich, 2010; Barnshaw & Trainor, 2007; Chatterjee, 2010; Clermont et al., 2011; Hawkins & Maurer, 2010; Iversen & Armstrong, 2008; Mathbor, 2007; Minamoto, 2010; Norris et al., 2008).

Social capital in the food security and disaster literature in the Caribbean, however, has had less integration and research, rather social capital research has focused

mainly on socio-political issues viz. families and diasporic identities, ethnicity, and violence and poverty (Moncrieffe, 2008; Reynolds, 2004; UN, 2004). It's important to note also that no theorist has addressed the important issue of how individuals of different cultures experience and view social capital (Morrow, 1999; 2001; Schaeffer-McDaniel, 2004) and its conceptual link to place attachment and food security in SIDS. Current research has yet to address these issues (Schaeffer-McDaniel, 2004). We are well short of a full understanding of links among place, social capital and natural hazards in relation to resilience.

In summary, there are many gaps and inconsistencies in the literature on key concepts employed in this dissertation: resilience, place attachment and social capital, in particular. Thus, there is ample reason to propose an alternative more integrative framework for addressing food insecurities in the Caribbean and elsewhere.

Towards a Food Security Resilience Framework

In view of the definitional and theoretical complexities just noted, and given the importance of adopting a broad integrative approach that takes them into account, this study draws on and combines notions of recovery, sustainability, interpretive processes, adaptability and predictability and places them in a process-outcome framework that is hoped will be useful for improving the food security of communities throughout the cycle of a natural hazard event.

This framework emphasizes antecedent social and contextual factors (Cutter et al., 2008b) that affect the social psychology of bouncing back (Zautra, 2010; Zautra, Hall, & Murray, 2010). It does not ignore the physical expressions of change and loss that often characterize natural hazard events; it views sites of disfigurement, defacement, scars, loss

and erosion as places where vulnerability will become endemic if deliberate action is not taken to rediscover past coping mechanisms or invent new ones. Resilience will be found alongside vulnerabilities that act as powerful reminders to the community of the alternative to resilience. The dual presence of vulnerability and resilience is a fact of island life that requires acceptance. Even after hurricanes have inflicted severe losses, evidence of some kinds of resilience is readily available; for example, during hurricanes significant numbers of persons in affected communities exhibit extraordinarily high levels of cooperation leading to immediate recovery for most. However, this recovery may be short lived as the community bonding and cooperative behavior may stop once the debris has been removed, insurance filings received (Zautra, 2010) or food aid delivered.

Resilience at the community level therefore cannot be limited to immediate recovery but should factor in sustainability which requires deliberate planning and the employment of nuanced intervention and coping mechanisms to ensure continuity and the building of future resilience capacity (Folke 2006; Gunderson & Holling, 2002; Zautra, 2010). Within the context of natural disasters, sustainability is defined as the ability to "tolerate—and overcome—damage, diminished productivity, and reduced quality of life from an extreme event without significant outside assistance" (Cutter, 2008, p. 601; Mileti, 1999, p. 4).

Sustainable hazards mitigation has been advanced by researchers as a goal that should be aimed at but it has failed to be applied to everyday living consistently (Pine, 2014; Smith & Wegner 2006). This foregrounds an imbalance between theory and praxis. Being able to link the concepts of sustainability, disaster resilience, hazard

mitigation and food security theoretically is laudable, but, how does this translate to action on the ground? How does a sustainable approach to building food security resilience in communities impacted by natural hazards materialize in community action plans and get implemented? This requires what Pine (2014) calls "multi-objective planning" which will result in "mutually reinforcing outcomes" as there will be higher degrees of stakeholder participation in support of rediscovering neglected old mechanisms as well as inventing new ones (p. 224).

Recovery therefore is more than survival and emphasizes the basic principle of achieving a more balanced state (which is more than returning to a former state) while sustainability foregrounds the nuanced community's "capacities for intentional action" (Zautra, 2010, p. 9) manifested as appraisals, plans, opportunities to bond, connect and build structures of trusts. Such intentionality recognizes the role of social capital which may determine the quality of the connectedness and the capacity for building future resilience even without the threat of a disturbance.

Psychologists have long recognized that absence of pain and ill-health is no assurance of a secured life, but there are natural capacities and capabilities within people - including those who have suffered ill-health - to bounce back from adversity and find sustained vigour and drive to pursue life's objectives (Zautra, 2010; Zautra et al., 2010). Communities have shown parallel capacities and capabilities. It is not the absence of crime and the presence of green space that ultimately attract persons to a community otherwise the capital cities in many countries would be ghost towns; rather, people are attracted to a sense of place that provides for their basic needs, affords social connection, and growth (Zautra, 2010).

This dissertation proposes that the wise use of social capital in support of place attachment will allow for the organic emergence of possibilities and the potential to "grow and graze"[3]. The notion of growing and grazing is metaphorical for pathways of empowerment and the construction of purpose and meaning at the community rather than the individual level. For example, one pathway of growing and grazing features community-wide place dependence on a specific product that represents the essence of the community, not the individual.

The community identifies a product that can be awarded "geographical indication-esque" status within a specified bordered physical environment. The World Intellectual Property Organization (WIPO) defines a geographical indication (GI) as a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. By extension this model can be applied to many different kinds of place-centered endeavors, including those that enhance food security.

A "graze and grow" philosophy places the emphasis on the possibilities of place-centered community-wide resilience. It is derived from agriculture wherein productive activities that emerge from the land increase the value and cement the identity of the farmer or the producer. Land here represents place. If left idle, the potential economic value of the land may not be realized. Agricultural activities that comprise crops and animals increase the intrinsic value of the land when the crops grow and the animals graze and are kept healthy for the market. The material output (crops and animals for the

[3] Grow and Graze is a social perspective expounded on first by Bishop Thomas Dexter Jakes of the Potter's House of Dallas, Texas to encourage Christian growth and development spiritually, socially, economically.

market) can be profitable and this tangible output can increase the net worth and value of the land and by extension the net worth of the ownership of the land.

The same concept can be transferred to place. One component that endears place to people and gives place value is the potential it affords and the hope it sparks within people to graze and grow. This potential is manifested in the product possibilities that emerge in community plans and on verandas and - if these reach fruition - the opportunities afforded the community to bounce back quickly and continue forward after a disturbance. The ideas around the potential and possibilities inherent in these products are used to deliberately create attachment to a place and to (re)present symbols of security, optimism and resilience for the community.

Furthermore, products become symbols of what is great about the place and means of community identification and pride. A resilient community would therefore deliberately shape and construct these products that are intrinsically linked to place attachment. The community no longer sees itself as simply a bordered space but what Zautra (2010, p. 8) calls a "defensible space", a space worth protecting from disturbances through resilience building. This is guaranteed to evoke feelings of attachment and a sense of identity and responsibility linked to that site - which will encourage behaviors promoting security – including food security even in the face of natural hazards.

Defining resilience in this way would go beyond the focus on risk or its absence to include interpretation, capacity, thoughtfulness, planning, and an orientation towards sustainability leading to the setting of attainable goals and a realistic vision for the community as a whole now (Zautra, 2010) and for future generations. Place attachment would now be organized around people-place-processes and the potentials (for example,

product possibilities) (PPPP) that are unique to that geographic space. The resilience definition when applied at the scale of community to ensuring food security should therefore incorporate a place attachment component.

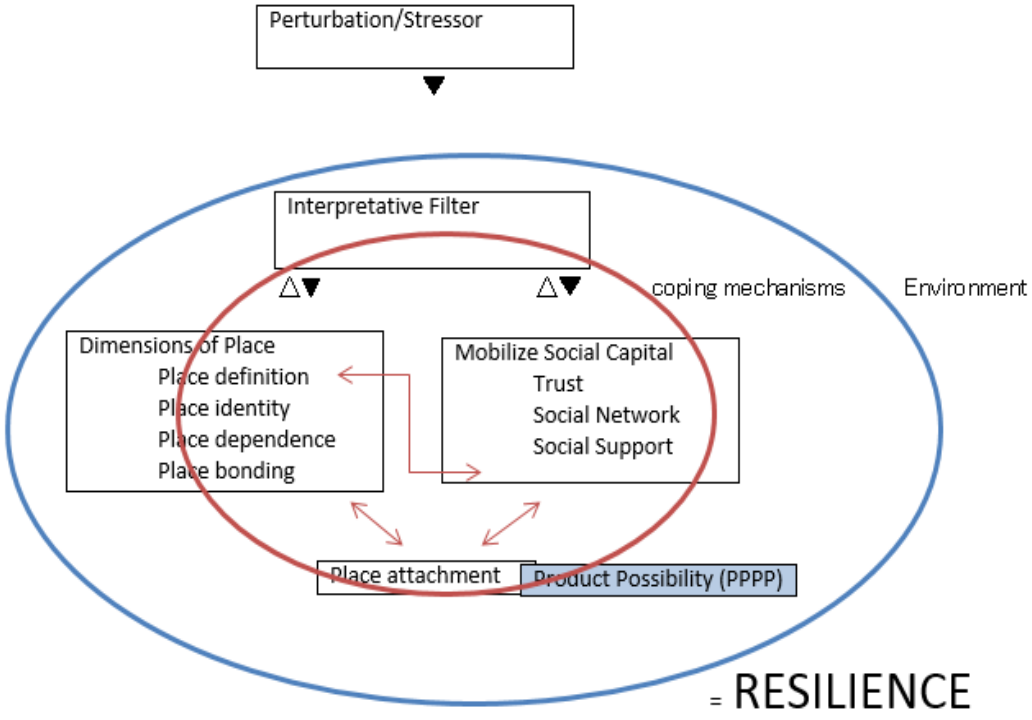

Figure 4. Food Security Resilience Framework

Resilience is therefore a function of the interpretative filter that communities utilize to manage (or not manage) and develop coping mechanisms. The filter will be impacted by dimensions of place attachment and social capital mobilization. Place attachment must also include the 4Ps emphasizing the product possibility that allows a community to graze and grow. Figure 4 summarizes the various elements of resilience as conceived herein. It includes:

1. Interpretations of the disruptions in relation to several dimensions of place: place definition, place dependence, place identity and place bonding (Modified from Mihaylov & Perkins, 2013)
2. Products that are unique to a specific geographical space and valued by inhabitants (place attachment)
3. Mobilization of social capital to plan and sustain a realistic vision of the community
4. Continuing appraisal of the environment to anticipate risks, limit negative impacts and seek opportunities for renewal
5. Bounce back capabilities nurtured through adaptation, evolution and growth in the face of disturbances (Modified from CARRI's 2013 resilience definition).

Chapter 3

Research Questions and Methodology

Introduction

The process of formulating and executing a doctoral dissertation is not as straightforward as it might appear in published texts. This chapter highlights the challenges and the successes in operationalizing my research proposal – from the classroom to the field and beyond. It records many details because they may be instructive to others who embark on similar explorations of little studied topics in developing countries. I chose to employ a qualitative approach because it seemed best suited to the investigation of a subject that lacks a detailed existing literature and for which the integration of different kinds of evidence from different cultural contexts would be necessary.

Qualitative research tends to be iterative and recursive between the various stages of a project from question formulation, research design, data collection and analysis through to presentation. Unlike quantitative research, data collection and analysis is a simultaneous process in qualitative research, where a refining of the research design is on-going (Bradshaw & Stratford, 2010; Creswell, 1998; Merriam, 2009). The research design is therefore "emergent" (Creswell, 2009, p. 169). As observed by Jeffers (2011) each stage of a qualitative research project has to be refined and re-defined because traipsing from "research plan to the material reality of the field site is often far from smooth" (Jeffers, 2011, p. 39). In human geography, qualitative methods are widely accepted, though concerns are rampant on issues of rigor, validity and reliability of data (Crang, 2003; Dowling, 2010; Winchester & Rofe, 2010). Quantitative yardsticks may

not be appropriate for assessing the rigor of a qualitative study which is "based on different assumptions of reality thus demanding different conceptualizations of validity and reliability" (Merriam, 1995, p. 52). Merriam (1995, p. 56) noted that qualitative researchers are not "seeking to establish 'laws' in which reliability and observation are essential", but rather trying to "understand the world from the perspective of those in it."

Research Questions

In the fall semester of 2010, I began to put together a framework of research questions to better understand the intersectionality of climate change, food security, and hazards reduction within the context of small island developing states. This process continued for several years of classroom study but it was not until the summer of 2013, while I was conducting semi-structured interviews with a number of people who crafted Jamaica's policy on food and nutrition security that the first research question assumed its quasi-final form.

Research Question 1: how is food security understood and defined by multiple- stakeholders (government, economic sector, civil society groups and communities) in Jamaica, and more specifically, how do communities understand what characterizes the threats to food security during times of active hazards namely, hurricanes and drought?

To answer this question, I probed and surveyed the standard historical and theoretical literature surrounding world food crises and food security issues as well as the contributions of radical thinkers who advocated alternative interpretations. I began searching for a wide cross section of organizations and community groups to interview. Having made contact with a number of governmental officials, food conglomerate

organizations operating in Jamaica and community based organizations (CBOs) I started volunteering my services at community trade shows and festivals. Very soon, I began receiving invitations from policymakers and community activists to participate in varied types of workshops and meetings in my capacity as researcher with interests in pre-disaster recovery frameworks and food security. For a period of ten (10) weeks, I crisscrossed the island as a participant observer at community farmers' association meetings, community disaster preparedness business meetings, community economic and engendering social consciousness meetings, church food distribution pantry sessions, a government policy workshop and three separate citizens' consultation workshop on climate change.

One specific experience stood out. I was a participant observer in an all-day workshop hosted by policy makers aimed at refining Jamaica's food and nutrition policy. The workshop registered a large representation of over fifteen governmental and quasi-governmental sectors with mandates inter-locking on issues of climate change, health, food security, agriculture, community development, and local government reform, for the most part. In attendance were also local NGOs, CBOs, and international NGOs (INGOs) with interests in food and nutrition security and hazards management.

As I engaged with the various representatives a common concern emerged which is best described as a polarity discourse around the notion of the difficulty and outright futility of ensuring food stability in a country already experiencing increased incidents of storms and drought as a direct result of a changing climate, on the one hand, and the need for nuanced community action on the other. In examining the various natural hazards to which Jamaica is vulnerable, framing food stability within the context of community

disaster risk reduction became a contested issue. I also participated in a planning meeting hosted by a non-governmental organization integrally engaged in urban renewal projects in one of Kingston's inner city neighborhoods. The aim of the planning meeting was to seek funding for a workshop geared toward the development of an "Urban Based Agricultural Industry…" in Kingston. Despite the sense of foreboding surrounding the promotion of agriculture in the city, the thought that kept surfacing focused on what made "small space" people resilient and why did it seem as if the urban ghetto in comparison to larger spaces produced disproportionately more people of renowned talents who succeeded against the odds and made their stamp on the world? Jamaica's reggae musicians and athletes were referenced as evidence of small space influence on the world. The narrative then explored the magic of 'place'; the blessings of the Divine One and even the notion of hardship being the mother of invention as possible answers.

Without being conscious of the geographical concepts being deliberated, the collective interpretation by the local NGO representatives conceded a historical link between 'success' and 'place' arguing that resiliency of a people cannot be de-linked from the place in which they were nurtured; and, if this were indeed so then place based approaches to resilience needed to be understood. That idea picked up fervency and was to be re-packaged as a selling point to the potential funders of the proposed workshop.

The idea advanced considered the "how to" of transferring to the community level the lessons learned by a small island like Jamaica in successfully negotiating economic and cultural benefits at the global scale. Communities experiencing global scale issues of climate change, hazards management and food insecurity needed to devise path ways and strategies to proficiently mediate those concerns. The successful hosting of

the workshop with secured funding for 'urban agriculture' lit a fire round the centrality of food and agriculture as tools for building community resilience regardless of the place and the risk categories – human, natural, or technological – that communities face. These key revelations ultimately fuelled the dissertation's second research question:

Research Question 2a: What types of natural hazards impact on communities in the research site and what are their impacts on the communities' food security?

Research Question 2b: What place-based coping and adaptation strategies have been utilized by these communities to ensure food system security prior to and during natural disaster cycles, specifically hurricanes and droughts?

I wanted to find out the extent to which community resilience was a function of place and so I decided to work more closely with the urban project and to seek out other communities who were deliberately engaged in hazards management activities and/or food security ventures. In the interim, I delved into archival materials on food security in Jamaica, visiting the Jamaican Parliament to retrieve its Hansard recordings of pronouncements the government of Jamaica might have made on food security since 1970. I also visited the archival librarian at the *Jamaica Gleaner*, the oldest newspaper in the Caribbean region which boasts articles from 1834, as well as the *Jamaica Observer*, the nation's alternate newspaper to retrieve articles on "natural disaster", "food security", "community resilience" and '1970-2013".

As a result of these inquiries I was introduced to the Michael Manley Award for Community Self- reliance Project. The project's operational criteria are: community initiative and participation; sustainability and succession planning; democratic

governance and integrity; social, economic, cultural, educational and environmental impact; gender equity; and youth involvement (see http://michaelmanley.org/projects/#2). On August 1, each year, following the screening of a video documentary about short-listed candidate projects and communities, a winner is announced.

Using this information for guidance my aim became to locate communities which met two basic criteria – (a) they were involved in self- reliance projects and (b), their projects highlighted the issues of climate change, food security or pre- disaster recovery. This yielded a small number of candidate sites for in depth study. A meagre handful of communities qualified with self- reliance projects, fewer yet, were engaged in pre-disaster recovery, climate change or food security projects. The task now was choosing participants who were willing to participate in my research journey.

Reflecting to a conference on sustainable development I had attended in May 2012, in Kingston, Jamaica, titled "Globalization, Climate Change and Rural Resilience: The Challenge of Sustainable Development in the Caribbean and Beyond", I realized I had already been introduced to communities which were building resilience to climate change. I also realized that there were communities short-listed in the self- reliance project who were also participants at the sustainable development conference. The common denominator of communities that became the poster children for resilience was the extent to which they made use of local social capital. This triggered the third research question.

Research Question 3: How do communities utilize or fail to utilize social capital in their disaster coping strategies to ensure food system security during repeated encounters with natural hazards, therefore building community resilience?

By 2014, I had settled on the communities I wanted to observe and the research questions I wanted answered. The communities however, were spatially distant from each other so that visiting them and interacting with their members regularly became costly and time consuming. It took hours of traversing less than favorable road networks to access the communities and all of them held their community meetings after regular work hours. Most of my focus group interactions were therefore done late in the evening during or after a community meeting.

To improve the level of contacts I resorted to corresponding by Skype or emails and became an active "friend" on the communities' social media sites. Through these mediums I was able to keep abreast of the results of community meetings and initiatives. Two of the three study communities have active social media sites. On one Face Book site, narratives of participants who were no longer living in the community but who kept in touch with it, underlined the nostalgic pull it exerted on the diasporic members. They reminisced about the sacred meanings they ascribed to the role of these communities in their formative years and the deep rooted sense of belonging they still feel to the place even though they no longer lived there. Utterances like "You can count on me for help" showed these members' willingness to support community projects. Influenced by these comments I began to interrogate concepts of place attachment and "placelessness" in the study's final research question.

Research Question 4: What is the role of place attachment in building social connection for food system security and hazards management in community pre-disaster planning?

Qualitative Mixed Methods Research

The qualitative data collection process was extensive and drew on multiple types of information including direct and participant observations, semi-structured interviews, archival records, documents and audio-visual materials. Study communities and major institutional actors in the Jamaican agricultural economy were included as well as official documents and newspaper reports that addressed the study topics. A holistic analysis of the data was conducted using Atlas ti 7 software programme. Investigations were conducted in two phases over a two and a half year period (see Table 2).

Phase 1 was a scoping inquiry involving a limited number of communities and participants in focus group discussions and semi-structured interviews. This inquiry refined and sharpened the questions that were asked of a much larger number of participants in Phase 2. The interim objective was to assemble a detailed description of issues, themes, outcomes and interpretations pertinent to improving community health by incorporating food security into pre-disaster recovery planning.

Table 2

Qualitative Methods Employed in the two phases of Data Collection

Methods Phase I					
Communities	**Semi-structured interviews**	**Focus group**	**PLA Techniques**	**Archival Research**	**Content Analysis**
Port Royal	X				
Long Bay		X			
Manchioneal		X			
Leith Hall		X			
Methods- Phase II					
Communities	**Semi-structured interviews**	**Focus group**	**PLA Techniques**	**Archival Research**	**Content Analysis**
Trench Town		X	X		
Jeffrey Town		X	X		
Prospect		X			
Economic Sector	**Semi-structured interviews**	**Focus group**	**PLA Techniques**	**Archival Research**	**Content Analysis**
GraceKennedy and Company Limited	X				
Wisynco Group Limited	X				

Civil Society Group – NGOs, CBOs, INGOs	**Semi-structured interviews**	**Focus group**	**PLA Techniques**	**Archival Research**	**Content Analysis**
Agency for Inner-City Renewal	X				
UWI climate research focus group	X				
The Jamaica Red Cross	X				
The Inter-American Institute for Cooperation on Agriculture (IICA)	X				
Caribbean Agricultural Research and Development Institute (CARDI)	X				
Help Age International	X				
UNDP	X				
USAID – ACDI/VOCA	X				
Consultants on Jamaica food and nutrition security policy	X				
Rural Agricultural Development Authority	X				
Office of Disaster Preparedness and Emergency Management (ODPEM)	X				
Hurricane Sandy Secretariat	X				

Ministry of Water, Land, Environment and Climate Change	X				
Planning Institute of Jamaica	X				
Rural and Physical Planning Department	X				
Meteorological Office of Jamaica	X				
Documents	**Semi-structured interviews**	**Focus group**	**PLA Techniques**	**Archival Research**	**Content Analysis**
Hansard, The Parliament-Jamaica				X	
Major newspapers in Jamaica – The Gleaner and the Jamaica Observer				X	
The national plan – Vision2030 Jamaica					X
Jamaica National Food and Nutrition Security Policy Draft 2012					X
Community audio-visual texts					X

Research participants. Plans for the study underwent a series of changes between initial scoping inquiries and final formulation. These affected the list of participants as shown in Tables 2, 3, and 4.

In 2012, I initially anticipated focusing on urban based food security issues in Jamaica because the Ministry of Agriculture there was implementing a major backyard gardens project funded by UN's Food and Agricultural Organization and evaluating efforts to strengthen farmers markets across the island including the urban areas. At the time I intended to explore the possibility of developing a "food hub"[4] as a way of improving food system security. Anticipated participants in the proposed study included (a) three (3) communities (two urban and one rural); (b) four (4) organizations representing the corporate food conglomerates and major importers and exporters of food; (c) four (4) civil society groups influential in pre-disaster planning for post-disaster recovery; and (5) two (2) senior civil servants who were policy analysts and who represented government programs and policies in relation to food security and hazards management (see Table 3). After receiving approval from Rutgers Institutional Review Board, I contacted each proposed participant by telephone and sent them letters of introduction and consent sheets; reinforced where necessary by follow up telephone conversations.

[4] The term "food hub" is a dynamic concept across diverse communities. It generally describes a market that "facilitates the aggregation, storage, processing, distribution, and/or marketing of locally or regionally produced food products" Barham, James. (2011. 6)"Regional food hubs: Understanding the scope and scale of food hub operations." *Washington, DC: USDA AMS*.

Table 3

Originally Proposed Participants

Communities	**Economic Sector**	**Civil Society Group**	**Government**
2 urban and 1 rural*	Jamaica owned food conglomerates that export Jamaican produced food	NGOs; CBOs (inclusive of grassroots organization)	Food and Security Policy for Jamaica Steering Committee representatives preferably:-
Port Royal Trench Town Claverty*	GraceKennedy and Company Limited Foods Lasco Jamaica Jamaica Broilers Private Sector Organization of Jamaica (PSOJ) representatives	Agency for Inner-City Renewal (in Trench Town) Office of Disaster Planning and Emergency Management - ODPEM (the director preferably) The Adventist Disaster Relief Agency - ADRA (the director preferably) Representatives from Academia	Chief policy maker in the Ministry of Agriculture and Fisheries (MoAF) Permanent Secretary in the MoAF who is the Chief Public official with responsibility for implementation of policies (inclusive of the food and nutrition policy) in the country.

The participant list was subsequently modified in light of my attendance at an international conference on "Globalization, Climate Change and Rural Resilience," hosted in Jamaica's capital city, Kingston. During the three day meeting, I was able to network with a number of local climate change advocates and policy makers as well as with representatives of academia, communities involved in aspects of hazards management and the Ministry of Agriculture and Fisheries. A broader perspective on

Jamaica's food security and pre-disaster recovery processes began to emerge and with it a prospective list of new participants. This was finalized during the summer of 2013 when I went back to Jamaica to conduct preliminary field research funded by a Pre-Dissertation grant from the Rutgers Graduate School through the Department of Geography (see Table 3).

Once in the field and undertaking scoping activities, it was discovered that one of the original three communities would not be accessible and a number of the originally proposed organizations were unwilling to participate in the study. Furthermore, Hurricane Sandy had devastated the eastern section of the island in 2012 thus creating an opportunity to gather current, up-to-date data from participants with fresh memories and who were eager to tell their stories.

During the preliminary fieldwork I conducted semi-structured interviews and focus groups, attended national and local agricultural shows/expos, joined in community disaster management meetings, economic empowerment workshops, neighborhood watch gatherings, trade fairs, and academic conferences and participated in the government's food and security policy consultation meetings. These experiences helped to refine the original research questions.

Table 4

Revised Participants' after Scoping Exercise

Communities	Economic Sector	Civil Society Group	Government
2 urban and 3 rural*	Jamaica owned food conglomerates that export Jamaican produced food or/and hold major franchises within the global food system which is imported to Jamaica	NGOs; CBOs (inclusive of grassroots organization)	Food and Nutrition Security Policy for Jamaica National Steering Committee representatives inclusive of a consultant to the government
Port Royal Trench Town Long Bay* Manchioneal* Leith Hall* Corner store owner Farmers Community Focus group Parish disaster-coordinators ***rural communities impacted by Hurricane Sandy**	Grace Kennedy and Company Limited Foods (senior representatives) Wisynco Group Limited (senior representatives)	Representatives of Agency for Inner-City Renewal (AIR-(Trench Town) An Academic representative of the UWI climate research focus group Senior representatives of The Jamaica Red Cross A senior representative of the Inter-American Institute for Cooperation on Agriculture (IICA) Senior representatives of Help Age International Senior representatives of USAID – ACDI/VOCA	Senior representatives of the Economic and Policy Development Unit of the Ministry of Agriculture and Fisheries (MoAF) Consultants on Jamaica food and nutrition security policy Representatives of the Rural Agricultural Development Authority Representatives of the Office of Disaster Preparedness and Emergency Management (ODPEM) Senior representatives of the Hurricane Sandy Secretariat Senior representative of the Praedal Larceny Unit of the MoAF

In the academic year 2014/15, I returned to Jamaica with the intention of completing intensive fieldwork. There were now two rural case study communities and one urban; the urban site of Port Royal had been dropped from the list and the rural sites were different both from the ones originally selected and others considered during the scoping fieldwork of 2013. The research participants' table was finalized (see Table 5) to reflect both the continuum of preparedness exhibited on the island and the nuanced approaches of communities seeking better health outcomes. Concepts of place attachment and social capital were now built into a research plan that foregrounded food security as a central pillar on which to build pre-disaster recovery plans.

Table 5

Finalized Participants

Communities	**Economic Sector**	**Civil Society Group**	**Government**
1 urban and 2 rural*	Jamaica owned food conglomerates that export Jamaican produced food or/and hold major franchises within the global food system which is imported to Jamaica	NGOs; CBOs (inclusive of grassroots organization)	Food and Nutrition Security Policy for Jamaica National Steering Committee representatives inclusive of a consultant to the government
Trench Town Prospect* Jeffrey Town*	Grace Kennedy and Company Limited Foods (senior representatives) Wisynco Group Limited (senior representatives)	Representatives of Agency for Inner-City Renewal (AIR-(Trench Town) An Academic representative of the UWI climate research focus group Senior representatives of The Jamaica Red Cross A senior representative of the Inter-American Institute for Cooperation on Agriculture (IICA) Senior Representative of Caribbean Agricultural Research and Development Institute (CARDI) Senior representatives of	Senior representatives of the Economic and Policy Development Unit of the Ministry of Agriculture and Fisheries (MoAF) Consultants on Jamaica food and nutrition security policy Representatives of the Rural Agricultural Development Authority Representatives of the Office of Disaster Preparedness and Emergency Management (ODPEM) Senior representatives of the Hurricane Sandy Secretariat Senior representatives of the Ministry of Water, Land, Environment and Climate Change Senior representative of the Jamaica Vision 2030 Project Senior representatives of the Planning Institute of Jamaica Senior representatives of Rural and Physical Planning Department Senior representative of the Meteorological Office of Jamaica

Help Age International	Senior representative of the Praedal Larceny Unit of the MoAF
Senior representatives of UNDP	Senior representative of the Climate Insurance Unit of the MoAF Senior Advisors to the Minister of Agriculture of Fisheries
Senior representatives of USAID – ACDI/VOCA	

In the end a total of twenty - five (25) persons participated in semi- structured interviews; these include twelve (12) representing government agencies, ten (10) persons representing civil society groups, and three (3) persons representing the economic sector. In addition, eighty (80) persons, representing all the community members from the scoping stage of the research to the final three communities, participated in focus group discussions – one focus group per community.

I also employed a variety of other qualitative methods and methodology to collect and analyze additional evidence. Chief among these were participatory learning action (PLA) techniques namely, hazard assessment analysis and Network Dynamics. A wide range of documentary sources were also investigated including: print and audio-visual materials retrieved from the communities; archival materials retrieved from Jamaica's two major newspapers and Hansard proceedings (Parliamentary debates) as well as content analysis of policy documents from government agencies with food security, climate change and disaster risk management mandates (for example, the Office of Disaster Preparedness and Emergency Management (ODPEM), the Planning Institute of

Jamaica, the Ministry of Agriculture and Fisheries , and the Ministry of Water, Land, Environment and Climate Change).

Focus group discussions. A focus group is a data collection technique used to probe the collective thinking of multiple participants, sharing specific characteristics and experiences germane to a research topic. Geographers have used focus group methods in hazards management and other research. Zeigler, Brunn, and Johnson (1996) for example used this method to investigate people's responses to emergency procedures during Hurricane Andrew. Their findings were used to contribute to subsequent disaster plans. The research literature suggests that focus groups should not be fewer than 6 persons but no greater than 10 (Cameron, 2010, p. 152), or 11 persons (Harrell & Bradley, 2009, p. 81). I served as moderator/facilitator and note taker. Given that I had to pay close attention to what participants were saying and to monitor the mood of the group, extensive notes were not taken. However, all sessions were audio-taped after receiving permission from the group and consistent with standard procedures approved by the Rutgers Institutional Review Board. The average size of the focus groups was 11 persons.

Early in the research proposal I envisioned the focus group as the main method used to collect data from local residents. This method provided primary data from community participants about their food security strategies and hazard coping mechanisms. It also permitted local residents to scrutinize perceptions of food security that were identified in the semi-structured interviews with other informants. This was particularly important because participants in the semi-structured interviews were mainly

policy makers or power brokers whereas the community members were most likely the targets of policies based on these perceptions.

The focus group technique does not produce data suitable for statistical analysis but has the advantage of stimulating interaction among group members thereby generating more information than other research methods (Berg, 2004; Cameron, 2010; Harrell & Bradley, 2009). Through this medium, meanings attached to situations and issues were re-worked as community members are given the opportunity to learn from each other and to re-think their understanding and interpretation of their social and economic issues. This was an insightful process not just for the researcher but the participants. Furthermore, the focus group participants become integral to the process of knowledge creation and co-partners with experts in the overall production of knowledge. As the researcher, there were moments when I had to refine and re-phrase the questions being asked as I was led to explore new directions based on the responses and insights being gathered from the dynamic group discussions.

I soon realized that allowing each participant to express his/her view can create a moment of insightful tension, especially when it is different from the majority view. This was well illustrated on one occasion when participants were speaking about the role of the Red Cross Jamaica in their community and the mechanism used by the organization to distribute emergency food. One female participant unexpectedly got up and declared that she would not continue to participate if persons insisted on “prettying up things”. This created a tense and disruptive moment when everyone began to shout in agreement or disagreement with the statement. I had to bring the discussion under control and institute rules on how to handle disagreements, which I had not previously done because

they had been thought unnecessary. No one left the meeting but the mood changed for the better as some persons felt they now had permission to speak more freely than anticipated.

As early as May 2012, I realized that there were layers of gatekeepers to penetrate before getting access to my study communities. I also realized that the process would take a long while and much negotiation. I therefore made early contact with the government entity responsible for disaster planning on the island, the Office of Disaster Preparedness and Emergency Management (ODPEM). My aim was to locate urban communities that were actively involved in pre-disaster recovery activities and at the same time involved in food security projects. ODPEM's organization structure included community based disaster groups across the island. Developing a relationship with ODPEM so as to gain entrance to these communities was of utmost importance.

In summer, 2013, ODPEM arranged entrance for me into the various communities through its parish disaster coordinators. By means of emails and later telephone contacts, ODPEM representatives introduced me to the parish disaster coordinators who were advised to "accommodate" my research in their communities. With this general approval, my initial access to various communities was smooth for the most part. However, the focus group for each community would be limited to persons who were members of the community disaster preparedness committees. This proved to be very useful as these members represented a wide cross section of community interests – farmers, women's group, church groups, school groups and other non- profit groups. However, as new research questions emerged the focus groups also shifted. For the three

communities that were chosen as case studies, one of the focus groups in a rural community was convened through the Rural Agricultural Development Agency (RADA).

The focus group for the other rural community consisted of community initiated farmers' association that was also responsible for hazards management projects within the community. The urban focus group was organized through a community based organization that mobilized public action around the theme of community development. Though the mandate of each focus group was different, all groups engaged issues of hazards management and food security in their communities. The venue for each focus group meeting was decided by the community and group sessions lasted on average 90 minutes. I had one focus group meeting with each of the communities in the scoping stages of this research. I had at least two formal meetings with the groups in the three case study communities and a number of informal meetings with members of these focus groups over the period of data collection. The informal meetings were mainly for clarity after the discussion ended or sometimes after the transcription process had ended.

Before conducting the focus group discussions, thought was given to wording and sequencing of questions as well as the number of questions to the asked. An interview schedule with probing questions was devised which would be used to guide the discussion as well as the semi-structured interviews which preceded the focus groups. This allowed for standardized questions across all focus groups but did not preclude insights from one group being introduced in the discussion with other groups. The schedule was divided into sections organized around themes from A-H. The sections focused on the role of social capital and place attachment as tools for building differentiated resilience approaches to natural hazards and food insecurity to ensure

community health. The structure and content of the interview guide were heavily influenced by the Social Capital Community Benchmark Study 2000[5] (SCCBS) survey instrument emanating from the John F. Kennedy School of Government, Harvard University, and Shmuel Shamai's (1991) empirical measurement of a sense of place.

The SCCBS survey instrument foregrounded the concept of social capital as conceptualized by Robert Putnam, Malkin Professor of Public Policy at Harvard University. The concept espouses social capital as "community connectedness" and explores the social networks and norms of reciprocity that emerge from these networks (Putnam, 2000, p. 18). The interview guide therefore benefitted from questions considered most effective at measuring 'key dimensions of social capital' (SCCBS, 2002.2). Shamai's (1991, p. 348) sense of place measurement scale was greatly influenced by Relph's (1976, p. 4) proposition that place attachment "should be probed 'by examining the links between place and the phenomenological foundations of geography"'. Emphasis was placed on the long and deep experience that people have of place, combined with properties of place such as location, landscape, myths, rituals and personal involvement.

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[5] In an unprecedented partnership with some three-dozen U.S. community foundations, Sanguaro Civic Seminar conducted the 2000 Social Capital Community Benchmark Survey, the largest measurement of social capital ever. 30,000 respondents were polled across 41 communities, covering all parts of the U.S.A, and ranging from tiny towns to sprawling metropolises. This survey was developed in consultation with a Scientific Advisory Council comprised of some of the best social scientists in the U.S.A. For more information on the survey, survey instrument, and results, see: http://www.ksg.harvard.edu/saguaro/communitysurvey

Section A, a general section, sought to retrieve demographic information in an attempt to ensure that participants were bona fide community members. Section B solicited responses aimed at understanding the types of hazards that the communities face and to understand the degree of interruptions and effects of these hazards on the various elements of food security, in particular access to and availability of food. Section C focused on adaptation and coping mechanisms employed by the communities as they engage the pre- and post-disaster planning processes to build community health and resilience. Questions geared towards understanding perceptions of place attachment, sense of belonging and meaning ascribed to place were placed in Section D, while issues related to volunteerism and trust were placed in Sections E and F respectively. A further section (G) was created that synthesized and focused all the concepts on mechanisms of pre-disaster planning for "Building Community Health". Finally, Section H focused on food security perception especially during and after a hazard event.

Analysis of focus group discussions proved to be tedious and time consuming but it allowed for a reliving of the moments of enlightenment and general familiarization with a rich data set. A preliminary transcription was done within the week of data collection. Though the literature advises researchers to transcribe and undertake preliminary analysis of each focus group directly after, or within a few hours of, the meeting, I found this to be impossible. My communities were far apart and during the period of data collection, I was involved in a number of activities simultaneously based on the availability of the willing participants. I therefore used Sundays for detailed transcription – all day. However, each evening I did preliminary transcription for the purpose of identifying the general trend of the responses. Over time, themes were

identified and recorded at the top of each interview sheet, preliminary codes were devised and placed in the margin of each sheet, and key quotations were highlighted and colour-coded. The transcripts were then uploaded to Atlas Ti 7 where more detailed codes and themes were identified and further analysis done.

There was no significant difference in the gender composition of the participants at the community level en bloc, apart from the fact that the parish disaster coordinators were all females. However, the urban community had disproportionately more females than males while the rural communities had slightly more males than females. Urban focus group participants were more likely to be college educated than their rural counterparts. A majority of rural participants were middle aged but most of the urban participants were young persons.

The main constraint on attendance at focus group meetings was the cost of traveling to them, sometimes over considerable distances on winding and dangerous rocky terrain. This however, did not prevent the community members in the rural sites from participating, as many walked for over three miles to get to the focus group sites.

Semi-structured interviews. The aim of semi-structured interviews is to obtain points of view, reflections and observations of people who have specialized knowledge or information that the researcher cannot easily obtain elsewhere (see http://ernwaca.org/panaf/RQ/en/interview.php). These interviews generally necessitated using an interview guide (see Appendix A) organized around flexible but ordered questions and allowing all participants to be asked "the same questions within a flexible framework" (Dearnley, 2005, p. 22). In preparation for the interview, a single interview

schedule was prepared with eight sections, A - H. This interview schedule was also employed to guide focus group discussions.

Questions from Sections A to H were designed to be answered by members of the urban and rural communities through focus group discussions (discussed in 2.2.ii), while Section H was geared towards the other participants in the study – civil society groups, economic groups and the government ministries using semi-structured interviews. Section H which consisted of questions about perceptions of food security in general and food insecurity during a hurricane, completed the interview schedule.

This semi-structured mode of interviewing is widely used in social science research as an effective and even efficient way of gathering primary data in the field (Crang, 2003; Crang, 2002; Longhurst, 2010). Semi-structured interviews allow for an ordered structure that ensures comparability across cases and all interviews while simultaneously allowing for open-ended answers and the freedom to pursue new leads or avenues of exploration as they emerge (Berg, 2004; Creswell, 2007; Dunn, 2010. They also promote a relatively informal atmosphere. My interviews were frequently interrupted by telephone calls and other interventions. For example, while I was conducting one of the longer interviews the nation's eyes were glued to the televised 2013 World Athletics Championship streaming live from Moscow. Jamaican athletes were defending titles as the world's fastest male and female. When the Jamaican athletes won their events the interview was placed on an extended pause to allow for participation in office celebrations. This kind of flexibility allows for rapport between the interviewer and the interviewee and permits the interviewee to lead the process, thus increasing-the potential for high response validity.

The less than rigid format of the interview also permitted acceptable diversity in response to a variety of constraints encountered in the field, because the interviewer does not have to adhere to a detailed interview guide (Kajornboon, 2005; Harrell & Bradley, 2009; Jeffers, 2011). As the name suggests the interview schedule acts as a guide. This flexibility allowed me the opportunity to further prompt, probe, and follow interesting leads. As a result issues not within the original question design were explored and an unforeseen path to new sources of data (for example new participants) was forged.

One hundred and five (105) people participated in this study. The number of interviews was mainly constrained by the expense associated with traversing the distance to meet with respondents as well as synchronizing with the varying schedules of the experts I wished to interview. I attempted to recruit representatives from a wide cross-section of organizations because many entities in Jamaica play significant roles in community health, food system security and/disaster risk management. Conflicting schedules or absences of leave were the two main reasons for failure to interview everyone on the list of potential respondents. Some of the government agencies fielded more than one representative to compensate for the absence of a targeted expert. Some organizations that were approached during the summer months of 2013, declined to participate because their members were preoccupied with meeting fiscal deadlines at the end of the financial year. This was also a time when staff members were often away on family vacations. The following organizations were contacted through emails and telephone and, though they agreed to participate, the interviews never occurred.

1. College of Agriculture, Science and Education
2. The Kingston Wharves – representing the ports of Jamaica

3. The Salvation Army
4. The Adventist Disaster Relief Agency (ADRA)
5. The Food for the Poor
6. Caribbean Broilers
7. The Jamaica Broilers
8. Agro Investment Corporation

All of the interviewees from the economic sector of society were men in their forties and fifties but those from the government and civil society sectors were comprised of a mix of men and women, mostly under 30 years old and often recruited to senior positions from institutions of higher learning. Interviews varied in length from 47 minutes to close to two hours. Focus group discussions were on average 90 minutes. In total the interviews and focus group discussions yielded over forty hours of audio recording.

All interview transcripts were imported into Atlas Ti 7 which facilitated the coding process. Atlas Ti 7 provided a variety of tools for coding, sorting and retrieving written and audio data that allowed for two phases of analysis to be conducted. The first phase was a descriptive analysis that permitted exploration of the data to detect prominent themes and begin coding. As shown in Appendix B, 32 codes were identified and placed in an initial Code Book. Phase two of the analysis included further refinement of the data organized to address the formal research questions. A more detailed coding list then emerged as seen in Appendix C containing over 1,000 codes with further refinement of the Code Book. The query tool and the co-occurrence tools were used to identify patterns and relationships pertinent to interpreting the data (Friese, 2014).

Participatory Learning and Action (PLA). Initially, I intended to make extensive use of PLA data gathering techniques but, in the end, these were used sparingly. PLA methods have been popular in research on community development because they are designed to safeguard and honor the lived experience, knowledge and active voice of participants. They create space for deliberation and collaboration among people at the grass roots, thereby fostering a bottom-up approach to data gathering (Gibson-Graham, 1996, 2003; McClintock, 2011; Reason, 1994). PLA techniques are diverse, experimental and manifest in many different types of social science research including, among others: rural appraisal in agricultural development (Chevaliers & Buckles, 2013b; Chambers, 1994; Pretty 1995; feminist action research (Butler, 1990; Fine, 1994; Gatenby & Humphries, 2000) in critical geography; and community-based participatory research [CBPR] in public health (Minkler & Wallerstein, 2003). In community food planning the goal of equitable community participatory collaboration is prized by some researchers (Allen, 2010; Community Food Security Coalition, 2009; Pothukuchi & Kaufman, 2000).

My research proposal envisioned utilizing PLA techniques in what was ambitiously termed a "Joint Elaboration Workshop" (see Appendix D) format. This was to be a process-sharing exercise wherein the community participants would assist in all aspects of the workshop design, beginning with forming a team to formulate the objectives and execute the workshop. Three main PLA techniques were to be introduced to the participants, viz. concept mapping, SWOT analysis and the Chrice Matrix analytical tool (Chatty, Bass, & Fleig, 2003).

Once I started fieldwork in the communities it became clear that-the PLA workshop proposal was impractical. Four main reasons were identified. First, access to community members was not automatic or-simple; I had to go through layers of gatekeepers. Second, given the different scheduling conflicts, the focus group meetings would be accommodated after other scheduled meetings of the community groups. For the two rural communities, the focus group meetings took place after their farmers' association meetings. In one community the farmers' association meeting started at 6p.m. and thus my focus group meeting started after 8p.m. and had to adhere to strict time scheduling. For the other rural community the first group meeting was being facilitated between two important events – one, a meeting the farmers had with their extension officer at 9:00 a.m. and two, the delivery of water via a truck to the farmers. The latter event did not have a scheduled time excepting "any time after mid-day". The farmers though willing to participate in offering information were not willing to participate in using the more participatory techniques.

The urban community focus group meeting was held after two community empowerment classes that started at 5:30 p.m. and 7:30 p.m. respectively. The participants were however, willing to try the PLA techniques. Third, some community members felt the PLA techniques were time consuming and they should be rewarded for such in-depth participation. One community member noted that researchers were known to take the community ideas and "write books and get paid and the community didn't get any of the book money". As I was unsuccessful in securing funds for the field exercise, I was unable to compensate the participants, or to organize meeting times outside of those already scheduled.

Fourth, one community felt "over studied" and was suffering from 'research fatigue'. This community had participated in a number of studies hosted by local and overseas universities, local NGOs and CBOs and indicated they were doing me a favor. That favor, however, did not stretch into accommodating all the PLA techniques I proposed to use. At the individual semi-structured interview level, the participants were willing to participate in a traditional semi-structured interview, on a one on one basis however, as all the PLA techniques were geared to small group participation, I did not engage them in these PLA techniques.

Given the importance of PLA to community development processes, I went back to the literature to find PLA techniques that could be administered in a novel way taking into consideration the realities on the ground. I chose to alter my initial plans and to engage the communities in the hazards assessment analysis which would provide an overview on threats hindering food system security during a period of active event and the prospects for using a food security approach for pre-disaster planning in the future. I used Sections A- E of the interview schedule to inform the discussion surrounding the hazard assessment analysis. I also engaged the focus group participants in a novel approach to participatory action research called Network Dynamics. This is a flexible tool that encourages and supports participation. The technique began by defining a situation and listing the stakeholders involved. Participants were then asked to assess the network based on the extent to which they perceived each stakeholders' trust of the other stakeholders. Section F of the interview schedule was used to guide the Network Dynamics questions that were used.

With one exception research findings were shared with the communities to ensure that their voices were being represented accurately and fairly. One community member responded "it is very revealing and enlightened to see ourselves through someone else's eyes and also compared with a similar community" (email correspondence with participant, 2016). Another community participant stated "In all the years we have been studied, and we have been studied a lot, it is the first time, a researcher has brought us all together to have us hear from each other. Nobody has ever studied us as a group and have us talking about our issues and knowing what each other thinks. Nobody. Thank you".

Content analysis of published documents. It was important to understand the Government of Jamaica's (GoJ) policy position on food security and their level of commitment. Analysis was conducted on an array of policy documents issued by the following agencies that share mandates related to food security and climate: the Planning Institute of Jamaica, the Ministry of Agriculture and Fisheries, and the Ministry of Water, Land, Environment and Climate Change.

Content analysis was performed on the following two documents – Jamaica Food and Nutrition Security Policy -Draft 2012 (JFNS) and the Vision 2030 Jamaica: National Development Plan (Vision 2030 Jamaica). The draft Jamaica Food and Nutrition Security Policy and subsequent Action Plan provides information about strategies, actions and frameworks pertinent to food security while Vision 2030 Jamaica outlines the national development plan and strategic framework that is intended to provide overall guidance of the country's future development to the year 2030. It outlines the short and medium tern socio-economic policies and programs that will facilitate the development process. The major aim of the content analysis was to examine government's approach to hazards

management given the heighted awareness of the challenges climate change will present to the country. Furthermore, I wanted to ascertain the link between community disaster management and food security.

A basic frequency count of the following key words and phrases confirmed my suspicion that food security was not being directly incorporated into community pre-disaster recovery planning strategies – "food security", "disaster management", "hazards risk reduction", "climate change" and "community based approaches to disaster preparedness". There were 99 hits for food security, with the draft JFNS policy accounting for 78 occurrences of the term, and the Vision 2030 Jamaica, 21. Hazard risk reduction and disaster management were mentioned in total 5 times in the food and nutrition security policy document. Hazard risk reduction was mentioned 111 times while disaster management 72 times in the Vision 2030 Jamaica document. Climate change scored 36 hits in the draft JFNS policy document and 97 in the Vision 2030 Jamaica document. However when an analysis was done to see the relationship between food security and community based approaches to hazards risk reduction there was only one reference in the draft JFNS document that was specific to community based approach to hazards risk reduction, while the Vision2030 document had two. There was however, no direct or overt association of hazard risk management, community based approaches and food security. *In other words, a food security approach to community based hazards management was not considered.*

Policy documents at the Office of Disaster Preparedness and Emergency Management (ODPEM) were also consulted. Prior to 1980 and the establishment of a dedicated agency for disaster preparedness (Office of Disaster Preparedness and

Emergency Relief Coordination (ODIPERC, now ODPEM) Jamaica's disaster management initiatives were focused entirely on the relief/recovery/rehabilitation phase of the disaster risk management cycle, except for the agricultural sector where a number of soil conservation initiatives inadvertently spawned disaster mitigation measures, especially in relation to landslide and flooding. The establishment of ODPEM heralded a gradual trend towards more comprehensive disaster management planning, encompassing all stages of the disaster management cycle, albeit at the macro (national) level (Spence, 2009). No comprehensive study has been attempted at the community or individual scales to ascertain the impact of natural hazards on food security in Jamaica, and though ODPEM has the mandate to oversee and guide Jamaica's hazards management, food security is not factored into its operations and is not seen as an integral part of the pre-disaster or post disaster recovery planning. Distributing emergency food is however shared with a number of NGOs across the island, chiefly the Jamaica Red Cross and Food for the Poor, as well as a few economic organizations who view emergency food supply as a part of their corporate social responsibility.

I conducted a search of ODPEM's archives and it consisted mainly of photographs and early earthquake records. Early climate related data which were normally kept by the Meteorological Service, Jamaica were destroyed in a fire in 1992. Records on the number of hurricanes that impacted Jamaica were available as well as documents outlining the legal, governance and institutional framework guiding disaster management at the various levels of government and for selected communities. There was no record pertaining to food security in relation to hazards management.

Two of the three case study communities provided documents and audio-visual materials for analysis. The documents included minutes of community meetings, newspaper reports of community events; grant proposal submissions to donors, community development plans, journal articles on the community as well as You Tube and other online video recordings of community activities. I read or viewed each document and manually extracted information based on a coding system I had already devised for other documents using the Atlas Ti.7 software. Some of these documents were only accessible at the community site and thus I did not subject them to the rigor of the software content analysis. I took copious notes on the videos.

Archival Sources - Historical Food Security and Natural Hazards Patterns in Jamaica

Email contact was made with a few archivists outlining my research interests and seeking permission to access archival data that would be relevant to my research topic. All the archivists expressed appreciation for being considered as not many researchers seek their assistance. The rules of the archives and costs for engaging their services were outlined and I was invited to their individual offices. The newspaper archives were for the most part in electronic format.

Otherwise, large bounded documents were kept in date order and had to be retrieved by a library assistant. The parliamentary documents on the other hand were not digitized and could not be handled by the public at any time. All requests with relevant search terms had to be made at least two days in advance. When the search was completed, I was notified of the number of ‘possible hits’ and asked if copies were to be made available at a cost, before being invited to visit the archives. The Office of Disaster

Preparedness and Emergency Management had their archival materials digitized and I was allowed to query their database at no cost.

A historical approach based on the study of primary documents is one of the oldest forms of qualitative techniques used by geographers (Roche, 2010, p. 173). A historic review of attempts at ensuring food security especially during periods of natural hazards did not produce any data for the research sites. However, throughout the semi-structured interview sessions and the focus group discussions some oral history was attained from the participants on which to infer the historicity of food security concerns in general within the communities and food security as a function of disaster risk reduction since the 1970s. A number of participants, especially the older ones, tried to compare their experiences in Hurricane Flora of 1944 and Hurricane Charlie of 1951 with later Hurricanes – Ivan of 2004 and Hurricane Sandy of 2012. Hurricanes Flora (1944) and Charlie (1951) are the only two hurricanes prior to Hurricane Gilbert (1988) any living Jamaican would have experienced; Charlie made a direct hit. Hurricane Gilbert was the first hurricane that all Jamaicans who were born after the mid-1940s might have experienced. Many older Jamaicans would reprimand youths with the saying "young bird don't know storm". After 2001, the island experienced at least 10 hurricanes thus putting in question the validity of that proverb. In recognition of the critical role of agriculture in Jamaica's sustainable development, this sector has for decades been the perpetual focus of national as well as international interventions for hazard/disaster risk reduction (Planning Institute of Jamaica, 2007, 2013; Spence, 2009).

There are two official national newspapers with island- wide distribution, *The Gleaner* and the *Jamaica Observer*. An initial online search of the archives of The

Gleaner was carried out. Its online archive is incomplete although it boasts searchable digital records from as early as 1834, thus making it the oldest Jamaican and Caribbean newspaper. During the summer of 2014, I met with the archivists of The *Gleaner* and as a paid subscriber I was afforded the privilege of her assistance in doing the necessary archival search. The following terms were used to generate the data "food security", "eat Jamaican", "disaster and emergency food" "eat what we grow", "food shortage and hurricane"; though over 2,000 hits were made only 78 were highly relevant. The search produced results clustered in four main time frames 1973-75; 1988; 2004 and then 2006-2008. The *Jamaica Observer*, the other national newspaper, was established in 1993 and therefore had took brief a history to yield much usable data. To supplement the newspaper archival search, I also requested a search of the Jamaican parliamentary proceedings, called the Hansard. The Hansard is the traditional name given to the transcripts of parliamentary debates in the legislative arm of the Jamaican government.

I requested parliamentary proceedings from the 1970s. The first world food crisis occurred in the 1970s which coincided with Jamaica's engagement with democratic socialism and notions of self- reliance. I also requested documents for every year Jamaica had experienced a hurricane or prolonged drought in which food shortage was identified as an issue. The Hansard materials are not online and are not directly available to the public. An archivist had to manually search piles of bound documents, after were services paid for in full. This was a tiring and tedious process that did not yield much useable information. One exception was the first Food and Nutrition Policy drafted in Jamaica in 1974 that was propelled by the contemporaneous global economic and food crises. This came on the heels of the first oil price shock of 1973-74. There were also entries

pertaining to Jamaica's need to be self- reliant through an agricultural campaign that encouraged the population to eat locally grown produce.

The Government of Jamaica (GoJ) began a massive land leasing project to stimulate local agriculture and announced an Emergency Production Plan. Again, in 2003 there was an entry from the Minister of Agriculture at the launch of the "Grow What We Eat, Eat What We Grow" campaign. This campaign was motivated by the staggering food import bill which at the time stood at US$ 400 million per annum. The goal was to promote locally grown food as a healthy alternative to imported products. It was not until 2009 that the notion of food security appeared in Parliament, again after the second world food crisis severely curtailed food imports Tropical Storm Gustav (2008) inflicted damage to the agricultural sector estimated at $1,678.3 million.

By November 2013 the "Eat Jamaica" campaign was launched to strengthen, promotion and support local agriculture as well as to curtail imports that had reached US$ 1 billion per annum. The search did not unearth any entry that linked Jamaica's food security campaigns to pre-disaster planning, even though it was recognized that climate change impacted grain markets.

Conclusion – Methodological Limitations of the Study

Consistent long time series quantitative data about Jamaica's food economy would significantly improve this study but do not exist. For example, we do not know what proportion of the population is food insecure nor do we know the severity of such insecurity during a hazard event. Data about crop types and farming input exist, but not about community nutrition. Furthermore, systematic comparative data about levels of production by individual farmers during periods when hazards are present and absent is

not available. Nor do we know how food is distributed in households during these periods. Data about the financial and monetary costs of a food security approach to hazards management is also unknown.

This research would have also benefited significantly from the use of ethnographic methods to capture institutional arrangements through which society–environment relations are governed in relation to ensure food system security through the disaster cycle. A more comprehensive study might also have made good use of Geographic Information System (GIS) techniques. Being able to spatially analyze food access in relation to road and transportation networks and distances from markets and the associated costs of getting people to food and food to people is worthy of study. Such information would clarify the challenges faced by rural communities as they seek to take account of the multi-sector demands that constrain adjustments to hazards. This sort of understanding is pertinent for any community that seeks to implement pre-disaster recovery plans.

Costs of data collection exerted limitations on the research. I was privileged to have received funding for the scoping phase of my dissertation, however, the actual research phase suffered from lack of funding. Without funding I could not independently convene meetings in comfortable settings, but had to depend on the generous accommodation of community leaders who allowed me to piggy-back on their meetings. This restricted the amount of time that data were collected. Late evening after 8 o'clock was not always the best time to gather data because some participants were by then tired and hungry. This had a disproportionate effect on the women who needed to attend to home and childcare duties.

Finally, a number of key organizations refused to participate in the study, while, others like the Food for the Poor, the largest provider of emergency food and welfare on the island, could not find the time to participate. Their contribution would have enhanced our understanding of institutional capacity and institutional constraints, and thus the feasibility of incorporating food security concerns in community wide pre-disaster recovery plans.

These deficiencies imposes serious limitations on the research. On the other hand the data that were collected about people's experience of food security during a hazard event were unmatched and would – if systematically collected in future - be invaluable for guiding pre-disaster recovery planning activities intended to improve community health.

Chapter 4

Understanding National and Local Contexts - The Study Area

Introduction

Jamaica is a small island developing state in the Caribbean Sea located at latitude 18º 15´ North and longitude 77º 30´ West (see Figure 5). It is a unitary state that is divided into fourteen parishes administratively as seen in Table 6. Each parish is grouped into one of three counties which boast more historic than functional administrative significance. The two rural communities chosen for this research, Prospect in Manchester and Jeffrey Town in St. Mary are in the county of Middlesex. Trench Town, the Kingston urban case study community is in the county of Surrey. Though all the communities have many similarities, and their inhabitants share a common love for Jamaica, their capacities for resilience are differently perceived and constructed. The degree to which they are representative of the range of community types in Jamaica cannot be ascertained with precision for the reasons which will be discussed next.

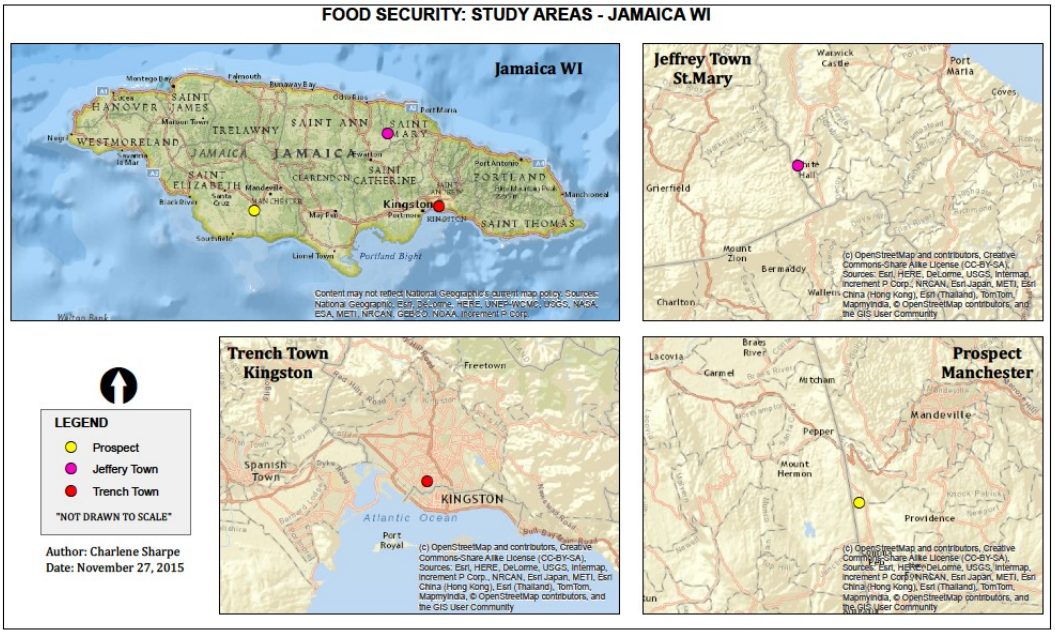

Figure 5. Location of Jamaica showing research sites and administrative parishes.

Compilation of community profiles is an on-going project being undertaken by the Jamaican government's Social Development Commission (SDC). Previously the parish of Manchester had begun a "visioning" exercise through its parish development committee and the SDC in 2003-2008. This was the first attempt to gather comprehensive community data that was parish-wide in scope and it spurred similar efforts elsewhere on the island. However, these are not fully comparable due to changes adopted as the process evolved. This means that focus groups may or may not be representative of their communities (see Table 6). This situation gives credence to the decision to adopt a qualitative rather than a quantitative analysis of evidence, though use is made of systematic statistical data where these are available. What follows is a gradual narrowing of the spatial scale of analysis beginning at the national scale.

Table 6

Administrative Divisions in Jamaica

	Parish	Area km²	Population Census 2011	Capital Town
Cornwall County				
1	Hanover	450.4	69,533	Lucea
2	Saint Elizabeth	1,212.4	150,205	Black River
3	Saint James	594.9	183,811	Montego Bay
4	Trelawny	874.6	75,164	Falmouth
5	Westmoreland	807.0	144,103	Savanna-la-Mar
Middlesex County				
6	Clarendon	1,196.3	245,103	May Pen
7	Manchester	830.1	189,797	Mandeville
8	Saint Ann	1,212.6	172,362	Saint Ann's Bay
9	Saint Catherine	1,192.4	516,218	Spanish Town
10	Saint Mary	610.5	113,615	Port Maria
Surrey County				
11	Kingston Parish[(1) (2)]	21.8	89,057	Kingston
12	Portland	814.0	81,744	Port Antonio
13	Saint Andrew[(1)]	430.7	573,369	Half Way Tree
14	Saint Thomas	742.8	93,902	Morant Bay
	Jamaica	10,991.0	2,697,983	**Kingston**

Source: Statistical Institute of Jamaica. Retrieved from https://en.wikipedia.org/wiki/Parishes_of_Jamaica

1. The parishes of Kingston and Saint Andrew together are referred to by Jamaicans as the 'corporate area' and are governed by a single parochial board called the Kingston and St. Andrew Corporation.
2. The parish of Kingston does not encompass all of the city of Kingston. Most of the city is in the parish of St. Andrew.

Food, Climate and Hazards in the National Context

Issues of food security within the context of climate change and natural hazards are now part of the Jamaican government's political agenda. Two recent reports have concluded that existing disaster risks will be exacerbated by projected climate changes and will pose a serious threat to the livelihood of communities throughout the Caribbean (Inter-American Development Bank, 2000; Simpson et al., 2012). The following changes are predicted:

- an increase in average atmospheric temperature;
- reduced average annual rainfall;
- increased Sea Surface Temperatures (SST); and
- the potential for an increase in the intensity of tropical storms.

In Jamaica hurricanes are also expected to increase and inflict annual average losses of US$100.0 million; a 500 year storm could top US$3.0 billion (25% of GDP)", (Planning Institute of Jamaica, 2012 [revised]). As a result of these changes key climate-sensitive sectors of the economy – agriculture and tourism – are likely to be seriously dislocated (Planning Institute of Jamaica, 2012 [revised]; McCalla, 2012).

Agriculture is a pillar of Jamaica's national development through contributions to GDP, employment, foreign exchange earnings and rural livelihoods (Simpson et al.,

2012). In 2009, for example, it contributed an estimated 5.6% of real gross domestic product (GDP) and employed 20% of the labour force (Planning Institute of Jamaica, 2012 [revised]. Climate change impacts are already being observed in the form of more pests and diseases and many extreme weather events, mainly hurricanes, which have destabilised the agricultural industry and caused declining productivity and crop damage (Simpson et al., 2012). Examples of losses from specific hurricane related events are provided in Table 7.

In addition, a 2005 survey of social and economic conditions in Jamaica, conducted by The Planning Institute of Jamaica (PIOJ), reported a downturn in agricultural production of 7.3 per cent as a result of hurricanes Ivan, Dennis, Emily, Tropical Storm Wilma and the drought of 2004/2005. The PIOJ further reported a decline in the production of non-traditional crops by 2.1 per cent, and 3.4 per cent for domestic crop production when compared with production in 2004. The fishing sector also reported a decline by 15.9 per cent from the previous year (Myers, 2006). In 2012, the agricultural sector showed promising performance, growing 6.5% in quarter 1, and 8.5% in quarter 2. Quarter 3 however, experienced a decline of 0.5% due to drought conditions.

Table 7

Estimates of Direct Loss to Domestic Crops Production

Hurricane/Storm	**Domestic Crops- Loss J$**
May 2002 Flooding	351 million
Hurricane Ivan	199 million
Hurricanes Dennis & Emily	112 million
Hurricane Wilma	206 million

Source: Adapted from Vassell (2009.22)

Jamaica's socio-economic context. Jamaica is a developing country with high levels of poverty, especially in rural areas. In the following summary, the condition of women – key figures in agricultural production - is highlighted.

Jamaica's population was estimated at approximately 2.7 million in 2010, with women accounting for 50.7%. Some 52% of the population reside in urban centres and an estimated 24.7% reside in and around the Kingston Metropolitan Region. The working age population (age 15-64) is 64.1% of the total population, 50.9% of whom are female, (Planning Institute of Jamaica, 2012.1 [Revised]). About 16.5% of the population live below the poverty line (2009). Most of the poor (61.0%) live in rural areas, are dependent on the agricultural sector, and are therefore disproportionately at risk to climate change impacts. Women accounted for 47.6% of the poor; 45.5% of households are female headed, about 30% of which have consumption expenditure below the poverty line, (Planning Institute of Jamaica, 2012.1 [Revised]).

With a total labour force of 1.25 million (2010), women account for about 43% of the employed work force, 20% of the agricultural labour force and about 26% of the production of domestic and export crops. Women are also recognized as the primary vendors of crops and are therefore most likely to be directly impacted by food security issues, (Planning Institute of Jamaica, 2012, p. 2 [Revised]). The majority of fisher-folk – about 70% – are men who are engaged in actual fishing, while the women are responsible for fish vending and the management of operations, including vending sites. Only 6% of registered fisher-folk are women, nevertheless they are often boat owners and active in fishing cooperatives, (Planning Institute of Jamaica, 2012, p. 2 [Revised]).

Even though Jamaica's Human Development Index (HDI) of 0.688 puts it among developing country with high human development, the level of poverty has been trending upwards over the past few years. The distribution of the employed poor by occupational groups shows that the largest share, 36.5%, are agricultural and fisheries workers, followed by elementary occupations (19.2%), (Planning Institute of Jamaica, 2012, p. 2 [Revised]). One in every five poor females is an agricultural labourer and one in every four is engaged in elementary occupations. These low wage occupations signal the particular vulnerability of the female-headed households that are typical of the communities studied in this research. (Planning Institute of Jamaica, 2012.2 [Revised])

Jamaica's disaster management/Climate Change Legislative framework. "The June 1979 Floods" provide a convenient starting point for assessing Jamaica's legislative responses to disaster. At that time a tropical depression deposited 34 inches of rain across western Jamaica in 24 hours. This event killed 42 people, affected 160,000 persons and caused US$60 million in damages. An effective relief effort was led by the Jamaican army and international relief agencies but the experience led officials to realize that better preparedness would have been more effective (Grove, 2013, p. 577). In addition natural hazards and disasters were now perceived as threats to national development that required organized responses.

In June, 1980, the Jamaican Parliament established the Office of Disaster Preparedness and Emergency Relief Coordination (ODIPERC) later called the Office of Disaster Preparedness and Emergency Management (ODPEM) following passage of the Disaster Preparedness and Emergency Management Act 1993. ODIPERC was one of the first civilian emergency management organizations to be established at a national scale

prior to the UN's initiatives during the International Decade for Natural Disaster Reduction in the 1990s (Grove, 2013). ODPEM's primary mandate is to "develop and implement policies and programmes to achieve and maintain an appropriate state of national and sectoral preparedness for coping with all emergency situations which may affect Jamaica" (Government of Jamaica, 1993, p. 4; Grove, 2013, p. 573). This early Act, which continues to be revised, never addressed issues of food security.

A legal framework has since developed that merges various plans, policies, legislation and regulations as a step toward mainstreaming disaster risk reduction and climate change throughout government operations. These include:

- Disaster Management Act 1993
- National Disaster Plan
- National Disaster Fund
- Institutional framework for Disaster Management
- National Hazard Mitigation Policy
- Guideline for National Disaster Relief policy
- Review of Disaster Management Act 1993
- Agricultural Disaster Risk Management Plan
- Vision2030 Jamaica
- Jamaica Food and Nutrition Security Plan 2012 (draft)

More recently a similar set of initiatives that address climate change have been identified for mainstreaming:

- Jamaica National Climate Change Policy and Action Plan
- Agricultural Land Use Policy

- Draft Food Nutrition Security Policy;
- Draft Fisheries Bill
- Draft Carbon Emissions Trading Policy
- Disaster Management Act 2009 (Draft)
- Draft Building Code (2012)
- Town and Country Planning Act
- Environmental Management Act
- The Meteorological Act
- National Renewable Energy Policy 2009 – 2030 …Creating a Sustainable Future (Draft)
- Watershed Policy
- The National Transport Policy

Despite a fairly comprehensive legal framework, and encouraging signs of inter-agency cooperation, no single unit coordinates the country's climate change policy initiatives (Neufville, 2011). In 2012 the Ministry of Water, Land, Environment and Climate Change (MWLECC) was created with one of its mandates being to mainstream climate change into existing legislation such as the Natural Resources Conservation Authority (NRCA) Act 1991 and to formulate and implement policies that take into consideration the United Nations Framework Convention on Climate Change's (UNFCCC) attendant Protocols and Agreements. Through this new Ministry, climate change imperatives are to be streamlined into all policies and plans emanating from the government inclusive of the Jamaica National Food and Security Plan drafted in 2012) and led by the Ministry of Agriculture and Fisheries (MoAF). Furthermore, in

conjunction with the Forestry Department and the National Environmental and Planning Agency (NEPA) - the agency responsible for environmental protection - community-based groups should be convened to mainstream climate change into local activities which the NEPA stated were critical to the success of mitigation processes (Neufville, 2011).

An assessment of 900 communities by the Jamaican authorities at the start of 2011 found that 310 were highly vulnerable to natural disasters and needed to build resiliency. Programmes to encourage community-level management, and to find and fund alternate "livelihood activities" for those who live off the resources of the land were being encouraged (Neufville, 2011) but these programmes were not mindful of food security challenges.

Food security limitations of the existing Natural Disaster Management approach. While there may be recognition of the hazards in many communities, risk reduction and vulnerability - as these relate to food security - are not salient concerns until after the disaster occurs at which time the response of the government and NGOs tends to be focused on short term relief.

As the primary agency working on disaster management in Jamaica, the Office of Disaster Preparedness and Emergency Management (ODPEM) embarked on a Comprehensive Disaster Management (CDM) programme framed within the four phases of a disaster cycle: mitigation, preparedness, response and recovery. Disaster management is coordinated at three levels – national, parish and local/community levels. It was after Hurricane Gilbert in September 1988, that ODPEM included communities more deliberately in its management framework.

A National Zonal Programme was put in place so that disaster stricken communities could survive on their own for at least 72 hours until outside assistance could reach them (odpem.org.jm). Within the National Disaster Management Framework, "The Zone" is envisaged as the smallest organized unit, outside of the family, that is empowered to prepare and respond to emergencies and disasters at the local level. The Zonal Programme conceptually represents the establishment of a formal organizational structure at the community level. This will provide an enhanced level of capacity, within communities, to prepare for and respond to emergencies/disasters (Office of Disaster Preparedness and Emergency Management, 2012, p. 11).

ODPEM conducted an assessment of the vulnerability of 310 communities across the island ranking them on a variety of indicators. Through the Building Disaster Resilient Communities Project funded by the Canadian International Development Agency (CIDA), ODPEM successfully engaged at least 23 communities in developing community disaster plans. Two of the three research sites investigated in this study do not have community disaster plans, Prospect and Trench Town.

The Prospect community falls within the Alligator Pond Development Area (to be discussed further in 4.3.1 and 4.3.2) where the community of Alligator Pond (proper) has a community disaster development plan. The third case study community - Jeffrey Town - has a community disaster plan that was drafted in 2011 and is operated by the Jeffrey Town Farmers' Association (JTFA) under the title "Jeffrey Town Community Disaster Risk Management Plan". This Plan has been credited with providing an overall framework for reducing risks in the community including mitigation and preparedness. It does not address food security concerns. This highlights the deficiencies inherent in a

traditional community disaster plan approach to building food security resilience. According to one of the respondents, an executive member of the JTFA:

> We don't have a comprehensive disaster plan designed as it really didn't look at critical things like food security. The community disaster plan is still down to the individual to take care of himself. So we are implementing a new plan with a new project for food security specifically for climate change as these hazards will be more severe. So our project document is all about food security… Food security for climate change.

In 2015, through the Caribbean Development Bank's (CDB) Community Disaster Risk Reduction Fund, the JTFA was awarded US$644,744 to implement an integrated disaster risk management project "that includes significant food security aspects" (Gordon, 2015, email correspondence), in accordance with the community's bid that is framed around the notion of enhancing self- sufficiency and building resilience, rather than reducing vulnerability.

This dissertation argues that there needs to be a noticeable shift in governmental rhetoric as it relates to hazards and food security, with the discourse shifting from assessing disaster vulnerability and poverty to a focus on building resilience to hazards in light of climate change given that the latter view is a more proactive and positive expression of community engagement with natural hazard reduction (Cutter et al., 2008b; Furlow, 2015).

Problems with short term response. Despite meeting short-term humanitarian needs food relief has not substantially improved local community capacity to withstand future shocks and stresses or to build food security (Frankenberger & Nelson, 2013). Post-disaster food aid is "often late, unreliable and out of proportion to other elements of the response". Maxwell (2007, p. S25). Nonetheless, Jamaica has seen the proliferation of food aid in the guise of charity not only by local actors but by international donors and

governments. Poppendieck (1999) argues that charitable endeavors and volunteerism act as "moral safety valves" in societies by creating the illusion of effective action; they also replace effective public policy by relieving government of their responsibility to find long term sustainable solutions that increase food security.

Governmental food security response. Since gaining independence from Britain in 1962 the government of Jamaica has focused on developing the nation's resources. Though food security has not been overtly on the national agenda, agricultural development has. This has implications for food security because of its emphasis on supply side issues of availability and volume of food. Improving small scale farming has therefore been important. Examples of agricultural initiatives follow.

Self-supporting Farmers Development Programme. The Self-supporting Farmers Development Programme was a joint venture between the Inter- American Development Bank and the Government of Jamaica. It was initiated by the Jamaica Labour Party (JLP) government in 1969 under the then Ministry of Rural Land Development, and aimed to make credit available for medium-long term schemes involving (small) farms of between 5 and 25 acres. The Programme had two objectives:-

1. To improve the economic and social standard of the beneficiary farm family by lifting their net farm income to at least J$900 annually
2. To provide food for the nation by proper development of land resources (Inter-American Institute for Cooperation on Agriculture , 1988, pp. 23, 24).

Operation GROW. Though this programme was initiated in 1969, it was not funded until 1973 at which time the world was embroiled in a global food and fuel crisis. The Peoples National Party (PNP) government of that era flirted with notions of

democratic socialism and implemented policies favouring nationalization of the factors of production especially in the agricultural and business sectors. Food and agricultural policies were part of a national self-sufficiency campaign christened Operation GROW. This fostered three projects – Project Food Farms (We grow) – where the government established its own farms on 25,000 acres of land; Project Land-Lease (You grow) – where the government leased idle land to rent to competent small farmers who needed more land for agriculture; and Project Self-Help (Helping you grow) – where the government provided loans for increased production to farmers with from 5 - 25 acres. Amounts up to $J10, 000 were available at 4% per annum providing capital assets not exceeding $25,000."

Project Self-Help was inherited from the Self-Supporting Farmer's Development Programme of the previous government. An advertisement in The Gleaner of 1973 promoting Operation Grow, read:

"Operation GROW is your Government's massive food production drive to help our country feed itself. Now we are putting, idle hands and idle lands together to produce more food, jobs and income, for our people. We need your co-operation, we need

machinery. We need farmers and workers — with courage and skill — to grow and reap our Nation's wealth" (Operation grow advertisement, January 19, 1973).

Ironically, the 1970s were marked by food hoarding as a result of food shortages. These were not as a consequence of natural disasters but due to the lack of political management and will to implement sound agricultural policies.

Food policy vs agricultural policy. By the 1980s the Government of Jamaica (GoJ) led by the JLP pushed food security not from an agricultural policy perspective but a food policy perspective. Stair (2001) noted

> Food policy differs from agricultural policy primarily because of its emphasis on food i.e. the provision of staple food essential for the survival of people. Food policy is, therefore, more concerned with food consumption by the citizens of a country and less with food production. Food policy concerns itself with malnutrition or starvation of sections of the society and, therefore, with correcting imbalances between food availability on the one hand and the different capability of people to obtain access to food. (p. 8)

Jamaica, like the rest of the Caribbean saw improvement in food availability and a reduction in under-nutrition however; improvements in food availability were accompanied by sharp increases in import dependence for food supplies (Stair, 2001). This push towards massive importation was seen as a direct response to the food shortages of the 1970s as well as fiscal and monetary policies associated with structural adjustment.

Faced with the problem of widespread poverty and low incomes after the decade of the 1970s (Stone, 1988), public opinion championed the right of the urban poor to have the cheapest food available even if this meant not supporting the inefficient local agricultural production by refusing to pay higher prices for locally produced food. The attempt to give the cheapest food possible while meeting the conditionality of structural

adjustment decimated the dairy industry, thus reversing many of the gains made in that sub-sector in earlier decades. “Despite talks of inefficiency, what the government did essentially was to import dumped products from overseas and subsidised them further with Jamaican taxes so that cheap food was even cheaper ; at the same time subsidies to the local dairy industry and to the agricultural sector in general dried up” (Stair, 2001).

By 1984, the JLP’s policy response to the contraction in local agricultural production was to develop a Food Aid programme that distributed food stamps to low income families, pregnant and nursing women and children from low income families (Stone, 1988). This however was not linked to weather induced food shortages but trade and political economic manoeuvrings.

According to Campbell (2009, p. 1371), since the mid-1990s, the agricultural sector began experiencing unprecedented meteorological phenomena – hurricanes, floods and drought. Within a five year span (2002 – 2007) the agricultural sector was affected by seven hurricanes, two dry spells and three extended periods of heavy rains. An estimated US$ 285.7million worth of damage was recorded challenging the coping range of the sector and the PNP that had regained control of the government for the decades of the 1990s and 2000s. Despite this, there was no discernible food and agricultural policies supporting food security excepting for the continued practice of food importation in the decade of the 90s and early 2000s (Stair, 2001). Jamaica's food import bill for 2012 was estimated at US$1 billion, up from US$400 million in 2003 (Eat what we grow, 2013). This practice was touted as unsustainable and not in keeping with Jamaica’s development mandate especially in an era of climate change.

Hazard risk reduction and climate change adaptation food security programmes. The Sub-Committee of the Pilot Program for Climate Resilience (PPCR) (a World Bank supported effort) invited the Jamaican government in May 2009 to participate in the Pilot Program for Climate Resilience, as one of the six countries in the Caribbean regional pilot programme. The other five countries are Grenada, St. Vincent and the Grenadines, Saint Lucia, Dominica, and Haiti. The PPCR is among a number of programmes developed to assist developing countries and Small Island Developing States in particular, to build resilience to climate change employing hazard risks reduction and resilience building programmes integrated into core development policies and plans at the national and local levels (Planning Institute of Jamaica, 2012, p. 135 [revised]). Given the critical role for hazard risk reduction and climate change adaptation outlined in Vision 2030 Jamaica, and in the Growth-Inducement Strategy, the government simultaneously began to pursue a number of programmes and projects as well as a number of strategic actions aimed at building resilience to food insecurity within the agricultural sector as outlined in Tables 8 and 9.

Table 8

Select programmes and projects in Jamaica modified Source: Planning Institute of Jamaica, 2012 (Revised)

Project /Programme Name	Funding Agencies	Information on Project/Programme
Climate Change Adaptation and Disaster Risk Reduction project	EU, UNEP, GOJ	Objective is to achieve sustainable development by reducing risks and increasing resilience to natural hazards through: • the rehabilitation of degraded watersheds; • restoration of select coastal and marine ecosystems; and • enhancement of capacity of the government and local communities to adapt to climate change.
Enhancing the Resilience of the Agriculture Sector and Coastal Areas to Protect Livelihoods and Improve Food Security	Adaptation Fund	Concept endorsed by Adaptation Fund Board (AFB) in June 2011 Development of the proposal for approval and funding ongoing Three components of the programme are related to agriculture, tourism and water resources with capacity building as over-arching principle
Marketing and Agriculture for Jamaican Improved Competitiveness (MAJIC) Project	USAID, GOJ, ACDI/VOCA	Objective is to improve capacity of local agriculture practitioners in sustainable techniques, etc. (including through Farmer Field Schools) currently ongoing

Jamaican Adaptive Agriculture Programme	USAID	The goal is to increase the adaptive capacity of Jamaican farmers and fishers to respond to climate change while developing a resilient and sustainable form of agriculture-based micro enterprise and providing economic opportunities for youth. The programme will introduce aquaponics/fish farming and hydroponics (soil-less crop production) at 5 schools and 20 small farms and fishing communities (2010–2013)
Capacity Building for Sustainable Land Management in Jamaica	GEF	To enhance sustainable land management (SLM) and good land practices by building capacities for SLM in appropriate government and civil society institutions, farming and user groups, and mainstreaming SLM into government planning and strategy development
Hazard Mapping, Disaster Vulnerability & Risk Assessment: Caribbean Risk Atlas	World Bank	The two main components of the project are: a) A regional Risk Atlas that contains spatial data on risk from hurricanes and earthquake in the Caribbean and b) High Resolution risk maps for selected territories within the Caribbean. The project will also carry out training courses and workshops for professionals employed in the field
Enhancing the resilience of the Agriculture sector and coastal areas to protect livelihoods and improve food security	Adaptation Fund	To protect livelihoods and food security in vulnerable communities by: improving land and water management for the agricultural sector; strengthening coastal protection; and

		building institutional and local capacity against climate change risks. The three main components of this project are: a) increasing the climate resilience of the Negril coastline; b) enhancing the climate resilience of the agricultural sector by improving water and land management in select communities; c) improving institutional and local level capacity for sustainable management of natural resources and in disaster risk reduction in the targeted vulnerable areas
Crop Suitability Modelling for Future Climates University of the West Indies – Geography & Geology Department	Oxfam; UWI University of the West Indies – Geography & Geology Department	The project estimates the effect on crop production and farmers' income of climate variability using crop suitability modelling. Complements the use of climate scenarios in IP2, output can be used to inform crop choice in project area

The Strategic Actions for Agriculture and Food Security were devised to complement the programmes and projects that cannot be funded under the PPCR.

Table 9

Strategic Actions for Agriculture and Food Security Source: Jamaica, Planning Institute of Jamaica, 2012 (Revised)

Strategic Action	Linked/Associated Programmes	Implementing Agencies	Funding Agencies	Time Frame
Assess the predicted impacts of CC on the agricultural sector & mainstream climate change considerations in agricultural plans and policies	Climate Change Adaptation and Disaster Risk Reduction Programme (2010–2013)	PIOJ, Cabinet Office, MOAF, RADA, ODPEM, Local Authorities	PPCR-CIF: EU/UNEP/ GOJ	Short term (0–2 years)
Develop and implement integrated, sustainable and coordinated public awareness and education programmes relating to the impacts of CC on terrestrial resources including biodiversity and agriculture, for men & women	Climate Change Adaptation and Disaster Risk Reduction Programme (2010-2013)	MOA, MHEW, PANOS; NEEC, RADA	PPCR-CIF; EU-UNEP, GOJ	Short to medium term
Develop and implement CC adaptation strategies for the agricultural sector	Improving Jamaica's Agricultural Productivity (2009–2011; funded by CIDA); Assistance to improve Local Agricultural Emergency Preparedness in Caribbean Countries. (completed in 2008) Jamaican Adaptive	MOAF, RADA, WRA, MET, CARDI	PPCR-CIF; USAID FAO USAID	Medium to long Term (3–5 Years medium)

	Agriculture Program (2010–2013: Marketing and Agriculture for Jamaican Improved Competitiveness		
Support the development of research capacity: a) Develop climate resilient cropping systems with focus on developing varieties tolerant of flooding, drought & salinity and suited for resource poor farmers. b) Facilitate research into reducing the population of pests, the spread of diseases, the loss of crops, livestock, and fisheries due to CC impacts.		MOA, RADA, CARDI	Long term (Over 5 years)

These externally funded initiatives were complemented by home grown ones. In 2003, the Government of Jamaica (GoJ) launched the "Grow What We Eat, Eat What We Grow" campaign to ensure a more aggressive awareness of Jamaicans of the need to support local farming, and production and to reduce the food import bill and ensure food security.

Problems with governmental response. The People's National Party (PNP) tried to raise domestic food production to improve nutritional levels, however, the management of some of its self- reliant, locally funded projects left much to be desired (Stone, 1988). As a result of poor management and planning, the Operation GROW initiative had some 22,000 acres of land in production under Land Project Lease by 1979-80 out of 124,000 acres allocated and only 14,000 of the 38,000 farmers were still actively producing (Stone, 1988). The programme was criticized as being more of a land reform programme through redistribution of land from the rich to the poor or to the government, than a food security programme (Stair, 2001).

A number of farmers invested their Project Self-help monies in houses and motor vehicles for personal use rather than for agricultural purposes. Farmers complained of the inaccessibility of the urban markets as there were few farming roads connecting these farms to rural communities much less urban ones. Lack of appropriate means of transportation to get their produce from their farms to the markets exacerbated the problem.

The Jamaica Labour Party's (JLP) 1980s policy involved the allocation and distribution of imported food (rice, cornmeal, skimmed milk) to the poor thus increasing import food dependency funded mainly from overseas assistance - USAID, CIDA, EEC, (Stone, 1988). The JLP's food security policy resulted in food importation acting as a subsidy for local production given the prices of the shrinking market share available to local food producers (Stone, 1988). The nutritional emphasis of the food aid project was commendable but the kind of dependency on foreign handouts and on the state was

unhealthy as a long-term policy commitment (Stone, 1988) even in the midst of adequate food supply.

Hunger and food insecurity persisted amidst the presence of adequate food supplies. Debates erupted about the utility of national self–sufficiency as a guard against hunger. Today, in Jamaica many of the country's policies, regulation, and legislation do not adequately address issues related to climate change risk reduction or provide the incentives and the framework for climate change adaptation by communities.

Additionally, the risk assessment data required to inform community planning and development processes, is inadequate. Consequently, recent extreme weather events have resulted in significant damage, social dislocation and economic losses. A significant proportion of these could have been avoided if the country's policies, regulation and plans provided guidelines and incentives for everyone to adapt to climate change at all spatial levels. The lack of climate change integration is also evident at the river basin level, where in some cases; climate change is disrupting the water supply-demand balance with significant implications for agriculture, livelihood and the food security of the communities.

Now let us turn to the three study communities, the responses of whose residents are the heart of this dissertation.

Community Context: Prospect

Prospect is located in southern Manchester Parish which shares borders and climatic experiences with St. Elizabeth. The economy of the parish has been based on bauxite mining, small-scale farming, miscellaneous manufacturing and agro-processing

industries and provision of a range of services to central Jamaica (Manchester Local Sustainable Development Plan [MLSDP], 2007.

Most of Manchester occupies a high limestone plateau with elevations between 1,000 – 3,000 feet above sea level. Southern Manchester is in a rain shadow belt on the plains below. St. Elizabeth is often identified as "the bread basket of Jamaica" and has been the focus of much research (see for example, Campbell, Barker, & McGregor, 2010; Campbell & Beckford, 2009) but Manchester's role as an important contributor to the bread basket is now being nationally recognized because it appears to have maintained productivity in recent years while St. Elizabeth experienced declines (Tufton, 2009).

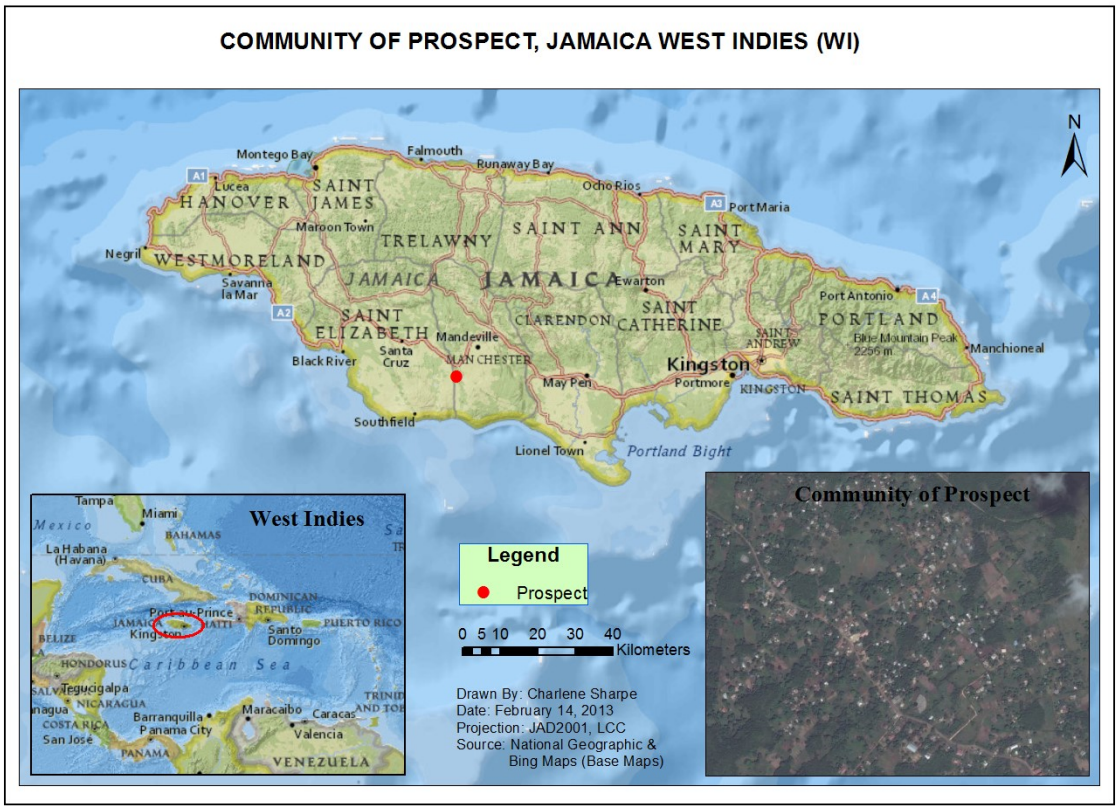

Figure 6. Location of the community of Prospect.

One other feature gives prospect a unique character. A conveyor belt passes through the community transporting bauxite from the mines in Manchester to the bauxite plant in St. Elizabeth, at Alpart[6]. The community receives compensation for noise nuisance from the Alpart Company. This provides money for casual employment, water, seeds and fertilizer. During previous drought periods, Prospect has been able to participate in Alpart's water programme. Some farmers have built make-shift conduits to divert water from the water main that operates the conveyor belt onto their land. Since 2008 the world price of bauxite has fallen dramatically. As a result Alpart reduced production significantly and ceased many of the projects they shared with communities. For the first time in over twenty years, a steady water programme was no longer available to the farmers and they then had the extra challenge of building their resilience to drought. The farmers are finding this to be an impossible task and the community is slowly becoming a site of vulnerability.

Development areas. In keeping with the Government of Jamaica's (GoJ) commitment to the Agenda 21 principle of sustainable development, the Manchester Parish Development Committee (MPDC) was convened in 1999 with an ambitious mandate to enhance civil society's participation in a governance structure that would

[6] Alumina Partners of Jamaica (ALPART) has its bauxite mining and alumina processing plant located at Nain, St. Elizabeth, in the south of Jamaica. The company was first established in the early 1960s under the union of three companies (Anaconda, Kaiser Aluminium and Reynolds Metals). Since then it has undergone several partnership and ownership changes, the last of which took place in 2011, resulting in the company being 100% owned by the UC RUSAL, Ltd. Hampered by the global economic recession and soaring energy costs, the Alpart plant was shut down early 2009, and to date operations remain curtailed. http://www.jbi.org.jm/pages/bauxite_alumina_plants 03/12/2015

recognize and implement development goals based on local sustainability principles through community participation and development.

In order to fulfill its mandate, the MPDC, in partnership with the Social Development Committee (SDC), conceived of carving the parish into Development Areas (DAs). Nine Development Areas were subsequently identified for Manchester. The intent is for DAs to reflect patterns and nodes of economic activity, services and mobility, around which strategies for sustainable development may be shaped. During the period 2003 – 2008, the MPDC and the SDC prepared profiles for each Development Area and the communities that constitute these areas and identified the strengths, weaknesses, threats and opportunities of each community (Manchester Local Sustainable Development Plan [MLSDP], 2007

The Alligator Pond development area. Prospect lies within the Alligator Pond Development Area (see Figure 7) in a valley formed by the Spur Tree Fault below the ridge of the Carpenter's Mountains and extending north from the Caribbean Sea to Gutters. The area is sustained principally by fishing in the south and by farming in the central and northern parts. Both the fishing and farming areas face problems of high unemployment. According to the parish's development plan (see MLSDP, 2007) 'The retail trade/commercial sector is increasing in importance and is concentrated on the main road to the town of Alligator Pond.

Tourism on the south coast has begun to have a significant impact on this coast in terms of increased land prices, employment shifts and environmental degradation. Mobility patterns show a strong orientation to St. Elizabeth (Junction and Santa Cruz) as well as to Alligator Pond itself (rather) than to Mandeville'. As presently identified by the

SDC and the MPDC, the Alligator Pond Development Area includes five communities and 16 districts. These are:

- **Alligator Pond:** Alligator Pond (Proper), Tezam, Top Bay, Bottom Bay,* Compound* (*residents claim these are one district);
- **New Forest**: New Forest (Proper), Comma Pen, Duff House, Logwood (the residents call Rose Corner), Sea Air;
- **Downs**: Downs (Proper), Blake's Pen, Emporium, Farm, Watson's Hill;
- **Butt Up**: Butt Up (Proper), Baalbeck, Precious Plain, Turner Top;
- **Prospect**: Prospect (Proper), Montpelier.

Historically, significant population relocations occurred in response to expansion of the bauxite mines. This migration process started in the 1950s. It continued in the 1960s when "bauxite bought out 80% of the land in Prospect." Persons from Baalbeck later relocated to Butt Up in the early 70s because of the excessive mining operations being carried out by the bauxite company operating in that area. Years of repetitive re-location to accommodate mining may have resulted in the affected communities.

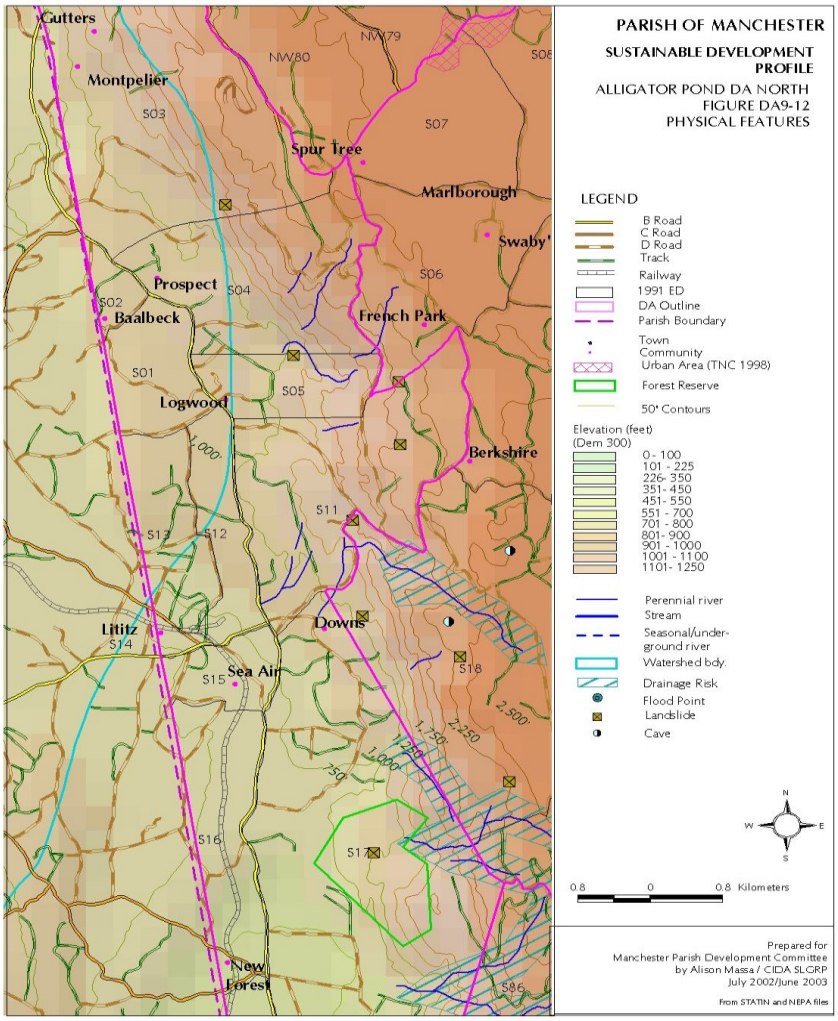

Figure 7. The community of Prospect within the Alligator Pond development area. Source: MLSDP, 2007

Involvement in farming/agriculture. Farming is the most important economic activity in the area. Crops planted mostly in Prospect (proper) are cassava, potato, tomatoes, melon, cucumber, and scallion, while for Baalbeck are: tomato, melon, cabbage, pumpkin, scallion. However, farmers complain of the lack of markets for their produce especially when there is an over-supply of crops, "most time what we produce just stay and rotten" (MLSDP, 2007). Farmers also complain about the lack of reliable irrigation as farming is mainly rain-fed. The community has domestic water, however,

they do not have water for farming purposes and would prefer to have a farming well, "domestic water can't do farming because you would not be able to pay the bill" (MLSDP, 2007) one farmer stated in relation to the challenges he faces on his farm. Another lamented, "Farming has declined due to lack of water" as the older farmers cannot continue to manually walk to water individual crops. They could have done this in their younger days but cannot anymore, furthermore "young people are not interested in farming" (MLSDP, 2007).

Some farmers lease land from Alpart, which owns 70% of the farming lands. These farmers farm near to Alpart's conveyor belt where they were able to access water more readily. The farmers believe they would be better able to manage their issues if they were members of a farmer's group.

Baalbeck's agricultural lands are owned by Alpart, however, some of the lands are mined out and are no longer productive. When asked how this impacts farming in the area, one community member stated "Di company nuh gi wi no troble fi wuk pan di lan' but wi nuh 'ave no schools, church, shops, agri-farm stores, only houses and light. (English: The company does not give us any trouble to work on the land but we do not have any schools, church, shops, agri-farm stores, only houses and light). Another resident said "di politician dem a sucka". "Gov nuh do nutten dung here, only di light. A faith man ha, mek dem jus a gwaan, (English:

> [The] politicians are suckers, The Government does nothing down here, only the light. Man has faith, (that's) why he is going on, (MLSDP, 2007).

Social Environment

Perceptions of crime and unmet community needs. Crime rates are generally low and involve mainly petty offences and domestic disputes (MLSDP, 2007), By the mid-2000s crime had escalated to include praedial larceny (agricultural theft). People in Prospect expressed fear about the effects of lack of skills and unemployment on the future crime rate. Prospect citizens also expressed concern about the rates of high school dropout and teen pregnancy, which they see as causes of unemployment.

Table 10

Estimated Employment Status, Prospect Community, 2003 (MLSDP, 2007)

Employment Status	Age Range	Male (%)	Female (%)	Total (%)
Unemployed	18-35	80	20	15
Unskilled	18-35	50	50	35
Employed	18-35	50	20	10
Skill	all	20	80	20
Self-employed	all	70	30	20

The 1996 survey of Alligator Pond Proper found that the level of income earned weekly was reflected by the type of job and the number of days worked per week. Roughly 28% of the respondents earned $J1,000 or less per week, 20% earned $1,000 - 1,500, 25% earned $ 1,500 - 4,000 while 25% earned $4,000 - $5,000 per week. The

mean weekly household income was $2,330 with a high of $5,000 and a low of $175,[7] (MLSDP, 2007).

The 1996 survey, found that only 48% of respondents in Alligator Pond proper had completed primary/elementary school. Ten percent had completed secondary school, while 38% had no schooling. The main issues reported to be impacting this section of the community are:

- Lack of water (domestic supply).
- Bad roads.
- Lack of drains.
- Need for streetlights
- Need for landline telephones.
- Need for a community center and recreational facilities.
- Need for a post office.
- Youth unemployment
- Dust pollution from the mining activities
- Need for a basic school.

Natural disaster risk identification. All the members of the Prospect focus group indicated that the community has been experiencing more droughts in the last twenty years as well as hurricanes and tropical storms. Drought however, is the most important hydro meteorological. Prior to its closing of operations in 2009 the bauxite company provided needed water assistance. Three-quarters of the respondents agreed

[7] The Bank of Jamaica has archived the exchange rate between the Jamaican and United States dollars since 1971 when the rate was $Jam 1= $ US 0. 77 and by 1996 $Jam 1 = $US 37.25. See http://www.boj.org.jm/foreign_exchange/fx_rates_annual.php

that drought existed "every year for the past 20 years". For some residents an 'El Niño' related drought was one of the worst droughts they had ever experienced. Most farmers indicated that February and March are the months in which they are mostly impacted by drought (focus group discussion, 2013).

Flooding is more prominent in some areas than drought especially during the now unpredictable rainy periods. "When wi ave heavy rain wata cover up wi housetop and some trees. Muddy water from the belt line come down on us. Wi live inna a riverbed, gully course area, so each time di rain come heavy wi have problems." (English: When we have heavy rainfall, the water covers our houses and some trees. Muddy water from the belt line comes down on us. We live in the riverbed, gully course area, so each time the rain comes heavy we have problems, MLSDP, 2007). In 1973 Michael Manley , then Prime Minister of Jamaica, visited the area and suggested that persons should leave, but no one did. During the May to June floods of 2002 about 15 houses were damaged along with several acres of farms (MLSDP, 2007). "Di bauxite people dem 'elp wi, all di time" (English: The bauxite people them help us all the time). The bauxite company helped the residents with repairs as usually a member of the family was employed by the company. The bauxite company also helped to provide seeds to help the farmers recover.

Figure 8 shows how the respondents of Prospect and the other two case study communities rated hazards that had the most persistent negative impact on them, where ten is most negative. Floods and droughts were perceived as most troubling, more so than hurricanes which are sometimes welcome when they bring needed rain. As one respondent explained

> "hurricanes a God sent, man. A suh we get likkle wata fi duh wi farming welst drought kill wi!" (English: hurricanes are God sent, man. That's how we get

a little water to do our farming or else drought kill us). Another participant explained " where we is, we doan get all di wind damage odder farmer dem crops ha get but wi get di wata (laughing) a'times more wata dan we bargain fah but we nah say nutten a dat wi want"). (English: Where we are (located), we don't get all the wind damage other farmers' crops get but we get the water (laughing) at times more water than we bargained for but we are not saying anything (meaning we are not complaining) that's what we want).

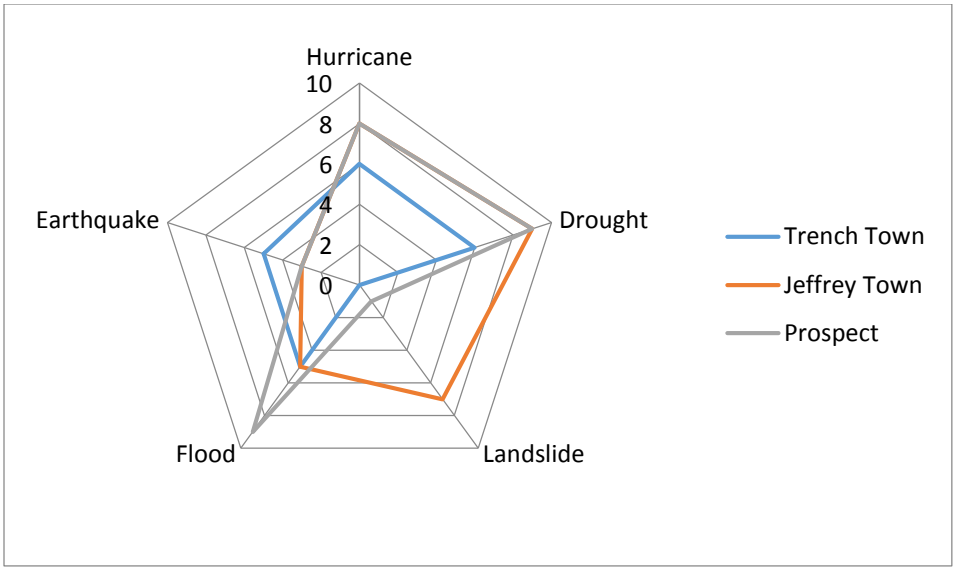

Figure 8. Comparative rating of the hazard impact on the research sites.

Landslides were not uncommon but they were not considered a threat to the community, unlike earthquakes which were considered to be a potential threat if they were to happen. However, no one could remember experiencing an earthquake.

Social capital - Organizational awareness and participation in Prospect. Citizens of Prospect identified illiteracy as a primary barrier to community organization and the development of their social capital. "Illiteracy affects reasoning ability, impairs communication, leads to conflict and hampers community development" (MLSDP, 2007). They recognized the existence of "some degree of community cohesion and organization in the form of an active church youth group and, a Provident Society."

(MLSDP, 2007) They also identified the Butt Up/Prospect Citizens' Association and Community Club, the Prospect Youth Club/Claremont PTA and the New Forest Neighborhood Watch as significant organizations.

At the DA Workshop, Alligator Pond citizens listed the following weaknesses in the community:

- Unorganized farmers;
- Unorganized fishermen;
- Unorganized community;
- Inadequate training;
- People don't want to work together;
- Poor attitudes.

They would like to see "a more literate community, emphasizing human development, fostering positive social economic growth through community development." In response they formulated a plan to start a Jamaican Movement for the Advancement of Literacy (JAMAL) program (MLSDP, 2007). JAMAL was established by Prime Minister Manley in 1974 in an effort to abolish adult illiteracy, at a time when it affected 53 per cent of the population aged 15 and over, based on a 1970 UNESCO study. Manley hoped that by using an island-wide network of volunteers, illiterate adults could be taught to read and write in the shortest time possible, enabling them to participate effectively in the social and economic life of the community. The last official national literacy survey, done in 1987, showed an illiteracy level of 18 per cent. JAMAL was dissolved in 2006 and replaced by the Jamaican Foundation for Lifelong Learning (JFLL) (Foster, 2006). There seems to be a general concern that "the youth don't see it as

important to form groups; they are only interested in the games (for example, football matches). There is no will to follow leadership" (MLSDP, 2007).

Residents of Prospect all expressed a need for community facilities, street lights and road improvement, transportation and water. In some places where facilities exist, the need is for equipment, leadership or some outside assistance to help them move forward (MLSDP, 2007).

Community Context: Trench Town

Trench Town is a neighborhood of West Kingston (see Figure 9). As explained below, it is beset by many problems but most especially by its location on the frontier between the territories of warring political factions. This is one of three spatially significant factors that affect food security.

Jamaica operates a predominantly two-party electoral system of government that holds general elections every five years. A patron-clientelist strategy is used by the People's National Party (PNP) and the Jamaica Labour Party (JLP), to mobilize participation in the electoral process, and to broaden their political appeal. In this system the limited resources of the state are systemically distributed to supporters of the winning party in a discriminatory and partisan fashion (Charles, 2002, p. 30). This vote-getting strategy has been used effectively for decades to entice supporters of disadvantaged inner city communities who typically experience "deplorable living conditions, low levels of skills, (the) unavailability of jobs and (their) intense material deprivation" (Charles, 2002, p. 31).

Supporters of rival political parties continually fight for dominance, including violent intimation. Supporters have been known to kill opponents to keep their political

party in power because political loss usually results in entire communities becoming food insecure if they are not willing to be loyal to the winning political party (Charles, 2002). As recognition for loyal support, party supporters are rewarded with 'free housing' within specified borders. This creates political communities that perpetuate exclusive local dominance. These communities are operated by both political parties and have been likened to 'fortified fortresses' complete with gangs of militia-like thugs that provide protection (Charles, 2002). Such fortified fortresses are referred to as "garrison communities". Trench Town is the chief garrison community of the People's National Party.

Trench Town is adjacent to the 2 acre large Coronation Market, the largest farmers' market in the English speaking Caribbean (Serju, 2010). The market is located less than one mile from the heart of the Kingston central business district and within 1.5miles of Kingston Harbour, the seventh largest natural harbour in the world. Jamaica's coastal areas are central to the social and economic life of the island state (Richards, n.d., p. 1) and are susceptible to storm surges and sea-level rise. Over 50 percent of the country's economic assets and 70 percent of the population are located in coastal areas. Since the turn of the century, the demand for coastal space has intensified, creating challenges for planners. Relocating the market at this time poses massive logistical challenges.

In addition, the Coronation Market lies within a different political enclave that is hostile to Trench Town. The parcel of land separating Coronation Market from Trench Town is widely known as "No Man's Land", 'a real frontier between the two territories'

that “few individuals - some politicians excepted -would be rash enough to risk crossing” (Eyre, 1984, p. 24).

The image of Trench Town community has marred its identity because violence and social stigma have hampered sustainability planning and actions needed to ensure food security, even when there are no weather or climate related stressors. Violent outbursts limit the access of Trench Town citizens, and others, to the Coronation Market. “Corry/Curry” as the market is called by Jamaicans is considered the main gateway for farmers from the rural parishes to sell their produce and for the urban citizens to access food produce at considerably cheaper prices than the supermarkets. The market acts as a major wholesale hub for food related from parishes with very different agro-climatic characteristics (Batjes, 1994). Food comes to Curry and is distributed from Curry. The market’s role in assuring food access to many households across the island cannot be trivialized and underestimated. Speaking about the importance of the Coronation Market, Mayor of Kingston Angela Brown Burke stated

> I believe that the market is of tremendous economic value. Certainly we know that thousands, if not millions, of dollars change hands within the market. We recognise that it is one of those areas where we actually see the manifestation of the role that cities are beginning to play. (Poyser, 2015)

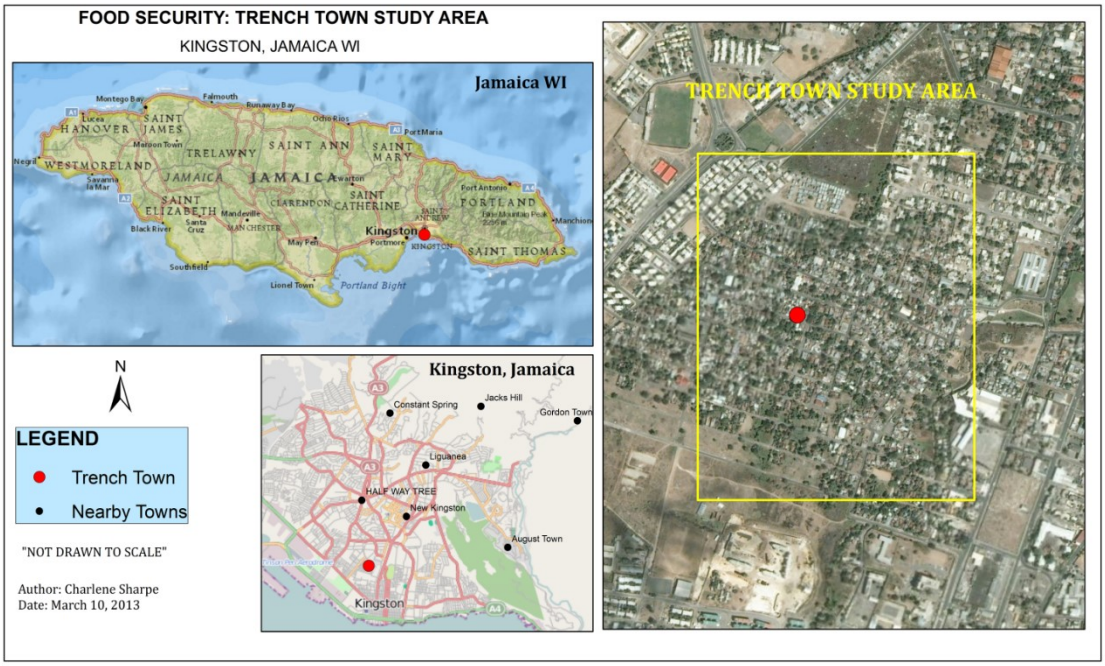

Figure 9. Location of the Trench Town Community.

In 2010 violence erupted in West Kingston accompanied by a series of fire that gutted large portions of the Coronation Market, effectively closing it for months (Coronation market moves to three miles, 2010; coronation market gutted by fire, 2010; Fire destroys sections of Coronation Market, 2010). An alternative space for the market was identified three miles north of the original site. This site proved unsuitable, in part because of excessive congestion in the area (see JamaicaObserver.com, 2010) and its inaccessibility for many urban residents. This illustrates the vulnerability of markets to sudden disasters, man-made and natural. Affected communities are forced to find alternative pathways and support networks to cope with food security risks and to protect those who seem most vulnerable including those in coastal areas (Richards, n.d.).

The third spatially significant factor that affects food security is the scarcity of space for urban agriculture. Trench Town residents would like to find ways to counter unemployment and other social ills. The community has embarked on an urban

agricultural industry project initiated by the Agency for Inner-city Renewal (AIR), a grassroots support organization (GSO) (Martinez & Boglio, 2008). As part of this and related efforts, a considerable body of data about Trench Town has been accumulated, as detailed in the next sections.

Development areas. Downtown, Kingston Jamaica is divided into sixteen (16) Development Areas of which Trench Town is one. Within it are four districts namely; Arnett Gardens, Rose Town, Lyndhurst/Greenwich and Wilton/Federal Gardens. Trench Town is one of two communities that benefitted from social intervention programmes supported by the United Nations Development Programme (UNDP) through the Jamaica Violence Prevention Peace and Sustainable Development Programme (JVPPSDP) (SDC, 2011, Draft). A survey report was one of the outcomes of the intervention of the UNDP in 2011 from which much of the data on this community was gathered. There was also a baseline survey for the community that was completed by the Social Development Commission (SDC) in 2007/2008 that also provided insightful data on this community.

The survey data reveal a population that is predominantly young, with limited education evenly divided between men and women but with more female headed households. According to the Social Development Commission 2007/08 data, the estimated total population of the four Trench Town districts is twenty seven thousand two hundred and eighty four (27,284) with an average household size of 3.8. Most of the household heads are females, 62%, which is higher than the national average (Jamaica Survey of Living Conditions, 2007). The community is youthful as 62.3% of the residents are below the age of thirty years. The working age population (15 -64 years) is approximately 61.4% while elderly people (60 years and over) account for 6.7% of the

population. The majority of household heads living in Trench Town, 70%, were born in Kingston and St Andrew. Nearly three-quarters (74.5%) of household heads have no academic qualifications. More female household heads have completed secondary education (31.2%) compared to 18.4% for males. There are also more female household heads (46%) without academic qualifications than males (28.5%). The largest employment groups are engaged in construction and machinery (males) and the hospitality services (females) but only very few have agricultural/farming skills (all males) (Table 4.6). In the 2011 survey conducted only 55.2% of household heads were gainfully employed compared to 66% reported in Social Development Commission Survey 2007.

Table 11

Household Head Areas of Training by Gender

Training Received	**Sex of household head**		**Total**
	(%) Male	**(%)Female**	
Beauty care and services	1.8	14.8	16.6
Secretarial and office clerks	1.3	3.6	4.9
Hospitality skills	4.1	11.9	16.1
Art and craft	3.6	.8	4.4
Construction and cabinet making skills	13.7	0.0	13.7
Machine and appliance	10.1	1.3	11.4
Computing and information technology	0.5	0.8	1.3
Apparel and sewn product skills	2.3	13.2	15.5
Commercial and sales skills	0.0	0.3	0.3
Professional and technical skills	6.2	3.6	9.8
Agriculture/farming	1.0	0.0	1.0
Other skills	3.9	0.5	4.4
Skills not stated	0.3	0.3	0.5

Total	**49.0**	**51.0**	**100.0**

Source: (Social Development Commission, 2011, Draft)

Table 11 shows that most of the household heads (46.5%) earned below Jamaican $30,000.00 monthly. In 2011, the exchange rate was $86.08 Jamaican dollar to 1$US[8].

Table 12

Monthly Income from all Employment

Monthly Income $Jam	**Percentage**
Less than 3,700	4.4
3,700-5,999	5.8
6,000-9,999	7.3
10,000-19,999	14.4
20,000-29,999	14.6
30,000-39,999	9.5
40,000-79,999	9.3
80,000-129,999	1.8
130,000-249,999	1.1
No Response	31.7
Total	100.0

Source: (Social Development Commission, 2011, Draft)

As seen in Table 13, over 40% of all employed household heads indicated that they received no additional sources of income. For those however, who received additional income, the local family and friends' network was the most important source (17.5%), followed by remittances 15.2%, then assistance by the government, 13.8%.

[8] The Bank of Jamaica has archived the exchange rate between the Jamaican and United States dollars since 1971 when the rate was $Jam 1= $ US 0. 77 and by 2014 $Jam 1 = $US 111.22. see http://www.boj.org.jm/foreign_exchange/fx_rates_annual.php

Table 13

Additional Sources of Income

Sources	**Percentage**
Government Assistance (PATH, pension etc.)	13.8
Remittances (Overseas)	15.2
Support by local network of family members and friends	17.5
SESP	0.8
None	44.0
Other	0.8

**This question allowed for multiple responses.* Source: (Social Development Commission, 2011, Draft)

According to Table 14, persons in the 20- 24 age range have the highest rate of unemployment (21.2%). Overall, females were more likely to be unemployed than the males. The overall unemployment rate in the community is 47% or over three times the national rate (Agency for Inner-city Renewals, 2013). Self- employment which manifests itself mainly in hustling is the main source of livelihood in the community and dominated by the men. Though the unemployment rate is high, only 19.9% of household heads indicated that household members benefitted from social safety net programmes offered by the government (Social Development Commission, 2011, Draft).

Table 14

Unemployment Status of Household Members by Gender

UNEMPLOYMENT STATUS	***MALES***	***FEMALES***	***TOTAL***
Unemployed 14-19	5.8	4.0	9.8
Unemployed 20-24	9.5	11.7	21.2
Unemployed 25-29	5.4	8.3	13.7
Unemployed 30-34	2.6	6.3	8.9
Unemployed 35-39	2.6	4.1	6.7
Unemployed 40-44	2.5	4.9	7.4
Unemployed 45-49	2.5	5.4	7.9
Unemployed 50-54	1.3	2.2	3.5
Unemployed 55-59	1.8	2.8	4.6
Unemployed 60+	6.8	9.8	16.6
Total	40.8	59.5	100.3

Source: Social Development Commission, 2011, (Draft)

Involvement in farming/agriculture. According to the 2011 survey, 9.3% of the households in Trench Town have been engaged in farming/agricultural activities. The majority of households (80%) farmed to feed themselves and family only, while the remaining 20% also sold their farm produce at the local market as well as produced for export. An estimated 63.9% of households owned the land utilized for farming, 19.7% were squatters, 6.6% rented and 4.9% leased.

Social environment.

Perception of crime. Crime was generally perceived to be low in Trench Town, despite the neighborhood's unsavory reputation. Over 50% of household heads indicated that crime has had no effect on their lifestyle (54.7%). However, between 10% and 20% of the population reported that crime curtailed their movements to work, school or entertainment and affected their chances for employment (see Table 15).

Table 15

Effects of Crime on the Community

Effects of Crime on the community	**Percentage**
Social life is curtailed	13.0
Restriction in movement in and out of the community at late evenings/nights	16.6
Afraid to show signs of economic wealth	3.8
Stigma affects chances of gaining employment outside community	17.5
Restriction in movement within the community at late evenings/nights	13.5
Fear to go to work and school	10.4
Crime has no effect on my lifestyle	54.7
Not stated	10.4

Source: Social Development Commission, 2011, (Draft)

Natural disaster risk identification. Most of the respondents in the SDC survey indicated that their community was exposed to natural hazards. The two main natural hazards that affected the community are hurricanes and earthquakes. Respondents also indicated in the survey that the community was affected by flooding, storm surges and freak storms (see Figure 8). Most hurricanes enter Jamaica from the East South East of the island and strike Trench Town before the other case study communities which are located further west and north of the island but the exposed area is smaller in Trench Town.

During the focus group discussion, participants were asked to rate the perceived impact of the major hazards impacting their community. A selection of comments is now provided.

> "I prefer the drought even though we don't have water".
>
> "The drought crack up the ground yes but the price of food don't go up as drastic as when it's a hurricane, everything happens slowly. So yes the prices will go up but it takes a while"
>
> "When we have a hurricane everything changes immediately. The zinc fences blow down that separates us from the road and the outside world. It expose us and we don't know how to deal wid dat (with that)."
>
> "Housing concerns during a hurricane is not a major problem. It's really just the flooding from the nearby gully that's my biggest problem; all the mucky water all over the house and it can be smelly too – that just kills me! Can't handle the mess, but I prefer the hurricane"
>
> "The hurricane don't really bother us like how I hear it bother other communities with roof tops gone and things like that, but it can be scary wid (with) all dem (them) winds. You don't know what to expect after the hurricane done. Every hurricane is different"
>
> "I prefer the hurricane as a hazard but I prefer how we are treated when it's a drought. When the hurricane comes – it is bap, bap, bap, and done, unlike the drought that has no end in sight. But den (then) the government sometimes shut wi (us) down wid (with) curfews and you can't move up and down freely like you woulda have a mind. You have armour vehicle like wow and that's more stress on top of the hurricane stress which is a big stress all by itself. We don't have that under drought times"

Unlike Prospect and Jeffrey own, earthquakes were perceived to have been a threat to Trench Town, though mostly in the past. One male participant in the focus group said the last earthquake was nerve-wracking:

> 'I rememba 'bout 15 or more years back, a rahtid earthquake shake and a hell hole dat mi a tell you. Di place jus' a shake suh a me just a slide suh like a giddy house business, no sah! Dat a di worse, dat a di worse, Jah know" (English interpretation: I remember about 15 or more years ago, a massive earthquake shook that is akin to hell. The place was shaking and I was sliding like I was at Giddy House. That's the worst feeling, God knows)

Another participant shared her experience:

> "Di earthquake I 'memba (The earthquake, I remember), I was in high school an' everything moved out of its place. There was no solid ground under mi (my) foot and mi (I) get dizzy. All if we wanted to run we couldn't run. That was a …(shaking head). I don't want to experience dat (that) again. Give me the worst hurricane and the drought and keep the earthquake. It doesn't matter what the experts say, you can't duck and roll go nowhere. Like old people get incontinent and can't hold their pee is suh it feel, you get incontinent and can't stand, can't sit, so it is chaos inside yuh body and you head and chaos outside and everybody a scream. Earthquakes are in a category by themselves. Thank God we haven't had one recently and let's keep it that way. I don't even want to discuss it".

Social capital - Organizational awareness and participation in Trench Town.

Trench Town has almost 62 CBOs with stated objectives revolving around youth development, child development, socialization, gender development, basic and secondary education, sport and recreation and citizens' welfare (Agency for Inner-city Renewal, 2013). These CBOs, however, do not have the requisite infrastructure, funding, leadership and staffing to perform effectively and on a sustainable basis. Consequently 31 or 50% are barely active or dormant, 3% are defunct or dormant and 47% partially active (Agency for Inner-city Renewal, 2013). Interestingly over 40% of the household heads are unaware of the presence of community based organizations in Trench Town. Nearly 40% (39.3%) of household heads are aware of church groups, 20.9% are cognizant of youth clubs and 13.2% of sports clubs. Awareness however did not ensure participation

as a high of 63.8% of the respondents did not participate in any community based group. The highest level of participate was enjoyed by church groups in the community.

Table 16

Organizational Awareness and Participation

Type of Community Organization	**Percentages**	
	Awareness	**Participation**
Church Group In Community	39.3	24.1
Youth Club In Community	20.9	7.4
Parent Teachers Association	8.8	6.4
Community Development Committee	3.8	1.8
Sports Club	13.2	3.3
Youth Club	20.9	7.4
Senior Citizens Association	2.8	0.7
No CBO In Community	42.8	63.2

*****_This question allowed for multiple responses._ Source: Social Development Commission, 2011, (Draft)

Five main developmental challenges have been identified within the Trench Town community in both the SDC Survey 2011 and 2007. These are high levels of adult and youth unemployment, limited or no opportunities for training and employment, high levels of high school dropout and poor parenting (see Table 17).

Table 17

Developmental Challenges Facing the Trench Town Community

	Developmental Challenges(2011)	**Percentage Distribution**	**Developmental Challenges(2007)**	**Percentage Distribution**
1	High levels of youth unemployment	31.1	**C**rime and violence	32.2
2	High levels of adult unemployment	28.6	High levels of unemployment and youth unemployment	23.1
3	Limited or no opportunities for training and Employment	12.0	Limited/no opportunity for training and employment	20.4
4	High levels of high school dropout	10.9	Low skill levels	13.0
5	Poor Parenting	8.1	Poor representation by elected political leaders	8.7

Source: Social Development Commission, 2011, (Draft)

Agency for Inner–City Renewal (A.I.R). The church is the most recognized community based organization (CBO) in Trench Town and it enjoys the highest level of community participation. For that reason this study focused on the experience of participants in the Agency for Inner City Renewal (AIR), a faith-based community development organization. Two focus group meetings were convened in Trench Town with some members participating in both groups. The groups were representative of the general demographic profile of the community and, importantly, tapped into the most powerful institution that seeks to help vulnerable, marginalized groups.

Agency for Inner City Renewal (AIR) employs the A-B-C-D (Assets Based Community Development) approach to community development. This holds that even objectively poor communities are asset rich; possessing within themselves the institutions, talents and goodwill that are the seeds of their future viability. AIR also subscribes to the concept of: The Learning Community. A learning community is a community having the capacity to gain insight from its own experiences and the experiences of others and to modify its behaviours to reflect new knowledge and insights. AIR promotes Christian Social Entrepreneurship; a unique and peculiar calling that employs entrepreneurial practices toward solving social problems in creative and sustainable ways based on Biblical economics.

AIR was registered as a CBO in 2007, with the singular focus of reducing the number of homicides in the community to a level that would allow for the development of the human, physical and financial assets of the community. Given the decline in the homicide rates between 2005 and 2009, by 64.9%, in the Kingston West Police Division (of which Trench Town is a part), the steepest decline in the country (see Table 18), AIR began to shift its focus to revitalizing the inner city through increased engagement and involvement of community individuals and institutions (Agency for Inner-city Renewal, 2013).

Table 18

13 Homicides and Shooting in the Trench Town Community 2005-2009

Murder	**Reported**	**Cleared Up**	**Shooting Reported**	**Cleared Up**
2005	135	71	153	66
2006	80	41	95	33
2007	133	53	130	45
2008	57	18	30	9
2009 (June)	21	2	26	7

Source: Kingston Western Police Division Statistics, Agency for Inner-city Renewal*, 2013*

AIR was founded by Dr. Henley Morgan, a successful management consultant and Social Entrepreneur, who originally titled the initiative, "Rebirth: Rebuilding the People, Reclaiming the Land, using Agriculture". His aim was to reach those whom some in the Jamaican society judged "irredeemable" (Bellanfante, 2005; personal communication with AIR's project manager, 2013). With the support of Citibank N.A., and the United Way of Jamaica, AIR successfully constructed Trench Town's first commercial greenhouse. AIR further engaged the wider community in entrepreneurism, using agriculture as the means for raising the income earning potential of participants and for ensuring the community's ability to bounce back after a natural disaster without total dependence on the political cadres.

Working with organizations such as the Young Entrepreneur's Association (YEA), and the Ministry of Agriculture/RADA, AIR engaged farmers in the area to create viable business enterprises that would ensure some food security even after a natural hazard event. AIR began working with the community to develop viable markets to ensure profitability and livelihood stability among local farmers and food availability in the community at all times. In addition, AIR engaged local students, from the three major High Schools in the area: Trench Town High School, Charlie Smith High School, and St. Andrew Technical High School. Working with teachers from each institution, students were taught greenhouse farming, entrepreneurism, and personal financial management. AIR's next step is to engage those interested students in forming co-operatives which will allow them to plant, grow and sell produce as a business venture. "The potential for real, lasting change is at hand," voiced the Chairman of AIR as the organization pushes forward amidst the challenges to ensure a food secure and viable community.

Community Context: Jeffrey Town

Local communities are developing their own solutions to issues of food security, climate change and disaster risk reduction through community sustainable livelihood approaches. The efficacy of local actions and how to scale these up to build resilience requires a process that still eludes many communities. There are communities however that seem to defy the odds and seem to have worked through a winnable process of resilience building that also ensures food security. The Jeffrey Town community (see Figure 10) represents a small farmer community that's using collective action and local innovation to breed resilience. This community represents the power inherent within

vulnerable, marginalized groups to effect change within the context of disaster and food security. Documenting and analysing the success of these local initiatives by communities charting their own path to food security resilience can encourage peer to peer knowledge building and create the platform for sharing these stories. Jeffrey Town community highlights the actions from the margin of a poor small farmer community driven by the concept of self-reliance undergirded by social processes that make these local actions possible.

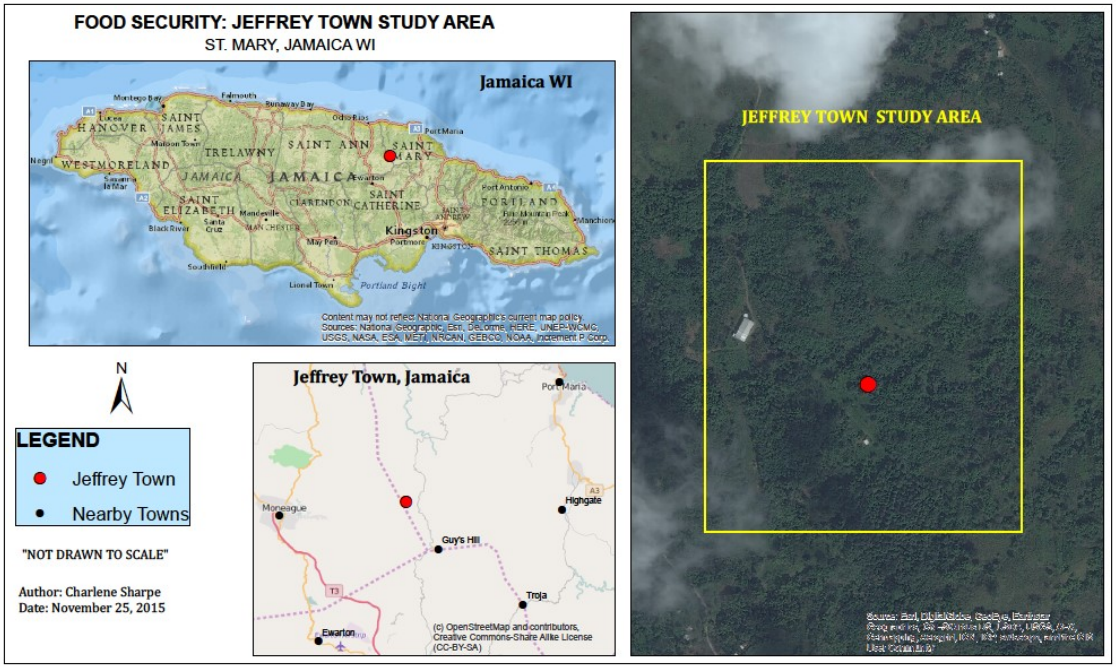

Figure 10. Location of the Jeffrey Town Community.

For more than ten years the Jeffrey Town Farmers Association (JTFA) has successfully partnered with national and international donor grant agencies and local social capital on a number of projects to enhance community resilience in the face of natural hazard risk and climate change. The success of the JTFA's approach has been

recognised internationally. In 2014 the JTFA was awarded the prestigious Equator Prize in recognition of its efforts to reduce poverty through the conservation and sustainable use of biodiversity. In March, 2015 at the United Nations Conference on Disaster Risk Management in Sendai, Japan, the JTFA emerged as one of three finalists of 88 countries which vied for the coveted UN Sasakawa Award for Disaster Risk Reduction (Walling, 2015). Nationally, they have been awarded the Scotia Eco Awards (second place) in 2011for their involvement in a number of environmental and sustainable development initiatives, three Jamaica Environmental Trust awards in 2010 for Best Environmental Community, Best Sustainable Agriculture use within a community and Most Beautiful Community in St. Mary. Again, in 2012 they won awards for Best Environmental Community and another set of awards in 2012 for the Best Sustainable Agriculture and Best Youth in Agriculture Community. In 2006 and 2011, Jeffrey Town also won the Michael Manley Award for Community Self-Reliance, recognizing their multifaceted approach to local community development.

Development area. The parish of St. Mary has not completed the process of being subdivided into development areas. When completed, Jeffrey Town will be within the Highgate development area. According to the Social Development (SDC) survey conducted by the government in 2011, the estimated total population for Highgate is 9,535 with an average household size of 3.8. Most of the household heads are female 50.6% which is less than the national average of 53.4% and rural average of 57.8.% within the same time period (Jamaica Survey of Living Conditions, 2007). Nearly half of the population (49.4%) are above fifty years old. The working age population (15 -64 years) is approximately 60.9% which is 2.5% less than the national average while the

elderly (65 years and over) accounts for 6.4% of the population which is 4.4% less than the national average of 10.8% (Social Development Commission, 2011 draft). The majority of the household heads living in Trench Town, 67.5%, were born in the parish of St. Mary. The other household heads (32.5%) were migrants from other parishes.

Generally, 65.4% of the household heads have no academic qualifications. The highest level of education attained by most household heads is at the secondary level (32%) with more female household heads (34.4%) compared to 25.9% male having completed secondary level education. It should be noted too that there are less female household heads (64.8%) without academic qualifications than males (66.1%).

In the 2011 survey 60% of household heads were gainfully employed, of which 72.7 were male. More than half of household heads, 54% stated that they received formal training for a specific trade, occupation or activity. Table 19 shows that only 6.9 % of the household heads are trained in agriculture even though this parish is predominantly rural. Nevertheless, over 20% of the population are employed as full-time farmers as seen in Table 19.

Table 19

Area in which Household Head was Trained

Area in which household heads have been trained	**Percentages**
Beauty care and services	5.4
Secretarial and office clerks	5.4
Hospitality skills	15.4
Art and craft	1.5
Construction and cabinet making skills	23.1
Computing and information technology	6.9
Machine and appliance	3.1
Apparel and sewn product skills	11.5
Commercial and sales	.8
Professional and technical skills	19.2
Agriculture and farming skills	6.9
Other skills	.8
Total	100

Source: Social Development Commission, 2011, (Draft)

Most household heads consider themselves to be shopkeepers and market sales workers as seen in Table 20, thus self- employed and making a living the quickest and safest legal way that does not require high levels of education.

Table 20

Occupational Classification of Head of Households

	Percentages	
Occupational Groups	**Males**	**Females**
Elementary	1.3	27.2
Professional	7	15.4
Service workers and shop and market sales workers	29.4	36.8
Legislators	1.3	
Plant and machine operators	7.5	
Technicians and associate professionals	2.5	
Clerks	4.4	11.8
Skilled agricultural and fishery craft and related trades workers	17.5 28.1	3 6

Source: Social Development Commission, 2011, (Draft)

Table 21 shows that only 32% of the population shared information regarding their household income. This is typical in rural community culture especially among the farming community where households refuse to disclose income specific information.

Almost 25% of the household heads earned below Jamaican $40,000.00 monthly. In 2011, the exchange rate was $86.08 Jamaican dollar to 1$US[9].

Table 21

Monthly Income

Monthly Income	**Percentage**
less than 3700	2.1
$3,700 - $5,999	4.1
$6,000 - $9,999	5.0
$10,000 - $19,999	6.6
$20,000 - $29,999	5.0
$30,000 - $39,000	2.1
$40,000 - $79,999	2.9
80,000-129,000	4.1
Not Applicable	29.3
No response	38.8
total	100

Source: Social Development Commission, 2011, (Draft)

As seen in Table 22, unlike the urban community where 40% of household heads indicated they did not receive additional sources of income, all employed household

[9] The Bank of Jamaica has archived the exchange rate between the Jamaican and United States dollars since 1971 when the rate was $Jam 1= $ US 0. 77 and by 2014 $Jam 1 = $US 111.22. see http://www.boj.org.jm/foreign_exchange/fx_rates_annual.php

heads surveyed in this rural community indicated they received additional sources of income. The local family and friends' network was the most important source (25.6%), followed by assistance from the government (22.3%) then remittances and salaries of other household members at 21.1% respectively. The percentage indicating that they are benefitting from government assistance (social safety net) is lower than the national rural data of 45.7%. The remittances being reported are also lower than the national rural remittance of 41.5 % reported in the Jamaica Survey of Living Conditions, 2007 (Social Development Commission, 2011 Draft).

Table 22

Additional Source of Income

Additional sources of income	**percentage**
State Assistance	22.3
Remittances	21.1
Other sources	2.5
Support from local network of family and friends	25.6
Salaries from other household members	21.1
Loans and Investments	7.4

Source: Social Development Commission, 2011, (Draft)

As seen in Table 23 persons in the over 60 age range have the highest rate of unemployment (22.4%), followed by the 20- 24 year group with 14.5%. A number of the older persons are retired, while many of the younger persons are unable to find jobs even

though they have academic qualifications while others are in school. Overall, females were twice as likely to be unemployed than the males.

Table 23

Unemployment Status of Household Members

Unemployed age group	**Percentages**		**Total**
	Males	**Females**	
14-19yrs	4.1	4.6	8.7
20-24yrs	5.4	9.1	14.5
25-29yrs	2.1	7.1	9.2
30-34yrs	2.1	7.5	9.6
35-39yrs	2.5	3.7	6.2
40-44yrs	2.1	5.4	7.5
45-49yrs	0.4	5.0	5.4
50-54yrs	2.5	7.1	9.6
55-59yrs	2.9	4.1	7
60+yrs	8.7	13.7	22.4
Total	32.8	67.2	100

Gender Source: Social Development Commission, 2011, (Draft)

Involvement in farming/agriculture. According to the 2011 survey, 48% of the households are involved in farming/agricultural activities compared to 9.3% of the households in Trench Town. The majority of households (62%) farmed to feed

themselves and family only while 38% sold their farm produce at the local market as well as for export. An estimated 65.5% of households owned the land utilized for farming, 10% were squatters, 17.3 % leased.

Social environment.

Perception of crime. The perception of 79.4% of the residents is that the level of crime in the community is low while 15% perceive the crime level to be moderate. As seen in Table 24, when asked about the effects of crime on the community, 86% of the household heads indicated that crime has had no effect on their lifestyle. However, 1.2% reported that that it restricted their movements in and out the community, 1.6% reported that they were afraid to show any sign of wealth or economic activity, while 3.7% indicated that crime restricted their movement within the community at late evenings/nights.

Table 24

Effects of Crime on the Community

Impact of crime on individuals lifestyle	Percentages
Restriction in movement in and out of the community at late evenings/nights	1.2
Restriction in movement within the community at late evenings/nights	3.7
Afraid to show any sign of wealth or economic activity	1.6
Crime has no effect on my lifestyle	86
Not stated	7.4

Natural disaster risk identification. Most of the respondents in the SDC survey indicated that their community was exposed to natural hazards (78%). The main natural hazards that affected the community are hurricanes and landslides/mudslides. Respondents also indicated that the community was affected by flooding, freak storms and earthquakes (see Table 24).

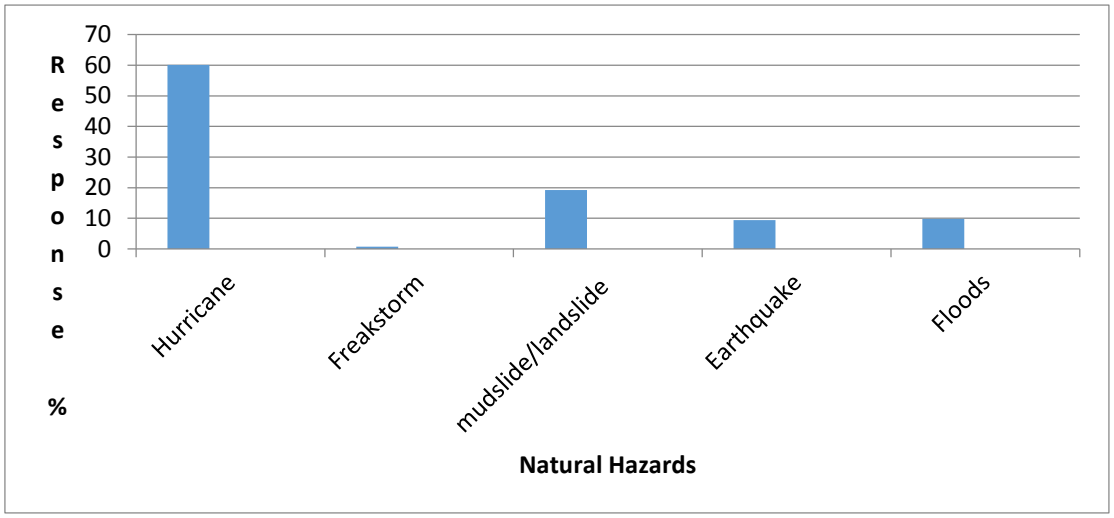

Figure 11. Types of natural disaster affecting the community.
Source: *Social Development Commission*, 2011 (draft)

During our focus group discussions, one participant noted that drought should be added to the list of major natural hazards impacting the community. Instantly, another respondent asked

> "Why you seh (say) drought is a hazard and should be added, after that is a recent thing and we talking about persistent things"

This created a moment of insight on the impacts of climate change and the need for sustainable development within any attempts at building resilience. It was explained that drought is indeed a recent phenomenon that is creating a serious problem for the

farmers and the wider community and that though the hurricanes could be devastating it was important to specify the category of the hurricane.

> "It depends on the category of the hurricane we are talking about as hurricanes may turn out to be the most dangerous of all the hazards because we don't know when it is coming and sometimes the weatherman tells us one thing but we experience something different and that can make it devastating"
>
> "I think we are more impacted by drought than hurricanes in the past 5 or so years. Water shortage is the key problem. We get water from the government sometimes but when drought is on then we get no water from the government at all. It is ironic that the government's water agency says "water is life" and yet they don't see it fit to ensure we have water. What you think they are trying to tell us about the value of our lives? Read between the line"
>
> "I don't hear anybody talking about landslides and that is a big thing for us. Recent report from a geologist who came up here and sat right in this room says the land is slowly slipping away so landslide is getting worse and if we will get more hurricanes and even an earthquake it means we will get more landslides."
>
> "We need to acknowledge that drought is the new kid on the block. We never used to complain about drought even though we have rain-fed agriculture. But the last few years, Jesus take the case and take the pillow, we have had long and intense drought. Some farmers in here can tell you how it mashed them up. Is something we will have to now look at seriously as it looks like drought is here to stay."
>
> "Where flooding is concerned it isn't the whole community that suffers from flood but mainly Wallenford and up that area. So it's not the rest of the community – so it depends on where persons are located. The flooding was bad though but not everybody has that experience like how everybody can tell you about hurricanes."

The group was asked to rate the hazards and their recent impact on a scale of 1-10 with ten representing the most severe impact. At first, the group insisted that drought would be rated between 9- 11, hurricanes (depending on the category) 6-11, landslides 5-7, and earthquakes 1-3. After a meaningful discussion focussing on climate change and the new realities of the community as well as the impact on the community as the whole and not just individual experiences, the group decided on drought having a more meaningful impact in the recent past than any other hazard. The perceived persistent rated hazards are seen in Figure 11.

As noted by one of the respondents a useful classification of hurricanes should indicate the possible damage that a community should expect. However, the (revised) Saffir-Simpson scale that is now used to rate hurricanes only describes wind speed and omits other important factors like rainfall amounts and storm surges. A lower category hurricane may dump greater amounts of rain and therefore create greater damage than a higher category hurricane. This respondent was therefore pointing out limitations of the official hurricane rating system.

Persistent water shortages are a significant problem in Jeffrey Town. Jamaica's National Water Commission uses the tag line "water is life" and the name Jamaica it is believed comes from the early Taino inhabitants who named the island "Xaymaca" meaning land of wood and water. The irony therefore of communities having to grapple with persistent water shortages is not only seen as a climate change concern but a lack of effective management of the island's water resources by the government. The inability of citizens to trust the government to make meaningful plans has led to their decision to depend on themselves. The President of the Jeffrey Town Farmers' Association in an interview captured in the national newspaper, The Gleaner, reported that his community stands firmly in the corner of self-help.

> "We strongly believe that we have to depend on ourselves. We have to use our own ingenuity to make our community better. We have done many, many things in the community such as bringing water to our community, soil erosion, best practice in agriculture, a multi-media centre and community radio station," he said of self-reliance projects undertaken by the community. "Winning inspires me. No disrespect to any other prime minister, but Michael Manley was my inspiration, and I totally believe in the idea of self- reliance." (Luton, 2011)

Self- reliance – Michael Manley's understanding. "Chance has never yet satisfied the hope of a suffering people. Action, self-reliance, the vision of self and the future have been the only means by which the oppressed have seen and realized the light of their own freedom" Marcus Garvey[10]

Michael Manley, the son of the late Right Excellent Norman Manley Premier who led Jamaica to national independence and prime minister of Jamaica 1972-80 and 1989-92 is credited with inspiring a generation of Jamaicans with his understanding and teachings on the concept of self-reliance. Manley (1975) stated that self-reliance should not be confused with selfishness or social indifference, but should be seen by each person as that ultimate responsibility that he/she has for self within his/her social context and within the course of his/her life. It is a private responsibility that cannot be escaped if men are to achieve in this life. Equally, a sense of shared responsibility must be developed within communities as a there is no contradiction between self –reliance and a sense of social responsibility. "The former refers to our capacity to accept responsibility for our own development within the social grouping; while the latter implies our awareness that our development must take place in the context of a general respect for the

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[10]Jacques-Garvey, A. 2009. Philosophy and opinions of Marcus Garvey. The Journal of Pan African Studies p4 eBook. http://worldafropedia.com/~worldafr/wiki/images/6/69/Philosophy_and_Opinions_of_Marcus_Garvey.pdf 19/11/2015

Marcus Garvey is Jamaica's first National Hero. In 1914 he started the Universal Negro Improvement Association (UNIA), in Jamaica. The UNIA, which grew into an international organisation, encouraged self-government for black people worldwide; self-help economic projects and protest against racial discrimination. http://jis.gov.jm/heroes/marcus-mosiah-garvey 19/11/2015. Garvey is credited with inspiring the works of the Nation of Islam, Malcolm X, Martin Luther King , Nelson Mandela and the Rastafarian movement http://www.biography.com/people/marcus-garvey-9307319 19/11/2015

interests of others in the group" (Manley, 1975, p. 43). In essence, "self-reliance implies the ability on the part of the people of a country to make common efforts towards the general development and welfare of the group'" (Manley, 1975, p. 43).

In considering the self-reliance concept and its applicability to communities, Manley advocated for an examination of the specific problems of attitude in the Jamaican society especially attitude towards work. In Jamaica, Manley (1975) asserted

> The sons of the privileged are never in any circumstances seen doing certain kinds of work…, the system operates to maintain them in a position above the need for menial or dirty work. By a process of historical association, (therefore) certain kinds of work, in addition to being unpleasant become associated with poverty and relegation to a section of the social scale. (p. 46)

One such occupation is farming.

The cultural perception is that "agriculture is dirty, low-class work left for those who scarcely can do better" (Walker, 2013, p. 1). The long experience of slavery, when added to this historical background results in a 'serious attitudinal problem in relation to work… the effects of slavery upon Jamaican attitudes (to working in agriculture) must therefore not be underestimated and should never be ignored (Manley, 1975, p. 46). The traditional view of agriculture as being the work of slaves has deterred many from investing in agriculture or encouraging their children to be trained in agriculture. This has hurt successive governments' campaigns to increase local agricultural production as an answer to general food insecurity in Jamaica. Fighting this social distortion of agricultural work is a significant undertaking by any farmers' group that seeks to address joint concerns about hazards and food security. The next section shows how the Jeffrey Town Farmers' Association has tackled the challenge.

Jeffrey Town Farmers Association (JTFA): The Evolution of Community Self-help. The deeply rural agricultural community of Jeffrey Town has a population of 2982 It is made up of six official districts; locally the residents divide it into nine: Jeffrey Town Proper, Wallingford, Top Road, Coffee Walk Road, Barker, Decoy, Maiden Hall, Spring Garden and Salisbury (CSGM, 2013; Gordon, 2013; personal communication with community leaders, 2015).

In the past local farmers were often devastated by natural disasters, especially those who had built their houses in hazardous spaces exposed to the effects of water run-off, landslides or floods. In 1991 three individuals mobilized a group of farmers to see how best they could help themselves to mitigate natural hazards. Thus began the Jeffrey Town Farmers' Association. It became even more important when the banana industry collapsed in the early 1990s, leaving most of the farmers with no legitimate means of earning a living (UNDP, 2015; personal communication with community leaders, 2015). As with any small community-based organization, especially one operated by fairly uneducated farmers, the task of figuring out how to mobilize and empower the local farmers was daunting. It required effective public relations campaigning and prompted weekly meetings of the group. At first the meetings were small but they grew to attract 70 farmers. Even though the group evolved around the goal of assisting farmers to earn a living from their existing farms, it was realized that farming practices also had to be changed. It would be necessary to abandon age old slash and burn and deforestation because this degrading soils and encouraged soil erosion, including landslides (UNDP, 2015; personal communication with community leaders, 2015).

Since its inception this organization has been able to achieve significant successes. According to the UNDP (2015, p. 6) one of the first actions members agreed upon was to market their goods collectively thereby achieving economies of scale; they also lobbied the government for assistance …(in support of)… equitable, sustainable small-scale agriculture that would benefit local farmers". In 1993 the group received funding from the United Nations Development Programme's Local Initiative for the Urban Environment (UNDP LIFE) to undertake a local water project. "LIFE provided two industrial water pumps, while the government agreed to purchase, deliver and install water pipes that would ensure the distribution of water resources. The initiative used voluntary labour to lay 3.5 miles of four-inch cast-iron pipe throughout the community," (UNDP, 2015, p. 6). In 2002/03 UNDP LIFE again provided funding for formal registration of the association as a "limited liability development company". Its mission was: to (a) harness all available assistance for community development, using agriculture as the platform; and (b) sustainably develop human and physical resources to create opportunities and achieve social and economic stability for all residents of Jeffrey Town, particularly women and youth. This initiative was instrumental in galvanizing the support needed to launch the JTFA (Gordon, 2013, p. 3; UNDP, 2015, p. 6; personal communication with community leaders, 2015).

Recently, the organization set out five short-term objectives:

1. Operate a multimedia centre to benefit local farmers and facilitate access to cutting edge information on sustainable agricultural practices. The organization maintains a training centre for this purpose, with a 1,100 square foot room on the

ground floor of the facility for agro-processing and 400 square feet in the basement for community storage.

2. Incorporate eco- and ethno-tourism into the local economy, for the benefit of local farmers. Plans are in place to have a tour that includes demonstration plots, an orientation of the local radio station, and other points of environmental and cultural interest along the White River.
3. Upgrade the infrastructure of the local radio station – a primary communications channel through which information on sustainable, organic farming is disseminated to local farmers. The group is working to establish a more stable signal that can more reliably reach the most remote areas of the hilly terrain and the many target communities between Jeffrey Town and the North Coast.
4. Continue work on disaster risk reduction and mitigation strategies such as terracing, building gabion walls (retaining walls made of stacked stone-filled gabions tied together with wire), and planting trees to secure soil and reduce land degradation. As a complementary activity, additional radio programming will be undertaken to specifically address educational needs around disaster risk reduction and the particular threats of living and farming in hilly terrain.
5. Make Jeffrey Town a model community in Jamaica, advancing models of sustainability, equality and alternative agricultural livelihood strategies. The intention is to be a "guiding light" for other communities, and a best practice in community- and farmer-driven development (UNDP, 2015, p. 6).

In 2015, the JTFA began a project to deliberately ensure food security resilience within the context of disasters and climate change. The project is being funded by the Caribbean Development Bank. The central idea is to have the community re-think its understanding of resilience so that it is not only about bouncing back, but bouncing forward; resilience is not just an outcome and a process, it is also a beginning, an orientation, a position, a way of thinking.

Concluding Thought

Resilience building must be context driven; in trying to make community health and food security disaster resilient, researchers need to distinguish among the types of social actions, agencies and capabilities that exist within communities and the intervention options and pathways that are available. Given the variations in local conditions, histories and institutions in Jamaica community responses will likely be differentiated.

The three communities studied herein represent different capacities for social action within the context of what Woods (2003) refers to as a 'hostile political economy' where social resources are unevenly distributed. The weak social capital and inadequate networks that are available run the risk of entrenching vulnerable behaviours and outcomes. They might be strengthened by careful application of knowledge about the struggles and perceptions of persons who live with already difficult constraints and as they engage new climate uncertainties and the attendant food security challenges. A one size fits all approach is unlikely to succeed. Not all communities can effectively act for themselves, even if they are the beneficiaries of strong community social connectedness or external social capital. Understanding what precludes one community from social

action or reduces its agency when others do better will help guide government policy and assist the more effective distribution of scarce funds after a natural hazards event as well as informing arrangements for improved food security and better governance of disaster management in the long term.

Short-term interventions can and do have an impact on long-term food security. While many short-term measures can be fitted into long-term frameworks for responding to food insecurity, others may inadvertently diminish the likelihood of sustainable food security. Too often even the best short-term responses are subject to procurement and logistical bureaucratic red tape with its attendant delays in getting food aid to the neediest (Flores, Khwaja, White, 2005, p. S26). Jamaican communities want to be resilient and bounce forward quickly and not be depended on government support or charity.

Chapter 5

Perceptions of Food Security in Jamaica

Introduction

Official and scholarly interpretations of food security were identified in Chapter Two. Now it is appropriate to examine how these concepts are interpreted in the Jamaican context. If meanings of food security are not shared, or at least are not mutually compatible, it will be difficult to achieve policy goals. This chapter records the views of laypersons and expert informants gathered from interviews and focus groups. Focus group discussions were held in the three case study communities. Semi structured interviews were conducted with representatives from two major Jamaican food distributors and manufacturers, eight civil society groups and an additional eight government or quasi-government offices with responsibilities that touch on food security.

Perceptions of the various stakeholders in Jamaica are as widespread as the views in the scholarly and professional literature and do not adhere to a singular narrative. A total of 102 discrete statements about food security were recorded. Sometimes one person offered more than one interpretation or the same interpretation was given by more than one persons. When duplicate statements were eliminated 56 distinct and different interpretations emerged. These are classified in Figure 12 and Table 25. Eighteen percent (18%) were similar to the UN's Food and Agriculture Organization's (FAO) definition, 37% viewed food security as a process, 11% framed food security using language about livelihood and economic stability and 14% framed food security as a matter of sovereignty. The remaining 20% indicated the respondent was ignorant of the concept or

was defeated by attempts to provide an interpretation. Each of these interpretations is elaborated and discussed in the following sections.

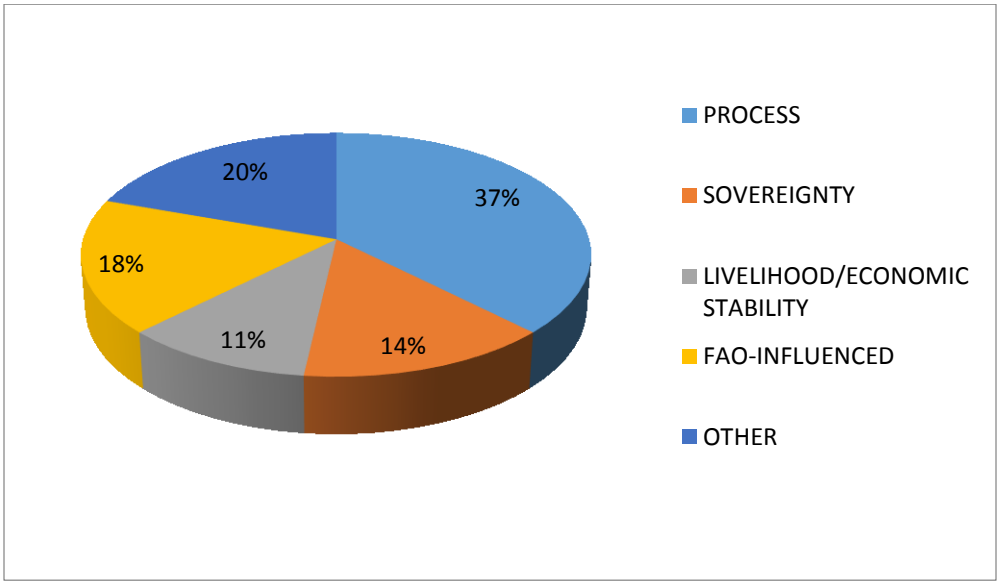


Figure 12. Meanings of food security among Jamaican populations.

Table 25

Conceptual Underpinnings of Food Security Definitions as Understood by Jamaicans

	Process	FAO	Food Sovereignty	Livelihood and Economic Stability	TOTAL
Government	6	1	1	1	9
Communities	10	6	5	4	25
Economic Sector	1	2	0	0	3
NGOs/Regional Partners	4	1	2	1	8
Other	Defeatist attitude/other				11
TOTAL	21	10	8	6	

FAO-Influenced Interpretations of Food Security

The formal FAO definitions of food security have influenced many interpretations held by Jamaicans. The most recent FAO definition is: "Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food and Agricultural Organization, 1996). FAO definitions are built around notions of access, availability, utilization and stability (of food supplies). Labelling interpretations as 'FAO-influenced' implies that people were aware of the FAO definitions and were directly influenced by them, or that this group of respondents had definitions that resonated with the FAO's.

Analysis of focus groups and interviews revealed that about 18% of the meanings of food security are influenced by FAO definitions. Within that group five themes stand out; these are reflected in the selection of quotations taken from focus group members and interviewees (see Table 26). First, there is the view that food security pertains to **root crops** (tubers, roots and bananas) rather than grains (rice and wheat). This was the predominant view of respondents in rural areas. The call to secure 'roots' resonates with FAO definitions that view culturally appropriate food as central to any definition of food security.

Second, the focus should be on **locally grown** food not imports, especially those around which a number of government and NGOs emergency food programs are built. Increasing local production to ensure adequate supply at all times will improve access and is therefore a step towards food security.

Third, food security should not simply be about availability and access to food in general but specifically to **nutritious food**. The implication here is that imported cheap foods are generally unhealthy. They are highly processed and high in sodium, sugars and fats - not as nutritious as locally grown, un-processed foods. The recent onset of non-communicable diseases that are associated with undernourishment or inappropriate nourishment is often linked to increasing consumption of imported foods (to be discussed further in Section 5.5). Nutrition security is therefore a major subset of food security and has been documented and promoted as a policy position by successive Jamaican governments.

The fourth interpretation is generally held by those responsible for the safety of food consumed by the public. A typical response was: "food security is **food safety** and the need to prevent batch re-calls". One economic respondent boasted that the standards at his manufacturing operations surpassed the requirements of the Jamaica Bureau of Standards. Meeting international food safety standards is important to many commercial food producers because their markets are not confined to Jamaica or the Caribbean region. Some community informants also defined food security as food safety, noting the government's responsibility to ensure there were no threats from poisonous or contaminated food.

Table 26

A Selection of Food Security Definitions influenced by the FAO's from the Jamaican Stakeholders

Food Security definition: Influenced by FAO's definition
With all the uncertainties of the global marketplace, the issue today is not just about finding cheaper food supplies, but more importantly, ensuring access to food. This government understands that it would be foolhardy to pursue 'cheap foods' without paying the requisite attention to building the nation's capacity to produce a critical bulk of its food. *<ref>P41: Former Gov't minister.BP2008 (2).pdf - 41:28 [(17:441-17:810)] by Super</ref>*
Jamaica is using the definition that the FAO uses, World Food Summit 1996 which encompasses the four dimension of food security – availability, accessibility, stability and utilization of food. There is a 5th pillar on environment. So if we are to revise the government's definition later we will need to look at this pillar. But for now we are using FAO's definition because it is cross cutting and takes in many things and we have used it for our purposes - for example in funding documents as it is what's acceptable. Remember now you know, a definition is a definition – what is more important is a food security law that will give support to our school feeding … We need legislation that will cause us to make the linkages stronger – the institutions more effective. *<ref>P21: Transcript Interview Gov't consultant.SR_Bdocx - 21:1 [(11:11)] by Super</ref>*
In the general sense – food security is the ability to feed country. Our first choice is to get products made locally *<ref>P24: Transcript Econ repG.docx - 24:3 [(24:24)] by Super</ref>*
Agriculture and the work we do is all about food security. One of the core areas we have as part of our mandate is food security for the hemisphere in terms of poverty alleviation. Food security is important as we have to ensure that people have access, food is available, affordable and safe. We are talking about quality of food, nutritional value that's important. For us it is not just food security but now food and nutritional security. *<ref>P25: Transcript regional partner IC.docx - 25:2 [(9:9)] by Super</ref>*
For food security it is more on the nutrition side and the people's ability to afford proper nutrition *<ref>P30: Econ rep W.docx - 30:10 [(61:61)] by Super</ref>*

…tips in proper food preparation; Affordability; Nutritious food to maintain body; Adequate supply of food at the household level
<ref>P306: Community TTranscript.docx - 306:11 [(21:21)] by Super</ref>

I have seen butchers cut off the part of the meat that is not good and carry the rest to the market. I was a bit surprised that that could still go to the market and a public health inspector was there so food security must be food safety.
<ref>P306: Community TTranscript.docx - 306:20 [(30:30)] by Super</ref>

The Regional Policy for Food and Nutrition Security has been accepted by CARICOM's international development partners as the framework to guide their interventions in the field of Food and Nutrition Security in the Region.
The Regional Food and Nutrition Security Policy (RFNSP) established four goals:
- Food Availability - Promote the sustainable production, processing, preparation, commercialization and consumption of safe, affordable, nutritious, high quality Caribbean food commodities/products. This concerns food, agricultural, rural, infrastructural development, land use and trade issues.
- Food Access - Ensure regular access of Caribbean households, especially the poor and vulnerable, to sufficient quantities of safe, affordable, quality food at all times, particularly in response to diverse socioeconomic and natural shocks. These are issues related to prices, incomes, agricultural public health, food safety and social development.
- Food Utilization/Nutritional Adequacy -Improve the nutritional status of the Caribbean population, particularly with respect to Non Communicable Diseases (NCDs) including diabetes, hypertension, overweight and obesity. This goal focuses on healthy lifestyle choices from early childhood-education, health, nutrition and social welfare issues.
- Stability of Food Supply - Improve the resilience of the region's national communities and households to natural and socio-economic crises. This goal addresses information and early warning systems, disaster preparedness and management, and adaptation to climate change issues
<ref>P48: Regional Partner quoting from GARCIA_CARICOM_2011.pdf - 48:19 [(8:1-8:1405)] by Super</ref>

Fifth and final, are interpretations that underscore the importance of taking an **overarching multi-dimensional strategic regional approach** to food security. This reflects a trend in recent regional and intergovernmental arrangements that recognize regional food security cannot be the sole remit of the agricultural sector but has to integrate all sectors of governance and take account of the most vulnerable in the region.

The Regional Food and Nutrition Security Policy (RFNSP) was endorsed in Grenada at the Special Meeting of the CARICOM Council on Trade and Economic Development (COTED) in October 2010. With the backing of Garcia the CARICOM Secretariat established a technical working group that formulated the RFNSP. They agreed that complementary input and coordination were necessary at the household, community, national and regional levels. The COTED further agreed that the RFNSP should be adopted as the "sole, comprehensive and integrated framework for actions to achieve the objectives of adequate availability, access, utilisation and stability of food supplies throughout the Region". This was accepted by CARICOM's international development partners as the framework to guide their interventions in the field of food and nutrition security in the Region (Garcia., 2011, p. 2).

Given Jamaica's struggle with low growth, high public debt and increased weather related economic shocks, it was surprising that no one from the economic sector framed food security from an economic/ livelihood stability standpoint. Neither did they frame food security as food sovereignty, unlike, the NGOs and the community representatives whose lived experience emphasises a bottom up approach to constructing food security.

Food Security as an Enabling Process

At the community level many narratives about food security incorporate processes that are needed to enable the communities and their partners to succeed, especially when confronted with hazards and disasters (see Table 27). For communities it was the process involved in ensuring that **access** is possible that makes food security a reality. "If you cannot manage the process, think through the process to ensure access then access will

still elude communities," (CBO respondent). Giving people better choices without ensuring successful access to them is an empty process.

As revealed by 37% of the definitions employed by respondents "process" is the dimension that is missing from the conceptual framing of food security in Jamaica, and by extension the world (see Figure 12). Two of the three communities stressed the need to understand that food security is not an event or simply an outcome attached to entitlement but is a process that includes certain necessary components. These are the things that make access, availability, stability and utilization of food supplies possible. Sound leadership is also a necessary adjunct. As articulated by the representatives of one of the NGOs and one of the economic sector organizations, leadership security is framed as the thought process needed to pull together the right conditions needed for the desired outcomes.

Table 27

A Selection of Food Security Definitions as a Process from the Jamaican Stakeholders

Food Security definition: Process
It was easy to convince the economic conglomerate to put hundreds of thousand into a bank account with our partners in the community...We have a micro lending situation. We have a strategic alliance with Churches Credit Union which amalgamated with another to form First Heritage Credit Union. This is now the biggest credit union in Jamaica. The shop keepers can now borrow directly from them – it is on a revolving basis so they pay interest below the commercial rate. They use this investment money to purchase stock/goods from the big food companies and put these goods on their shelves. It is like grant money from the food company to the shop keepers, but we don't want the charity so we devised the revolving fund. So we are giving the shopkeepers variety, economies of scale. **So food security is a process, but we have to ask how do we replicate this model.***<ref>P 2: CBO rep transcript.docx - 2:49 [(146:149)] by Super</ref>*
Food security should be approached as a social contract or partnership among different types of groups within the community as opposed to looking at it only one

way .The aim is to ensure that whoever is being used has the substance to be effective and this changes from community to community.
<ref>P28: Community TTranscript.docx - 28:1 [(10:10)] by Super</ref>

I think food security is a function of the lack of growth in the economy which has spurred a decline in the economy. A contraction of the economy. If we had growth in the last 20 years we would have had better social services which would mean we would have had education, better training, and more young people coming out better trained to produce more and we could pay higher wages and they could afford to buy food. So more people to work in the working world and so forth so with contraction there is less money in the revenue to develop social services so less attraction to invest in the country, so less education, less health benefits so the workforce is less eligible and a vicious circle ensue unfortunately. The biggest thing is the leadership crisis. Put in place proper leadership to run the country like a business then you can have investment to fuel jobs and growth to fuel the social services which will lead to better way of life, etc. **Food security is a function of good leadership security!**
<ref>P30: Econ rep.docx - 30:11 [(66:68)] by Super</ref>

Food security by this government is an after -thought really after something catastrophic happens as food planning is not done in development planning. **Food security must include food planning in the towns and rural areas – yes food security is about food planning just like you plan everything else in the town – road, schools, hospitals, houses, in that same list, food security**.
<ref>P304: Transcription Senior Govt rep2 .docx - 304:10 [(65:65)] by Super</ref>

Here is what food security is for us - the proper legislation to ensure food; Theft management – securing food from praedial larcenists; Soil preservation – so the soil won't erode much; farming practices; market and distribution - being able to get a market for the produce so you can buy what you want; Food storage; transportation – it's all of those things which enable access and those other things we hear about.
<ref>P306: Community TGroup transcript.docx - 306:2 [(9:9)] by Super</ref>

Leadership dimension is interesting. It maybe a new but obvious thought process needed to ensure food security. Part of leadership is taking care of the country and like a part of this at the family level is taking care of the family and getting access to quality food. This impacts IQ and children's schooling, etc, the type of food and so then nutrition is key. If getting substandard food then compromising the IQ of the next generation. It takes leadership to put all of that together. So at the national level – how a country uses its resources for benefit of country is important. If we spend nuff (a lot) on import of say onion and other food which is primary that means less is there for education and things like that so this is leadership security *<ref>P 6: Interview NGO ACdocx - 6:28 [(187:188)] by Super</ref>*

Other facets of process identified by the community and by government representatives, directly or indirectly, included legislation that safeguards governance and related matters. Of equal strategic importance to communities is market and distribution planning. Theft management is interpreted as a means of ensuring that the strategies and conditions to ensure sustained access and availability to food are in place. A senior policy director within the government sector noted:

> "It is not that we do not understand food security we just don't know how to implement. In Jamaica, food security problem is an implementation problem. We have the best plans on paper but we cannot execute the plans, so that's a missing link to any government or community trying to understand food security"

Two other process related concepts were mentioned by the respondents as missing elements in the current conceptualization of food security. The first revolves around framing food security as a social contract or partnership with society, while the second, advocates explicitly making food planning a public policy priority. The planning profession, note Pothukuchi and Kaufman (2000) is oriented towards comprehensive, designs for the future and betterment of a community, yet the food system is absent from most community plans and limited in the writings of most planning scholars. The success of Barbados, another small Caribbean island state, in managing its social partnership over a 20-year period has made the concept of partnership attractive to many persons in the region even amidst the failure of Jamaica's attempt in 2003 with its Partnership for Progress. A lack of leadership, research and trust among stakeholders were among the contributors of the social partnership failure (Minto-Coy, 2011).

Food Security as Sovereignty

In many parts of the world food sovereignty has emerged as a powerful counter voice to current FAO-influenced food security definitions and Jamaica is no exception.

The concept of food sovereignty originated with *La Via Campesina*, the International Peasant Movement, which is an international social movement composed of small and medium producers, landless people, rural women and youth, indigenous people and agricultural workers. The movement was organized mainly in reaction to the globalized and centralized food system that privileges market forces as the best allocators of food resources. Food Sovereignty is defined as the right of peoples to determine their own agricultural policies and priorities. Landless people and small farmers advocate for access to land, water, seed and public services and other local community needs. Sustainability takes priority over trade policy. Food sovereignty therefore identifies with the political struggles and cultural practices of those who are overlooked by large agri-businesses and the food security advocates (Schanbacher, 2010).

Fourteen (14%) per cent of respondents' statements about food security reflect notions of food sovereignty. Within that group there are subtler gradations of meaning, some aligned with notions of identity, others with environmental sustainability, yet others with resource security and culture. Each of these warrants further discussion.

Food sovereignty as a component of identity is a prominent theme among Jamaica's urban community where it is bound up with meanings about economic development, tribal politics, urban agriculture and, violence. For others it also has patriotic connotations about being Jamaican that mean having a unique cultural relationship with home grown food. Food importation threatens not only the relationship shared with food but also the species of food and seeds endemic to the island and the collective memory of authentic "Jamaican food" associated with recipes passed on generationally and on which cultural practices of story-telling and socialization have

depended. This association is not simply jingoistic nationalism for there are deep social and political cleavages that at times threaten to fracture Jamaican nationalism and underline the need for a more holistic understanding and framing of national identity.

For individuals, food and identity seem to embrace the emotive dimension of a community. Food plays an integral part in building people's self-esteem within the community. When individuals represent their communities at food fairs then food helps to provide the community with a sense of who they are as a collective. This represents the affective/emotive dimension of that group. The community therefore seeks out opportunities to show their produce and compete at the annual food and agricultural show held at Denbigh in Clarendon, Jamaica. These mainly individual achievements build community pride. Long before the food and agricultural show, individual farmers with good harvests would deliberately stop and call on each neighbour to admire the size of the yam or whatever farm products they had on display. The neighbour was then to send their "pickney" (child) to get a piece or a slice of the produce. As one middle aged farmer explained,

> "when you dig one yam and it share fi (for) four or five neighbours you know dat's (that's) a class of yam!"

Another middle aged male respondent remembered his father would also say,

> "'class of yam this! You see this field, it is my office'. Just like the prime minister goes to her office each day and does the affairs of the country he goes to his office and rule over the affairs of the land for his household and the community. 'In my office, I am boss. I decide where to plant and what to plant. I treat the ground well and it treats me well in return, this made me independent and it allows me to travel. One harvest of peas paid the university bill for two daughters and high school bills for two others and bought the washing machine in the house. I am the man! It keeps me healthy and fit. Whatever I plant that is what my family eats and so they are food secure. By simply looking at the land and feeling the soil I can tell what crops will do well where.'

> My father took great pride and pleasure in producing some of the biggest yam this side of Jamaica. When you get a good piece of yam, yellow yam from Trelawny you have to leave more than the head to re-plant and that will determine the size of the next crop of yam. Many people think the size of the yam only come from running the yam stick, but no, my father seh (said) is the size of the yam head that you plant and you cannot cut here so nor there so or you will damage the yam. My father would call his wife and children to look at the size. The community could have to come and look at the size. That does something to me. 'I might not know geography and biology but I know di farming'. That's what he would say".
>
> We didn't eat too much rice and those things that I see in a box – no sah, we didn't eat those things. We raised the chickens and the goats. Day in day out what we have on the farm that's what we would eat, the farm was our security. I remember the first time my father's sisters came from Canada with these food in a box, mama wouldn't touch it. So my aunts would give her children cornflakes and milk while mama gave us porridge. We were not sick. Now that all of us children are grown and my father don't have to do as much farming and all us now eating macaroni and rice, we sick. My father developed diabetes way into his 60s after he stopped farming."

A middle class mother of four adult children gave further insight on food and identity:

> "I believe people can be naked and even dirty but people must never be hungry especially children and the elderly as they can't help themselves. Children must never open the fridge and there is no food. If there is no food I have failed as a woman and a mother to provide for my family. It is worse in a disaster when everything is upside down. I remember in the 1970s when there was no food on the shelves of the supermarket and to get a little rice you had to buy roach spray and rat trap and sanitary napkins. I decided to turn some cornmeal with coconut and peas, just like we would cook rice and peas. At that time in the 70s it was my husband and I and we didn't have children. I remember after Gilbert, I did the same food – turn the cornmeal and seasoned it well with fresh fish trying to use up all the meats before they spoil as electricity gone, but the children wouldn't eat it. They said that was dog food. Turn cornmeal was dog food and they bawled. They said I cannot give them dog food cause them a nuh dog. Food security is getting your people to appreciate their own food".

Another mother added:

> "Give you joke, eena di last hurricane, I cut up some callaloo as that was growing on the back veranda in containers. I did it one night for dinner and the child refused to eat. She said 'what cut a morning can't cut at evening', so I agree with you, we have to teach our children to eat our cultural food and that will keep them food secure in a disaster instead of looking for other types of food."

Table 28

A Selection of Food Security Definition: Sovereignty from the Jamaican Stakeholders

Food Security definition: Sovereignty
Food security is dependent on identity and on what you think you deserve and how you see yourself. For example if you see self through the eyes of Garveyism and racial pride – you'll act differently towards your approach to life and this will include your approach to food and securing food especially during times of disturbances and so we deliberately teach Garvey's ideology *<ref>P 2: CBO rep transcript.docx - 2:34 [(71:71)] by Super</ref>*
Food security is sustainability planning in all we do. We have to see food security as wide as that and not only about the food you see today. To see food security in a bigger frame is important so all those who are poor and have a square of land today can look in the future and see they will be richer one day. Richer in the quality of their life. Global warming is going to have that impact upon us. We have to open our eyes and ears people. We have to change how we farm and that is connected to how we live and how we treat our environment. We have to recycle and collect our plastic bottles, we have to have storage capacity of water – we can't waste our rough water or our grey water, as all of this is food security. We have to treat our environment differently. *<ref>P31: Community Jtranscript.docx - 31:65 [(104:104)] by Super</ref>*
We were brain washed into thinking that what we were doing was wrong and we needed to do things differently so now we are always craving for things like American processed food which has caused us to become very food insecure – why? 1. We have to import these things and 2. Having imported it, we have gone away from the food of our culture**…** So I agree with the people of Portland, I don't want any flour and rice– **I want my cultural food. Every season in Jamaica there will be something we can eat and then we'll be food secure**. **We want security in things like water supply; we want seed and land security for there to be food security. Can you believe we have to import our national dish? What's national about it now?** *<ref>P32: Senior Govt repTRANSCRIPT.docx - 32:6 [(30:30)] by Super</ref>*
So food is tied to sovereignty. Our foods are more nutritious than those that we import. Our organization's agenda has always meant food sovereignty – producing for your own consumption and possible export. It was not food security as we are seeing it now. *<ref>P34: Regional Agri Consultant rep transcript.docx - 34:27 [(86:86)] by Super</ref>*
Healthy environment; Good physical environment *<ref>P306: Community Ttranscript.docx - 306:12 [(17:17)] by Super</ref>*

I used to eat cassava but I don't fool round it again. It's hard to find a replacement even though we still grow cassava

Food security is more holistic and much bigger than food security is usually thought of – it's not just about people being hungry and needing to feed themselves. Food security must be seen from a cultural point of view, market point of view, nutritional point of view, commercial, learning transformative point of view. It is much more holistic that traditional food security of people being hungry and we need to feed them. How do you leverage a sector to achieve some development goals?
<ref>P 2: Community GRrep transcript.docx - 2:56 [(164:164)] by Super</ref>

A second aspect of sovereignty is tied to the natural environment and sustainability. Food security, as one farmer's group executive noted, is not only about the current generation's food practice but also about future generations having knowledge of and access to food today. Planning, not just food planning but sustainability planning, is therefore an important strategic move to ensure food security resilience.

A third matter that clusters under the heading of food sovereignty is the security of water, seed and land tenure. This perspective seems to be the gravamen of small, poor, subsistence, and often landless, urban and rural farmers. Most of the community members who were farmers pointed to the need for land security because some were leasing land for generations but did not own it. As such, they were unable to make land improvements and to better plan for their food security thereby building resilience in the face of climate change and insecurity.

A fourth connotation of food sovereignty stresses the role of culture in shaping attitudes to food but more importantly, the role of food in understanding cultural nuances. Understanding the cultural nuances at the national and community level allowed for the NGOs to advocate for a more holistic approach to food security which would necessitate a widening of the food security discourse beyond hunger to look at issues of poverty and

globalization. An American based NGO described the role of the farmer-field school approach to ensuring food security: "Initially we trained 22 extension officers of which 7 worked and trained 22 farmers in the communities. These 22 farmers will be going now to train 150 farmers locally in their communities. We along with will help to provide supervision of the process. So this is food security.

Food security is not straight forward and it deals with more than the economics but also the social problems. For example, we need intervention into the problems facing farmers before it turns into crisis. The 7 RADA officers that St. Elizabeth has can't help when onion crisis occurs. They would be overwhelmed when the onion crop goes into chaos in St. Elizabeth – so food security means we need to expand the knowledge base and ensure farmers assisting other farmers and this will help to lessen many farmers saying RADA not helping and cannot help them. Training and support, training and support – one farmer helps the other. That's food security." (NGO respondent)

The development of training sites for the diffusion of farmer to farmer knowledge and for articulating a local approach to local concerns, with limited dependence on the experts' physical input, has become a central feature of the sovereignty movement. Through this approach farmers are expected to learn to develop solidarity and trust and to utilize community self-help. This practice should also result in the preservation of the indigenous agricultural and resilience practices, recapturing and re-discovering old ways to ensure sustainability of the natural resources and ensure land, water and seed security.

Representatives of the economic (commercial) sector did not make reference to food sovereignty. Their view advanced a neo-liberal approach to food security though not one that emphasized matters of livelihood and economic stability.

Food Security as Economic and Livelihood Stability

The livelihood and economic stability approach to understanding food security was supported by 11% of the informants (see Figure 12), most of whom were from the rural communities. Food security is therefore understood as economic security first and foremost. This differs fundamentally from the food sovereignty perspective even though aspects of the food sovereignty arguments *are* about livelihood security – specifically advocating for farmers to earn a decent livelihood.

Table 29

A Selection of Food Security Definitions as a Livelihood/Economic Stability from the Jamaican Stakeholders

Food Security definition: Livelihood and Economic Stability
For food security you have to look at the big picture. It is a nation's reliable access to food whether imported or grown within their country sufficient to the point where they can feed their population But here is the important part there must be excess of food to export to gain a profit. If there is no excess there is no food security. There's food but no security. Let me explain. If you want to be able to feed your people know it is normal for population to grow so you cannot just have enough to feed your current population. If you are only going to have just enough to feed your people you are not serious about security, what happens when there is a shortfall? You must be in a position where you have excess at your fingertips and the additional food you have you have to export, you need to add value to it by canning it, converting it like turning it to banana chips and export it for profit. **Excess is key to food security. If you are talking about food security and you are not talking about excess you are concerned with food – not security. Security is all about excess. Having enough is just about food**. *<ref>P13: Govt contract rep TRANSCRIPT.docx - 13:1 [(5:5)] by Super</ref>*
Food security is about securing income and building resilience. If you secure people's income they can satisfy their livelihood and food needs and this is not just a government responsibility but we need partners. *<ref>P16: Govt directorTranscript.docx - 16:1 [(4:4)] by Super</ref>*

Food security is not a focal point by itself but rather it is livelihood that is the focal point**. So for us food security is livelihood security.**
<ref>P29: International partner NGOUTranscript.docx - 29:15 [(79:79)] by Super</ref>

Technologically driven agriculture – greenhouse technology that's food security; Surplus and quality; *<ref>P306: Community TGroup transcript.docx - 306:1 [(6:6)] by Super</ref>*

I come from the country and I remember when disease took over the animals and my father had to line up in very long lines to get the animals vaccined so that we could continuously have proper meat to be butchered. That was our food security.
<ref>P306: Community TGroup transcript.docx - 306:19 [(26:26)] by Super</ref>

The way the project was designed – we looked at agriculture and saw how much Jamaica was importing. We had concerns about traditional food security - the availability of food for people to feed themselves. **We actually see food security as an economic, value added to build the economy of a community**. We saw the open lands. We didn't see backyard farms like the government, rather we saw open lands, we saw economic promise. We saw that raw food material will not necessarily achieve the ultimate there must be value added food processing. That's food security not backyard gardens.
<ref>P 2: CBO rep transcript.docx - 2:53 [(158:158)] by Super</ref>

Jamaica has become the dumping ground for America's free dumping of food. A more cohesive concept of food security needs to be developed or we will end up with the same solution– a solution that says people are hungry so feed them which ends up breeding dependency. **Food security needs to be embedded in an economic model that is empowering to the natural intentions and in Jamaica's case the natural orientation of the people**. The Global Entrepreneurial Report shows that Jamaicans are amongst the most entrepreneurial people, nascent entrepreneur– our women are number 5 in the world for natural entrepreneurship. Every day you can see a woman walking with her basket on her head selling bananas and other fruits – why not enlarge this so she can own her own fruit and smoothie company? So w**e** can use food security issues and agriculture because everybody comes together around the need to eat. It is a key survival issue and it can be used to solve economic, social, political and other problems than just filling belly. If it is just filling belly there is an easier way to do it - like the US we can just bring food and dump it. Remember Jesus allowed manna to fall from the sky.
<ref>P 2: CBO rep transcript.docx - 2:65 [(194:195)] by Super</ref>

A lack of liveable wages and community assets are the chief concerns undermining food security at the community level. These are exacerbated by a general lack of investment in agriculture. Most of the urban respondents did not grow their own food and therefore must engage the market with their wages to access food. The Livelihood approach to food security for them was interpreted as entrepreneurship, trade, surplus for export – a broader concept than being able to access "enough" food through wages.

Of the 50 percent of Jamaicans who still live in rural areas, 72 percent are poor and agriculture is their main source of employment. In both 1989 and 1998, households whose heads worked in agriculture were roughly twice as likely to be living below the poverty line as households whose heads worked in either manufacturing or services. Although the agricultural sector is declining overall, it still supports 150,000 rural families (Wyss & White, 2004, pp. 23, 24). As described by McClintock, Cooper & Khandeshi, (2013), much of Jamaican agriculture occupies the gaps, spaces and margins left available by the food system as well as the built environment, for example backyard gardens. It is within this context that the subset of interpretations about livelihood and economic stability is framed. It carries implications for:

1. The role of private sector producers and cooperatives
2. The role of trade subsidies, import of foreign food and the export of local excess
3. The entrepreneurial and creative energies of the people
4. Projects that can be easily scaled up to become a part of the dominant industrial agri-system.

One community respondent captured the livelihood concept's meaning in the following words:

> "to be honest, food security fi mi tideh, tideh, is mi pickney gone a college and gett'n a good job. Not working di farm. Farming can be ungrateful. All I working fah is for dem pickeny to finish college" English: ("to be honest, food security for me today, today is my children going to college and getting a good job. Not working (on) the farm. Farming can be ungrateful. All I (am) working for is for my children to finish college," (community respondent)

The livelihood/economic outlook on food security supports the dominant industrial agri-food system and focuses on the market. From this perspective food access is linked to viable and multiple sources of income and assets at the national and community scales. National food security becomes a function of increasing agricultural exports that absorb excess domestic production as well as engaging in value-added and technology-driven agriculture. At the community and individual scales, the best pathway to guaranteeing food security is not simply by adding income but through entrepreneurship. Being able to provide the best commodity (For example, healthy meats) and getting a good education to understand market mechanisms were key requirements for food security. This perspective hinges on the assumption that all stakeholders want the same outcome, namely a robust market that encourages a sustainable form of trading. Inter-sector partnership was cited as the absent mechanism needed to boost effective domestic market performance for Jamaican food. Surprisingly, none of the economic sector representatives advanced this understanding of food security which has allowed some insight on how these larger actors consider community-level efforts – possibly as interstitial. There is a belief by one respondent representing the economic sector that the requisite skills needed to drive economic growth are absent from the communities. So, while the communities are willing to contribute they do not have the capacity to deliver.

Other Dimensions of Food Security

The research data show that 20% of the respondents exhibited attitudes towards food security resilience that could not readily be labelled. This group represents the second largest expression of any sentiments about food security. A few of the participants' attitudes bordered on futility and hopelessness, while others were apathetic, yet still others, uninformed.

Broadly speaking this group could be resolved into two complementary parts. The first denoted futility and helplessness. Food access was precarious before the onset of any hazard; the hazard served to aggravate an already untenable situation. The leader of a women's cooperation noted they were already on a hurricane diet before the hurricane (see Table 30) therefore the hurricane only exacerbates the situation. There is recognition however, that there was an undeniable link between increased incidence of food insecurity and disasters.

Table 30

A Selection of Food Security Definitions: Defeatist and other Conceptualization from the Jamaican Stakeholders

. "After a experiencing a few hurricanes and being without food in the long run, we can manage to find food immediately with our little storage, but most people seem confused, not sure what to think, not sure who to follow and whether it would make a difference to do anything new as the hurricanes come same way and we are no better off, just more fragile and the nerves rattle a little more when we think of what could possibly happen. At that point there would be no need for food security as we would be no more…" (community respondent)
We cannot be food secure in Jamaica when agencies such as RADA have one extension officer to 400 farmers. We cannot be food secure when young people in rural communities sit on the corner with a lot of subjects, no jobs and a lot of idle lands around. We don't care about food security because we don't understand it.
Food security has implications for national security and productivity, and as such is not a matter to pussyfoot around. Given the context, a very straightforward question is, are we a food-secure or insecure nation? Anecdotally, I believe the pendulum is predominant in the insecure corner. This has coerced my imagination to concede that a food security effort in Jamaica is a notorious sham. (Letter to the Editor)
People in here go to bed without food but them shame to say it because they are lazy. But the truth is many of us in here have been on a hurricane diet without the hurricane. The hurricane only makes it worse, it throw we off the cliff. (Community leader)
Food security – is that something new? Every day we hear something new. Climate change, now food security. What's that? Is it the new GMO thing I hear people talking about? (Community leader)

A few respondents indicated that being able to keep their sub-standard dwellings safe was more important than securing food. The president of a citizens' association for one of the communities noted that:

> "house is first as it is a big thing – is a life time you take to get it. Food you can get even if you have to steal it. Not that I am stealing it but you have to put everything into perspective".

One representative of a rural community parents teachers' association for the local primary school and an executive member of the community disaster preparedness group noted:

> "you can find help to get food – but we can't sleep out under the stars wid (with) the wife and children at nights. Is not camping we camping. We have to look after the house first. That is a major life investment, which we cannot make again. The assistance from the government takes a while, a long while to come and the repairs to a house takes a lot of money. So in a hurricane, we have to think house first not food"

The president of the community based disaster committee added:

> "I am going to slab my roof. I am going to teach my children that if it is one banana we will eat it as we have to starve to get a slab roof. That's how I seeing food security. Food security is about building resilience. You can't a drop down and the structure around you a drop down too. Even one thing must stand strong. Well, I used to go to the shelter to help out because my house top always blow gone. But soon I won't be able to do this. The money is just not there again to keep buying new sheets of zinc to re-roof hurricane after hurricane. So is time my house stand strong in case the next time I drop down I cannot get up back. Remember government don't really have it to care. That is food security resilience, securing the roof over my head is food security resilience. If I don't do it, nobody cares and will help me. Absolutely nobody. I have to put on blinkers now. Something must have to stand up after the storm. If everything drop down you can't go on. People around here are losing hope and can't afford to build again".

Securing possessions was not the concern of only the poor in the community; a number of middle class citizens reported that their status was threatened as they were not able to recover and recuperate from their losses before they were impacted by new losses as a result of a hurricane or freak storm or even drought condition. Many of these respondents said they were not able to transfer the risk through housing insurance because the weakened economy had forced them to abandon housing insurance. Respondents described the middle class in their community as "fragile" and as quickly

becoming the newest losers of climate change and plunging them into being food insecure. Hunger will persist in the absence of property rights and owning a stable house.

Paradoxically, statements linking food security with helplessness came from key community leaders who were also community disaster mitigation leaders. Their houses were major assets and collaterals that could be used to access resources to ensure they would not go hungry indefinitely. Participants were willing therefore to give up on their access to physical food to ensure their dwellings and other material possessions were secured. This perspective reflects Wood's (2003) "faustian bargain." This concept of the faustian bargain focuses on ways in which persons increase and entrench vulnerable behaviours because the determining condition of the poor is uncertainty. As the poor in society are in constant search of security, which the government is perceived as not being able to provide, citizens have to ensure their own security. Securing one's dwelling place allows for the security of one's food.

The second thread is woven around a sense of cluelessness and being unaware. For others a general sense of apathy towards life is articulated. When asked for their understanding of food security, a few respondents noted they had never heard the term. It would seem that though persons had not heard the term this was not an indication that they had not thought about the concept. Their perception though was not in terms of what it means to be hungry, but rather trying to define what it means *not* to be hungry. One responded noted most Jamaicans were 'peckish' and that may be termed by some persons as hungry but he had seen stories of hunger elsewhere on the television and few Jamaicans are at that stage. To keep from being hungry these Jamaicans engage in farming as well as a "little kitchen gardening".

When prompted by a reference to the government's campaign to eat and buy Jamaican grown products some respondents stated that they were not "into politics" so they didn't know there was an *eat Jamaican* food security campaign. One respondent in a rural community stated that she thought the *eat Jamaican* campaign was about getting the tourists to eat yellow yams because Jamaican sprinter, Usain Bolt, the fastest man in the world, is quoted as saying his speed was directly linked to his consumption of yellow yams. She further pointed out that she knew persons who worked in one of the hotels on the north coast, one of Jamaica's tourist belts, and the practice in the tourist districts is to serve the tourists American and European foods, and not Jamaican foods. She could not understand why tourists would come to Jamaica to eat American and European food instead of authentic Jamaican food. Therefore she assumed the *eat Jamaican* advertisements were targeting the hotels and the tourists, not Jamaicans. After further discussion about the efficacy of the *eat Jamaican* campaign, a respondent asked "could it be that Jamaicans are too poor to *eat Jamaican*?"

Discussion

To appreciate the meanings associated with food security in Jamaica is to understand the ways in which food is socially constructed and used to define and symbolize who Jamaicans are as a people and how far today's society is from the colonial plantations where food was given in return for work performed by slaves. It is through food that a re-imagining and re-creating of a community's identity is achieved. Finding a way to conceptualize food security around the four approaches identified by the respondents allows for a better understanding of what threatens food security and what motivates food system resilience building. Food has long contributed to the community's

identity including its perceptions of security, especially in times of a natural hazards event.

Evidence from this research shows that experts, government officials, community residents, NGOs and representatives of the economic sector each perceive food security differently. As a consequence there are shortcomings, limitations and gaps in the collective view of food security that make it difficult to create a coherent framework for action to nurture food system resilience in the face of a hazard event and at other times. This recalls the question that Mitchell asked about Humanity's capacity to prepare for future risks in the midst of complex environmental and societal processes: how can "… different systems of knowledge about our ambiguous physical environment, and competing systems of action within our fractious society, … be brought together in pursuit of survival, security, sustainability and the other diverse goals that humans wish to obtain?" (Mitchell, 2005).

Interrogating the way in which food security is conceptualized by Jamaican stakeholders suggests that a fuller understanding will require a more integrated research agenda than at present; one that investigates the spatial variability of perceptions in light of climate change and other realities. Large natural disasters like hurricane Katrina are already complex, often attended by interpretations that are "multiple, unstable, contested and often mutually incommensurable" (Mitchell, 2005). By extension when these interpretations are exacerbated by other threats and juxtaposed against food security, a worrying outcome may be the result. Policy makers need a better understanding and appreciation of the voice of local stakeholders not slavish adherence to the views of international organizations, the research community and funding donors. Expert-driven,

strategic approaches to food security that are followed by communities and governments need to be complemented by tactical approaches that use local knowledge and is appropriate to the needs of local individuals and groups. Bringing community knowledge and industry knowledge within a single framework would move policy initiatives in the direction of adopting more meaningful food security plans and programmes. How this might be accomplished is discussed in the following sections.

Binding cultural identity into food policy: The national dish and food security. The cultural identity dimension of food is depicted in respondents' narratives about ackee and salt fish, the national dish of Jamaica. These underscore a discourse about culinary slavery which suggests Jamaican palette and culinary practices are imprisoned by and enslaved to the use of foreign/imported foods. This discourse has wider implications for government policies on food security.

Ackee and salt fish, was cited as slave food by the National Geographic Magazine and ranked second among the world's best national dishes, following only hamburgers in the United States (Jamaica Observer, 2013). It is believed that the ackee fruit was brought from Africa while salt fish was imported from North America to feed slaves cheaply and well. For many slaves salt fish was their only source of protein and even after slavery it remained the cheapest available protein for ex-slaves. According to Cooper (2012),

> "…the ackee … has become totally Jamaican, (however) imported salt fish is a symbol of our continued dependence on foreign goods and services. Surrounded by a sea of fish, we still believe that Canadian cod or, more recently, Norwegian salt fish is the ideal complement to ackee".

But now salt fish has become an unaffordable gourmet food for poor Jamaicans. This forces them to consider some awkward choices. Apart from Pollack (another imported fish) there is little affordable fish protein that might be substituted for salt fish.

A few respondents noted finding creative ways of eating ackee with “sausage,” “pork”, “chicken back”, “red herring” and what they could afford to buy. However, this was done in the privacy of their homes and could not be shared with their neighbours as they would feel “embarrassed”, “bad”, “ a way”, or “like a fraud” to serve this derivative of the national dish. One community member confessed to housing her neighbours once during a hurricane but pretended to not have any food as she could not serve ackee without the salt fish. Indeed salt fish is a near ideal food during hurricanes and in dry seasons. You didn’t have to refrigerate salt fish. It could last in the cupboards for months if not years and would not spoil and it could be cooked in many ways that could stretch to feed a large family. It didn’t even need much cooking, if any at all. “You just had to soak it overnight to get rid of all the salt and you could eat it just like that.”

Since the 1970s salt fish has become a target of the Jamaican government’s import substitution policy. Jamaicans are advised to substitute local products for imported salt fish. However, respondents noted a number of problems with this advice:

1. It assumes a demand for specific locally produced foods which may not exist.
2. The cost of locally produced food items are prohibitive compared with imported items which will necessitate government intervention in the market to protect the farmers and/or the consumers. Import substitution therefore will be a strategy that privileges local production via intervention by the government in the economy.
3. Substitutes will be disruptive to the collective memory of authentic Jamaican foods and recipes passed on generationally and on which cultural practices of story- telling, socialization and community social connectedness depend.

It is clear that imported foreign foods are deeply embedded in Jamaican agricultural and culinary traditions. This was illustrated by several informants in this study. For example, a local commentator on social issues on the island forwarded the following explanation for Jamaicans' entrenched foreign tastes and the futility of a campaign to "eat local":

> "Historically, the plantation economy was based on a captive labour force totally dedicated to the production of sugar. Little or no attention was given to the development of a domestic agriculture for feeding the population. Therefore, the cultivation of crops to meet domestic needs was an alien concept. At the end of slavery, many freed slaves took off to the hills and attempted to develop a self-sufficient agriculture sector. For plantations to be profitable, they required the supply of cheap labour. The self-sufficient farming pursued by ex-slaves was, therefore, inimical to the interest and viability of the plantation. As such, it was common practice for plantations to send military and paramilitary troops to destroy the crops of the peasants. This was to force the ex-slaves to sell their labour to the plantations in order to survive. Consequently, this only served to entrench the appetite for foreign goods and create habits of dependency. Therefore, weaning Jamaicans from foreign goods is a Herculean task. The appeal to patriotism in order to get a population to consume a good can only be short-lived". (Wilson, 2008, p. A8)

A government officer added:

> "Sixty-one per cent of products in the food basket are import-based and this is a major statement on our level of dependency, hence our vulnerability to external shocks whether economic or natural hazards and a major cause of our billion dollar import bill,"
> (Senior government official in the Ministry of Agriculture, 2013)

Other sources pointed to the scale of food imports in Jamaica:

Jamaica is the largest importer of agricultural products from outside the region at 21 per cent or US$997.5 million of the total regional import bill (Sanders, 2008).

A former Minister of Agriculture reinforced these messages:

"Last year and even earlier this year I made a few speeches where I keep pointing out that as a country faced with food security problems we have to look carefully at what we can grow and what we know we cannot grow. We have the soil, the climate and the farmers are ready to work. We have some of the hardest working farmers in the world

who are willing to produce. This doesn't mean we will not trade because food security does not mean a lack of trade as some things we do not grow and nutrition is fundamental to food security. There is a misconception out there though that the government is to ban food importation. I hear many persons saying we can substitute our imports with home-grown produce, but the data I have, show that only about 40 per cent or so of the imported foods can be substituted. We talking things like onion and carrot and Irish. This is the food government is to secure." (former Minister of Agriculture, 2011)

This raises the issue of what is considered appropriate food for a community and a country, especially in light of expected climate changes. Up to the beginning of the twentieth century, the GoJ used to subsidize the cost of salt fish; however, the weakened economy ended that practice. An overwhelming portion of the respondents from the rural area identified tubers, roots and bananas as other local items that the GoJ should consider securing.

> "We prefer to work with the drought. We can't manage the hurricane. After two days the yam, banana, and plantain done and we only eating rice and flour. Rice and flour bind us up so we can't relieve ourselves at the bathroom freely. Always have to be straining after eating white rice and flour. The government must do like Joseph in the Bible and build a storage area for our ground provision and stop this rice and flour, rice and flour". (rural male respondent)
>
> "I speaking for di (the) community. Listen me, we don't eat mule and donkey. Fish live eena (in the) sea an' we live pon (on) the lan'. In dis (this) community we don't go sea. We nuh (don't) fishin'. We eat wha' we grow, we eat bush. We nuh (don't) eat meat and we nuh fish so we nuh go sea. Many a wi allergic to tin tings and can't eati. (English: Many of us are allergic to the tin things and cannot eat them).We eat whole foods whole wheat rice, fruits and vegetable. We eat beans and peas. We don't do meat. We can't tell horse from donkey meat so don't bother with the meat, but we caan (cannot) get wha' we want fi (to) eat. Wi a sick wid wha' wi a eat (Translation: We are getting sick because of what we are eating)". (male respondent)

It would seem that there is a disconnection between some communities' understanding of what is appropriate food for food security versus the GoJ's food security understanding and policy decisions. Informants questioned the safety of the food and alluded to not trusting some of what is available as food on the market.

Perceptions on food safety, local production and food security. Food safety issues should not be ignored. For the economic sector respondents, food safety was the most important dimension of food security. Being able to guarantee consumers that their commodity met the highest standards in the world fulfilled their food security duty.

The concerns raised are not all at variance with the GoJ's understanding of food security however; participants are interrogating the availability of the local food they want to eat as well as the cultural appropriateness of their food choices. They are articulating their preference for ground provisions grown on the island rather than imported food items such as rice and wheat.

Jamaica imports at least 100, 000 tons of rice annually (Flemming, 2012) as there tends to be widespread belief that Jamaicans cannot have a main meal without rice. Jamaica also imports 100% of the red peas that is consumed on the island as well as all the grains used to produce animal feed (Clarke, 2013, p. 18) even though Jamaica has the capacity to grow all the peas and beans consumed in the country.

Successive governments have experimented with a number of projects to grow rice in Jamaica. Rice has been grown at Elim and BRUMDEC in St. Elizabeth in the 1980s (Food and Agricultural Organization, 1980), but it wasn't until the recent food crisis of 2007/8 that leaders began to look seriously into an alternative to rice. Using the experience of some African and Latin American states as motivation, the Government of Jamaica (GoJ) had floated the idea of growing cassava.

A former government minister noted:-

> "…a major challenge of this government is to provide a local substitute for imported starches like rice and wheat. In this regard another initiative of the Government to address the country's food security, is the development of a viable cassava industry. This is not a new crop, but we can do so much more with it. As

> a nation, we face the unfortunate reality of our major staples being imported products such as wheat, corn and rice. Cassava is ideally suited as a substitute for these products, both for human consumption and for animal feed…cassava provides the same amount of energy as rice. It exceeds the nutritional value of rice in its protein content, as well as in fibre, calcium, potassium, iron, Vitamin C, and thiamine, which makes it a suitable substitute for rice" (Tufton, 2008, p. 27)

In Sub Saharan Africa, cassava is the second most important source of carbohydrate next to maize and it is used widely to combat conditions of drought. Scientists at the Colombia-based International Center for Tropical Agriculture (CIAT) have dubbed the crop 'the Rambo' of food crops given its outperformance of crops like potatoes and beans and sorghum using a combination of 24 climate prediction and crop suitability models (Jamaica Observer, 2014).

Perceptions of the role of expert knowledge in food system resilience efforts. Surprisingly, agricultural technicians and advisors to the Government of Jamaica rejected the idea of planting cassava as a replacement for rice, in effect stymieing the government project.[11]

Five objections were voiced by the technical expert at the Ministry of Agriculture viz.

1. In Jamaica, there is a wide spread belief that come cassava plants are poisonous and many people will not prepare it the right way except for the making of bammy. Bammy making goes through a rigorous process to remove the poisonous juice. So as far as we are concerned people will not touch cassava unless it is to make bammy. That's what we do with it in Jamaica. We make bammy and bammy cannot replace rice.
   (Male scientific technical advisor on agriculture)
2. The economies of scale needed to drive cassava production we don't have it as the lands are already taken for other crops as well as only small plots the farmers he

[11] By 2015, the local brewing company, Red Stripe, announced its $1.7b investment plan which included using cassava to brew beer and fulfill its corporate responsibility of training local farmers in cassava cultivation best practices. This effectively countered the technical expert's assessment.

(the Minister of Agriculture) will depend on have. So the plans the Minister had would not work and we told him this. The minister didn't like this!

(Male scientific technical advisor on agriculture)

3. In Africa, they get assistance from the EU to plant cassava for animal feed (The Asians too get assistance) so there's a guaranteed market at a specific price. I did a lot of work on cassava and when we looked at cassava for animal feed it was more profitable for farmers here to sell it, process it into bammy and sell the bammy to buy feed. We tried to encourage cassava for animal feed here too but it wasn't efficient because it was not computing. We have higher yields than Africa but our small acreage makes it inefficient

   (Male scientific technical advisor on agriculture)

4. Utilization is important and key to understanding the role of education as a part of food security. If we go to Trinidad now, they eat cassava – they are not diversified either as they basically use it in their fast food. If you should go to D33– the American Airlines hub in Miami – you'll get cassava from the Latinos. They call it yucca! So cassava can work in some cultures just not ours. (Male scientific technical advisor on agriculture)
5. Food security concern in Jamaica is not so much a political issue as it is a technical issue because our technocrats are afraid to talk to politicians. Many politicians are in it for the votes but we are in it for the people. We have been doing cassava research in Jamaica for over 100 years now. Daphne Bennett did a lot of work on cassava from CIAT and Colombia and we bought into that research. But things have changed.

   (Scientific technical advisor on agriculture - male)

As a group the scientific technicians noted that expert knowledge was not valued by the political directorate; instead, decisions were evaluated against the impact they would have on the political popularity of the government. One technical advisor agreed and insisted:

> "… (It) doesn't matter that we have the technical knowledge and they do not. We recommend based on our technical knowledge and they do their own thing. They listen to their friends. They are the final decision makers as the political representatives. They are not technical representatives. It is all about the votes".

It would seem that political imperatives are overriding the contributions of technocrats who ought to assist to build the various capacities – absorptive, adaptive and transformational - necessary for food system resilience. The presence or absence of technical experts may therefore not be the major challenge in developing resilience.

Perhaps the financial donors are not asking questions that challenge the evidence of the requisite capacity building that is presented by political leaders? It is known that development aid is conditioned on the availability of expert assistance being available to build capacity before funding for government projects is approved.

But there is not much evidence that donors request evidence of utilization of expert technical recommendations in the implementation of funded projects. This may be seen as a gap in the policy framework. State actors capitalize on this loophole to their own political advantage. Disregard for the use of the experts' recommendations does not mean that experts fail to participate in the decision-making process but rather queries the implementation of their recommendations. One way of countering this tendency might be to emphasize co-production through collaboration between government policy makers and local universities.

However relationships between the technical experts and researchers at local research institutions seems strained. Results from research and development projects are often out of phase with election cycles, thereby hampering efforts to coordinate the role of researchers and government agencies. Respondents from the economic sector were already aware of this limitation and long ago decided to pin their companies performance to international standards developed with international partners rather than expectations of the government. One economic respondent noted that his economic operations had to be larger than the Jamaican psyche, tastes and the "politricks" of the system to be profitable. He added that community-based efforts at building capacity for entrepreneurship were just like the government's - unstable and fickle.

Agricultural entrepreneurial practices were consequently mainly able to occupy gaps, spaces and margins left available to them by the official food system (McClintock, Cooper & Khandeshi, (2013)). The organization he represented, therefore, though embracing its Jamaican roots, had to think globally. He could not align his business performance with the political system without risking bankruptcy. Insofar as planning is an integral part of building resilience these comments highlight a set of problems that make it difficult to make the food system more resilient.

Perceptions of the parliamentary process and food security. Limitations of Jamaica's parliamentary process of government are recognized by many respondents. In addition to the previously noted mismatch between research schedules and electoral ones, the end of each electoral cycle signals the possibility of a total change of policies if the previous Opposition party comes to power. Dissolving the Jamaican parliament every five years to make way for a general election leaves the state machinery void of representatives of the people for the period between when the parliament was dissolved until a new government is elected. The newly elected government is under no obligation to continue with the projects of the out-going government. In recent years, perceptions of corruption have stained the political directorate resulting in poor ratings by Transparency International's corruption index. In 2015, Jamaica ranked 69th of 167 countries[12].

Concluding Thoughts

This chapter has focused attention on meanings attached to food security in various sectors of Jamaican society. Trying to fix the food security challenge which took decades to be created is a mammoth task. Peeling back the layers of contrasting views

[12] See http://www.transparency.org/assets/data/cpi2015/cpi-data.json 15/02/2016

that frame the policy context and which are not all reflected in the official narrative on food security is a particular problem. It is becoming clear that a number of conversations are happening simultaneously in silos involving the government, its development and economic partners, the communities and NGOs - conversations that need coordination and greater overlap. It is also clear that the official narratives on food security cannot be allowed to be the only narrative.

Food problems experienced in the aftermath of hurricanes, droughts and other natural extremes are situated within the foregoing larger context. Chapter six shifts attention to the perceived threats posed by natural extreme events that affect the food system and the means by which they are managed.

Chapter 6

Perceptions of Natural Threats to Food System Security

Introduction

This chapter addresses how communities characterize and understand specific threats to food security during times of hurricanes and drought (For the purposes of this phase of the study informants were told that food security might be defined as a community's capacity to ensure that its members do not go hungry during the hurricane cycle or during drought). In this context threats is a broad term that goes beyond natural risks to encompass all perceived problems that hamper the achievement of food security during periods of active hazard.

Sections 6.2 and 6.3 present findings of perceptions for hurricanes and droughts respectively. During focus group meetings, efforts to ensure food security during the four phases of hurricane disaster management were cataloged: prevention, preparedness, emergency response, recovery[13]. These were then displayed graphically using a modification of the hazard assessment tool employed by Chevaliers and Buckles (2013a) and described in detail in Appendix E. That tool, combines two components of risk (R): the magnitude or severity of the potential harm (S), and the probability (P) that the harm will occur. Participants rated the threat associated with the natural hazard using a scale for severity/magnitude of 0 to 10. They also rated the probability that the hazard would

[13] These are overlapping phases with preparedness, emergency response and recovery occurring immediately before, during and after the impact of a hurricane and prevention occurring mainly thereafter throughout the period up to the onset of the next hurricane. Many hazard managers employ the duration times noted herein as approximate guidelines; actual durations may vary.

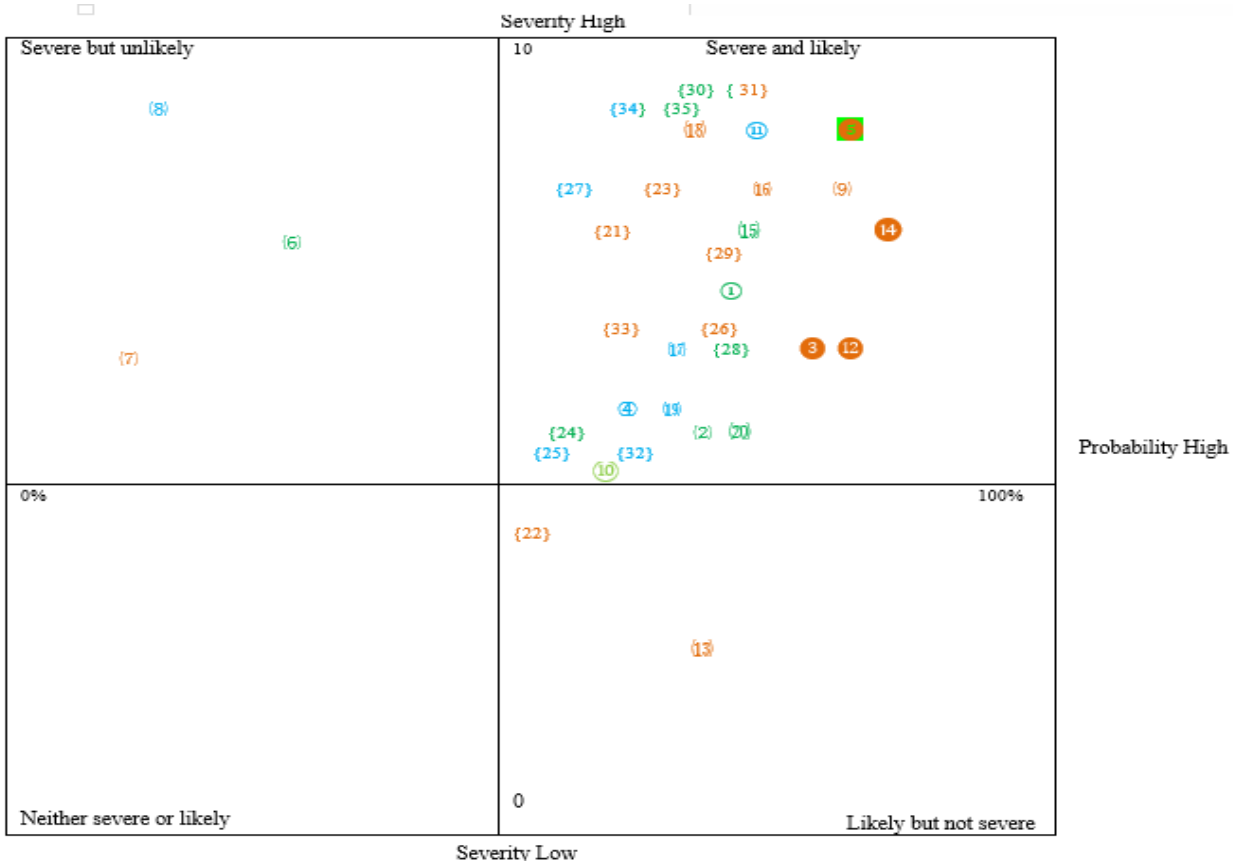
occur using a scale from 0 per cent to 100 per cent. Additionally, participants were asked to gauge the probable impact of each hazard event on the community's ability to build food system security and their capacity to respond.

Once all the threats associated with food security and the specific hazard were identified, participants were asked to prioritize these threats in the order that they hindered the construction of a resilient food system. Threats that did not have the full consensus of the respondents were removed from the list, leaving only those threats about which every participant agreed. The same procedure was employed for perceptions of drought. However, because drought is a slow developing and prolonged hazard, a division into four phases of response is much less meaningful. As a result there is only one drought response matrix.

The prevention phase of a hurricane. The prevention phase for a hurricane was defined as the period from December 1 to May 31 which lies outside of the Atlantic hurricane season. It is during this period that it is usually possible to devote attention to long-term efforts at reducing risks. More threats to food security (35) were identified during this phase than in any other. Even though some priority threats were common to the three case study communities the impact of the threats was differentiated. All types of priority threats were identified by at least some people in all of the communities, but, given the caveat that there should be ***consensus,*** those that did not satisfy that criterion were removed from the list.

The rural community of Prospect identified almost twice as many (16) priority threats as either Trench Town or Jeffrey Town, but did not pinpoint any for which they had a high capacity for resilience (see Figure 13). However, they identified ten areas in

which they had medium capacity to garner food system security resilience in the face of natural hazards. Four low capacity threats were perceived as being severe and possessing great potential for harm. These included: lack of a community plan for coping with food insecurities; challenges posed by infertile bauxite land; flooding; and blocked roads. While lack of volunteers and lack of training to build resilience had high probability to effect harm they were also viewed as less severe (rated < 5). This community surmised that they had medium capacity to convert these threats into positive outcomes.



KEY- Prevention Phase

○ Prospect

○ Trench Town

○ Jeffrey Town

Figure 13. Food security during the mitigation/prevention phase of a hurricane cycle.

Table 31

Threats to Food Security during the Mitigation/Prevention Phase of a Hurricane Cycle

Numeric symbol	**Threats identified**
1	Landslide
2,3,4	Flooding
5	No community resilience/food security plan
6,7,8	Little or no assistance from RADA in a timely fashion
9,10,11	Lack of trust
12	Blocked roads
13	Little or no training to build resilience
14	Infertile mined out land
15, 16, 17	Praedial larceny (agricultural theft)
18,19, 20	Little or no transferal or risk (for example no insurance)
21	Weak community group/social organization
22	Lack of volunteers
23,24,25	Lack of land title
26,27,28	Unemployment high
29	Weak institutional relationships
30, 31, 32	Lack of storage facilities
33, 34, 35	Lack of alternate energy source to electricity

Jeffrey Town, another rural community, painted a different picture of resilience building during the prevention phase of a hurricane disaster. The community judged there were no threats for which they have not built some resilience capacity. Of the nine threats

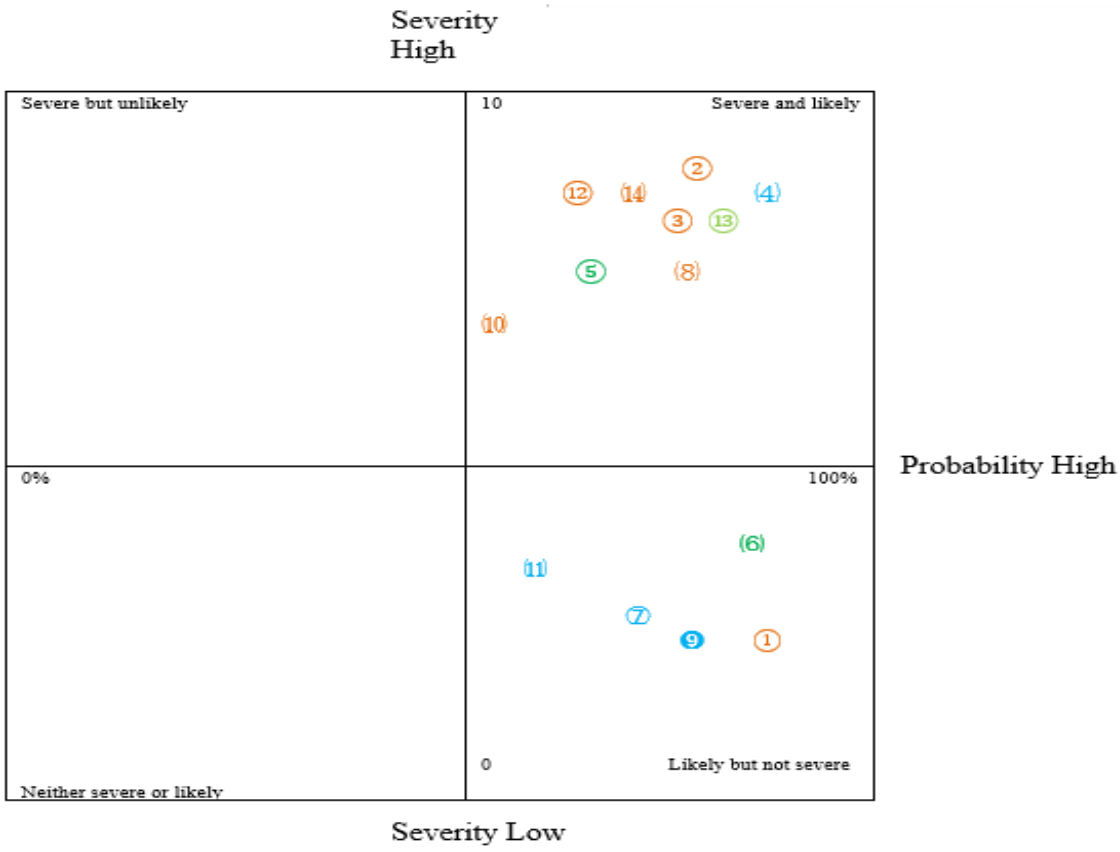
identified, they had developed high capacity for addressing two – trust formation between members of the community and the incidence of landslides in the area. The lack of trust has been identified by all three communities as a high probability and high severity (i.e. rating >5) threat, however, Jeffrey Town declared its perceived high capacity to overcome this challenge. There are other priority threats common to the three communities which were rated as severe and with high probability of hampering food system security resilience. Jeffrey Town however acknowledged having medium capacity to tackle these challenges, identified as: flooding; praedial larceny (agricultural theft); little or no transfer of risk (lack of insurance), no title for their land; high unemployment; lack of storage facilities; and lack of an alternative energy source to electricity.

The urban community of Trench Town had more in common with the rural community of Jeffrey Town than with Prospect. It presented itself as a community that's building resilience to food system insecurity in a deliberate way. Informants did not identify any priority threat for which they did not possess at least medium capacity to manage. They recognized their high capacity in building trust as well as for tackling the problem of flooding within the community. Both of these are threats that have to be addressed in the prevention phase to ensure food security resilience.

All three communities identified the lack of timely assistance from the government's agricultural extension arm, The Rural Agricultural Development Agency (RADA), as having a severe impact on building their resilience to food system insecurity, however, they concurred that the probability of this creating great harm was low. All three communities had medium capacity to cope with this threat.

The preparedness phase of a hurricane. The preparedness phase of the hurricane cycle was defined as up to 48 hours before the impact of the hurricane. These hours presented each community with priority threats that hindered their food security resilience (see Figure 14) but they were fewer (14) than for any other phase. The rural community of Prospect again recognized significantly more threats than the other two communities. Prospect informants perceived high capacity in three areas - to ensure water supplies, housing safety and sufficient money to permit stocking up on extra food.

These threats were classified as having high probability to cause harm to the food system as well as rated high severity. There was one priority threat, not knowing where to locate shelters and to receive food during the hurricane, for which Prospect had high perceived capacity to overcome. This was listed as having high probability to effect harm to their attempts at building food system security resilience but was considered to be of relatively low severity at this time. Of importance too to the Prospect community was the threat of not understanding the warning codes given by the government through the local media during this period.



KEY- Preparedness Phase

○ Prospect

○ Trench Town

○ Jeffrey Town

Figure 14. Threats to food security during the preparedness phase of a hurricane cycle.

Table 32

Threats to Food Security during the Preparedness Phase of a Hurricane Cycle

Numeric symbol	**Threats identified**
1	Don't know where the shelters are located or where to find food
2	Focus on securing the house not the food
3,4,5	No money to stack up on extra food
6,7,8	Supermarket, shop shelves low on 'hurricane' food quickly
9	Migration from community
10	Don't understand warning code communicated in the local media by government
11, 12, 13	Water scarcity
14	Cost of water

Jeffrey Town identified the least number of threats during this phase. There are two major threats however, that are considered to be both severe and likely to reduce their food security resilience but to which they too have developed high capacity. These are the threat of water scarcity and the lack of money to stack up on extra food. The probability of food shortages at the supermarket during this phase was a common threat to all communities and rated as high. Jeffrey Town, like Trench Town but unlike Prospect, did not rate this threat as severe.

Trench Town identified the least number of threats that were of high severity and probability during this phase. Interestingly, they identified the most threats rated as being less severe but having a high probability to impact negatively on their food security. One such threat for which they concurred they had low capacity during this phase was

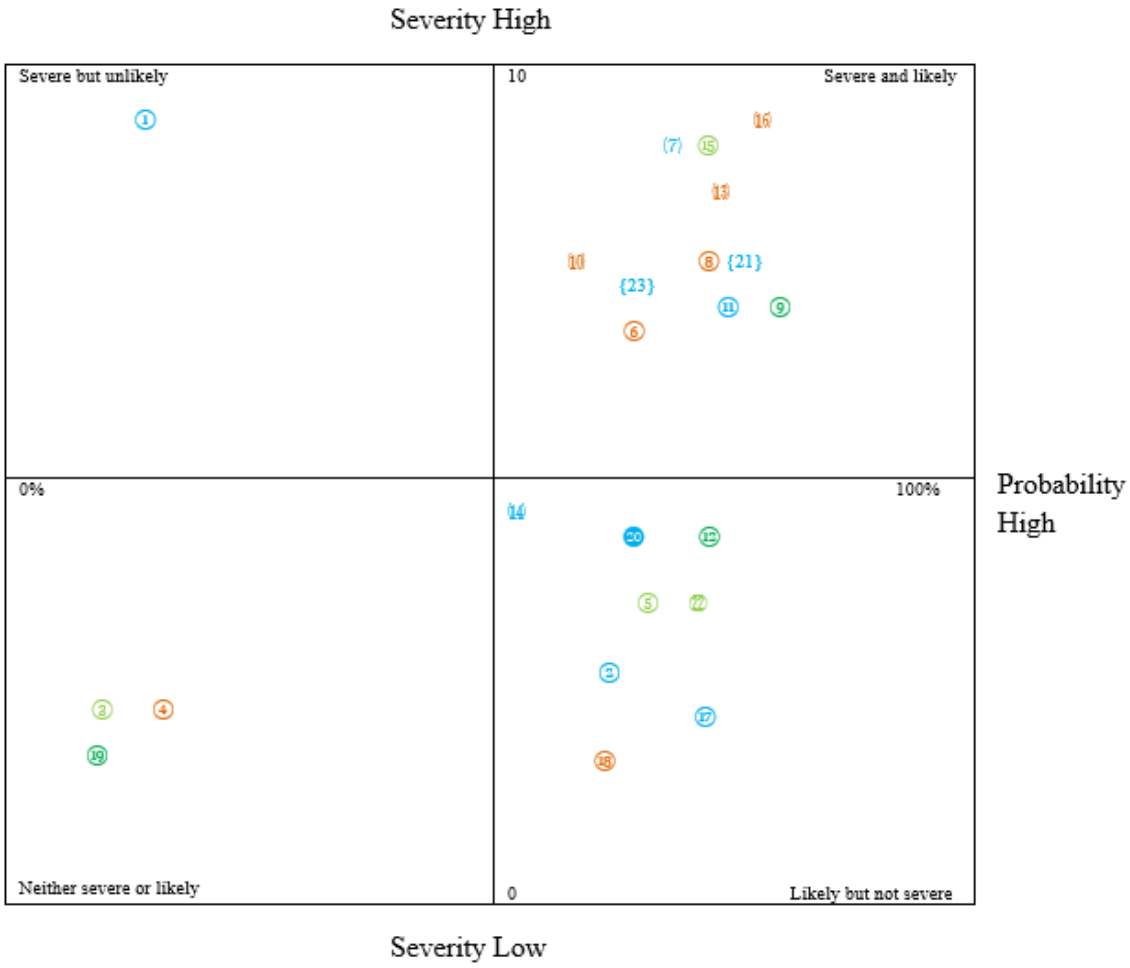
migration from the community. Though other communities had mentioned this threat during the focus group discussions it did not receive consensus to make the list for the other two communities. Like the other two communities, water scarcity was identified as a high probability threat however, for Trench Town it was seen as not being severe even though they acknowledged medium capacity.

The emergency response phase. The emergency response phase can be divided into two parts. The first (immediate response phase) lasts 72 hours after a hurricane and the second lasts from 72 hours to three weeks after the hurricane passed (see Figure 15).

Informants from Prospect discussed seven priority threats during this phase, four of which they acknowledged having high capacity for constructing food security resilience. Two threats seen as high magnitude and likely to inflict harm were: exorbitant hikes in the price of food after disasters and discriminatory practices in the allocation of aid. Price rises were identified as a problem for all communities; highest in the urban Trench Town and lowest for rural Jeffrey Town. Second, it is believed that the government assists its supporters or gives assistance in exchange for future votes. Communities that do not support the government are therefore at greater risk of being food insecure and find it more difficult to build resilience. Jeffrey Town noted that though this threat was highly probable it was not severe in their community, while for Prospect it was both severe and highly likely.

The threat associated with receiving little or no assistance from family in the immediate post-hurricane was a general threat documented by the three communities. Prospect informants believed they had high capacity to build resilience to food insecurity by means of assistance rendered by family and non-governmental organizations (NGOs).

Trench Town informants noted failure to receive such aid was highly likely and severe. Finally, Prospect informants noted they had medium capacity to respond to the threat posed by the lack of coordination between NGOs and their community.



KEY- Preparedness Phase

○ Prospect

○ Trench Town

○ Jeffrey Town

Figure 15. Threats to food system security during the emergency response phase of a hurricane cycle.

Table 33

Threats to Food System Security during the Emergency Response Phase of a Hurricane Cycle

Numeric Symbol	**Threats Identified**
1	Perceived violence
2,3, 4	Little or no help from family
5,6	Perception that Government aid linked to political tribalism
7,8,9	Exorbitant hike in food prices
10,11,12	Poor coordination among agencies
13	Poor coordination between agencies and communities
14, 15, 16	No electricity/ domestic water for days
17, 18, 19	Received culturally inappropriate food from NGOs
20	Stolen food on the market
21	Unsafe food being sold on the market
22	Churches give their members first; usually not enough to spill over to non-members
23	State of emergency/curfew

Jeffrey Town informants identified seven priority threats and noted they had high capacity to manage all. Of the seven, only two, the exorbitant hike in the price of food and the lack of electricity/water during this phase, were considered to have a high probability to impede their food security resilience. The lack of electricity and domestic water during this phase is a ubiquitous threat known through the three communities, however, Trench Town gauged this threat as severe but not likely.

Discriminatory practice in the distribution of aid by churches is a further threat in Jeffrey Town. The problem here was a consequence of assisting their congregants in the immediate phase of the emergency response at the expense of the rest of the community. Other likely but not severe threats included the perception of government aid being distributed to party supporters and the lack of coordination between NGOs distributing food during this phase. The three communities identified the latter as a universal one that impacted their food security during the emergency response phase of a hurricane.

It was the urban community of Trench Town, however, that identified the greatest number of priority threats in this phase. They had low capacity to manage one and medium capacity to overcome the challenges associated with the other four. Trench Town also recognized they had a high degree of competence to successfully confront four threats and amplify their food security resilience. One of the priority threats for which Trench Town announced its high competence to manage is the perception of violence that outsiders believe defines the community and which therefore impedes the flow of assistance to the community during this phase. This violence perception is however judged by Trench Town informants to be highly probable but unlikely to be a problem in reality.

The recovery phase of a Hurricane. The final phase of the disaster cycle is the recovery phase. There is no timeline attached to how long the recovery phase lasts, although in terms of availability of domestic foods in sufficient volumes for the market, it may take up to two years to recover completely after a hurricane.

KEY- Preparedness Phase

○ Prospect

○ Trench Town

○ Jeffrey Town

Figure 16. Threats to food security during the recovery phase of a hurricane cycle.

Table 34

Threats to Food Security during the Recovery Phase of a Hurricane Cycle

Numeric Symbol	**Threats Identified**
1	Reap unfit food
2	Lack of leadership on way forward
3,4,5	Culturally appropriate foods (yam, bananas, etc) inaccessible and unavailable
6,7	Wait long to receive promised help (for example seeds, fertilizer)
8	Waiting on shaded agricultural and other technology like Green House or even GMO foods
9,10,11	Lack of government support
12	Lose job
13, 14, 15	Exorbitant price on local agricultural products
16, 17, 18	Imported agricultural items are cheaper Non-organic food cheaper
19, 20	Too expensive to farm; too expensive to start over

Unlike the other phases, all the threats identified in the recovery phase were judged to be severe in their potential to harm food security resilience efforts as well as highly probable in their occurrence (see Table 34).

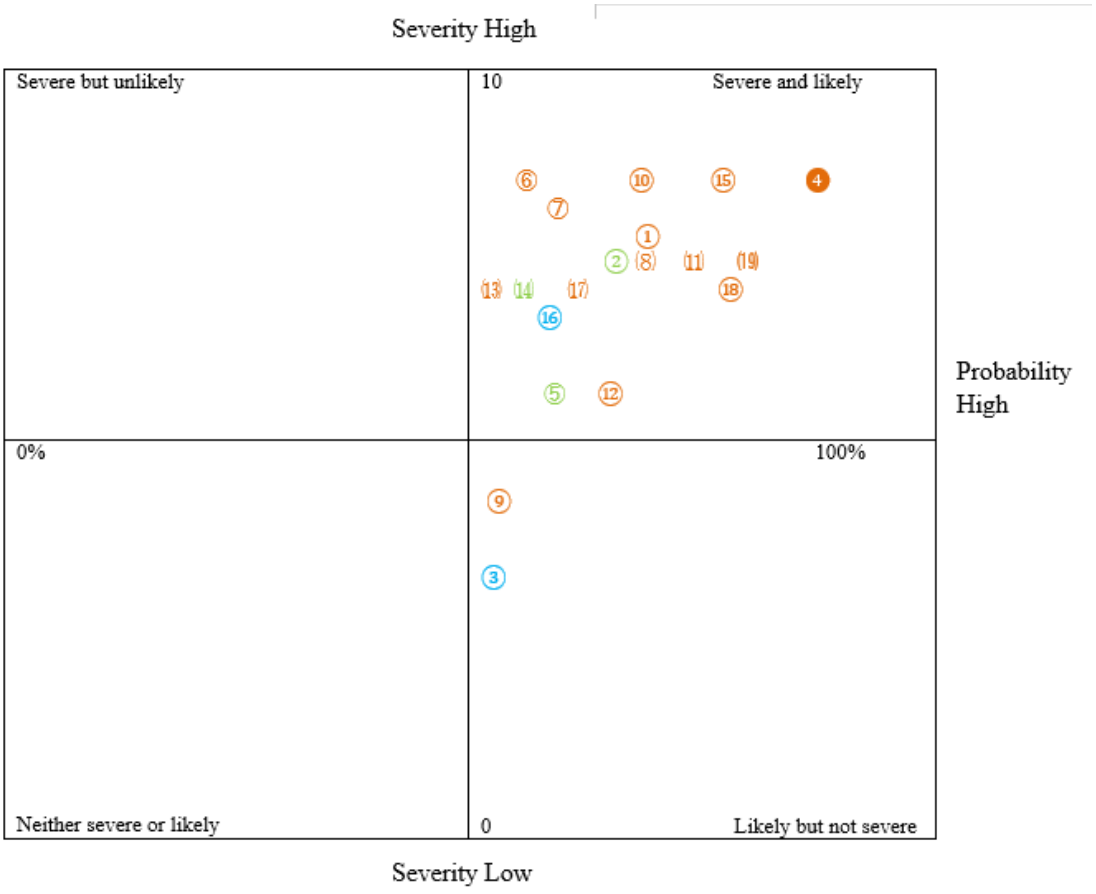
The rural community of Prospect accounted for 72% of the threats identified in this phase. They noted their low capacity to manage the effects of high prices for local agricultural products combined with cheaper prices for imported agricultural products. Over the years they have developed high capacity to not be dependent on government support. They reported medium competence to address the following priority threats: - (a)

not being able to allow the agricultural products to mature before reaping them for the market, (b) lack of effective community leadership to guide the way forward, (c) unavailable culturally appropriate food (for example, few bananas and tubers like yam and potatoes). This latter threat was common to the three communities. Prospect as well as Jeffrey Town identified a fourth threat, - inordinately long waiting periods to receive promised aid specially earmarked for agricultural recovery (for example, new variety of seeds and fertilizers as well as shaded agricultural technology, like greenhouses).

Of the 6 priority threats identified in Jeffrey Town, they had low capacity for one - the high price of local agricultural products; medium capacity to manage two, - cheaper prices of imported agricultural products and cheaper prices for non-organic products. (The Jeffrey Town Farmers' Association supported and produced organic products.) Finally, they calculated that they had high capacity to be resilient in the face of food security challenges without dependence on government inputs.

Trench Town, also registered high capacity to bounce forward in their bid for food security resilience outside of government support while they claimed low capacity to impact price increases for local agricultural produce and to manage job losses directly associated with the hurricane's economic fallout. On the other hand, Trench Town expressed medium capacity to manage the unavailability of culturally appropriate foods like bananas and tubers.

Assessment of perception of threats during a drought. Participants in the focus group discussions could not compartmentalize phases for the drought event as seamlessly as for the hurricane cycle, and as such, discussions were centred on identifying the major threats to their overall drought response. Fifteen threats were identified in total and though some were common to both hurricanes and drought, the communities had fewer threats to drought that were universal to all the communities than to hurricanes (see Table 35).



KEY- Preparedness Phase

○ Prospect

○ Trench Town

○ Jeffrey Town

Figure 17. Threats to food security during a drought event.

Table 35

Matrix of Threats to Food Security during a Drought Event

Numeric symbol	**Threats identified**
1, 2, 3	High cost of water
4	No community resilience/food security plan
5	Hilly terrain difficult to mechanize
6	Irrigation system is too expensive
7	Lack of rainwater harvesting
8	Local catchment areas are small, outdated and need repair
9	Lack of trained volunteers
10	Cost to purchase mulch is prohibitive at this time
11	Low social connectedness to coordinate activities
12	Middle men do not want to pay
13, 14	Roads to the market need repair
15,16	Customers do not want to pay the higher price
17	Better early warning system needed for farmers
18	Prefer to take loans to improve children's education than the farm
19	Little or no risk transfer

Prospect community identified the greatest number of priority threats during the drought period. Of the fourteen threats identified, all save one were rated as severe and

very likely to impact on food security resilience. Lack of volunteers who were trained assist farmers to better manage the drought was the only threat identified as probable but not severe, nevertheless, they had high capacity to deal with this threat. Of the three communities, Prospect has had the longest experience with drought given the dominant climate condition of that region (see Chapter 4) and has therefore been able to develop high capacity for more than half of the priority threats identified inclusive of water related threats and personal decisions as to whether to invest in the farming enterprise or to quit farming. It is important to note that although Prospect is a predominantly farming community there were members of the focus group discussion who were not farmers in the community though they may have an aging farmer in their household.

The Jeffrey Town community has identified only two priority threats to drought which are listed as severe and likely to create harm to their food security; namely the hilly terrain that is difficult to mechanize and the high cost of getting water to the community. They have however, developed high capacity to tackle these threats.

Trench Town also identified two priority threats during the drought period for which they have also developed high capacity to manage. One of these threats, customers' unwillingness to pay the high price for agricultural product, is rated as severe and likely, while the other threat, the high cost of water, is likely but not severe.

Discussion

Assessing some of the proximal and distal perceived threats that hamper food security resilience within the natural hazards context. In discussions of threats to food security hazards such as droughts and floods are generally viewed as macro-level events (Dilley & Bourdieu, 2001, p. 240). But recent temperature and precipitation

changes associated with global climate change take place incrementally and do not necessarily involve extreme events that are the focus of hazards planning. Understanding how macro-level hazards interact with other kinds of threats to economic, social and physical systems gives insight into the problems that face local communities that are attempting to build food security resilience. Grasping such an understanding however, requires juxtaposing macro-level hazards impacts alongside the more proximate and specific threats.

Findings suggest that there is an interpretive lens through which communities analyse the continuum of threats that they face and which also informs the resilience strategies that the community or government uses to counteract threats of climate change and extreme weather. In other words, resilience is a function of how a community interprets threats and response capacity more so than the actual circumstances. This stance either accentuates or hinders the community's response and the degree to which it explores options for obtaining access to food. Resilience is therefore not only contextual but relational. It will be argued that community food security can perhaps be reduced to an assessment of options within the relational contexts of social capital and place connectedness (to be discussed further in chapters 7 and 8).

A vulnerability approach to food security is probably inadequate because it limits the agency of the communities and neglects the role of the interpretive lens used by the rural and urban poor to shape their responses to insurmountable threats. The assessment of threats helps to identify shocks and stressors that threaten food security but it does not explain why some communities are better able to build resilience than others. Understanding the characteristics of: the communities (see Chapter 4); their interpretive

filters in relation to the continuum of threats they face; and the context of what Woods (2003) refers to as a 'hostile political economy' wherein social resources are unevenly distributed within the society; may better help us to understand the outcomes. One respondent noted that members of the community were "on a hurricane diet before the hurricane" which would indicate that food insecurity is not necessarily a direct function of such a hazard. Even during disasters care must be taken not to attribute all instances of food insecurity to the natural hazard event. Understanding how communities interpret the threats provides a useful way of assessing a community's food security and preventing possible food-related crises.

Taken together data from the three case study communities reveal that the prevention phase of hurricanes is pivotal for building food resilience because it is then that they confront the most problems (35 of 90 identified). A further 20 problems were identified as occurring in the recovery phase. Since both of these phases occur in the aftermath of a hurricane (and may persist over months to years and sometimes beyond) this suggests that the bulk of efforts to improve resilience might have to be focused on recovery and prevention rather than on preparedness and emergency management. A strategy that focuses on prevention and recovery is also appropriate for building food resilience against droughts because of their slow onset and slow to mature characteristics. It is also clear that there are important differences between the communities in terms of their self-assessments of capabilities to address problems raised by hurricanes and droughts. Prospect stands out as a community that perceives hurricanes and droughts pose more threats to food security than in either Jeffrey Town or Trench Town and Prospect informants do not rate their capacity to resolve hurricane-related problems as

high. These differences are just the tip of the iceberg that will be more fully explored in Chapters 7 and 8.

At this point it is appropriate to examine the applicability of two geographical concepts that are particularly relevant to Small Island Developing States casting light on the findings thus far. In the sections that follow we will address issues of double exposure and geographic scale in this context.

Double Exposure and policy related issues.

> "Mr. Speaker, the reduction of Stamp Duties on agricultural goods, as a condition for the World Bank Agricultural Sector Adjustment Loan, led to a significant increase in imports of fruits and vegetables as early as 1993. Similarly, there was an increase in imports of meat products, particularly poultry parts" (Former Minister of Agriculture- Jamaica, 2008)

The liberalization of the economy alluded to in the quote above radically changed the face of the agricultural sector and by extension the rural economies of Jamaica since the 1980s through the food aid and the Caribbean Basin Initiative programmes. This resulted in a growing dependence on food imports to support the domestic market and the persistent undermining of some local agricultural industries (Watkins & von Braun, 2003). Stephanie Black's (2001) Life & Debt documentary with official publication in 2003, tells the story of the Jamaican poultry industry being undercut by U.S' "dumping" of low-grade chicken parts to Jamaica. Wyss and White (2004, p. 25) reported the exporting of leg quarters to Jamaica at prices well below costs of production and noted that data is not available to confirm the actual number of poultry farmers that left the sector; however, anecdotal evidence suggests that nearly half of the "backyard" farmers may have left the sector, including farmers in Jeffrey Town and Trench Town.

A similar fate was meted out to the farmers in the dairy industry. Wyss and White (2004, pp. 53, 54) documented that the U.S. and EU flooded Jamaica with cheap, powdered milk in effect destroying the local dairy industry. Jamaica imported 9,981 tons of dairy products in 1992 and 22,793 tons in 1993, which netted an increase of 56 percent. As imports grew, the local production of fresh milk fell. In 1992, Jamaica produced 38 million litres of milk but by 2002, their output had dropped to 18 million litres, as a result of foreign food exports to the country. While economic liberalization and globalization resulted in restrictions of food and goods imported to the USA, reciprocal restrictions on foods and goods exported to developing countries like Jamaica from the USA was not forthcoming.

These global economic processes when intermingled with processes of global environmental change have doubly exposed small island developing states to powerful global change processes resulting in both deleterious and positive outcomes. Double exposure is a conceptual framework tool designed by Leichenko and O'Brien (2008, p. 28) to investigate the impact on communities of perturbations at the intersection of global environmental change and globalization. The framework shows how the two processes are continually interacting to transform the context in which communities experience and respond to change. The interrelation of climate change and economic shocks on these communities has resulted in these communities losing their perspectives on being sites of resilience (to be discussed further in Chapter 7).

Double exposure is a useful framework to understand all the various threats and impacts unearthed in the communities. As this study is however more focused on perceptions and responses to perceived threats the framework was not fully applied thus

sacrificing potential insights on food security and global change intersections in a small island development state.

Jamaica's agricultural sector has a dual subsector: crops produced mostly for the local market on the one hand and for the export market on the other hand. Local market crops include ground provisions - yams, tubers, and short term vegetables, herbs and spices are grown in the Prospect and Jeffrey Town communities. Wyss and White (2004, p. 22) opined that as a result of trade liberalization, imports of key food products became more affordable thus paving the way for food import dependence over the course of the 1990s.

The 1990s was a decade of significant trade reform in Jamaica, with most reform occurring near the end of the period. It is reported by Wyss and White (2004) that import licenses for a range of vegetables, beans and peas, were eliminated while export licenses were lifted for fruits, plants and coffee. Consequently, it became easier for Jamaica to receive cheaply priced product from abroad as well as to export certain agricultural commodities. Average tariff rates fell from 25 percent in 1989 to 11.8 percent by 1998, (Wyss & White, 2004, p. 23).

These policy changes were designed to attract foreign investment into the country, lower input costs for Jamaican producers, increase exports for Jamaica, provide cheaper and better-quality goods and services for the Jamaican consumers (Wyss & White, 2004) but this did not materialize. While the quantity of exports fell or remained roughly constant for four years during the 1990s, in all other years the quantity of food imports rose between 10 percent and 40 percent.

The volume of imported food products, by weight, was about 80 percent of the volume of domestic food products in 1989 and rose to 114 percent by 1999 (meaning that Jamaica imported more than it grew domestically) (Wyss & White, 2004). When imports price rose dramatically, it became more expensive for Jamaica to purchase food yet still Jamaica is dependent upon foreign producers for much of its staple diet. Successive Jamaican governments seem caught in a "catch 22" as it is within this context of globalization and economic liberalization that it is also promoting "eat local". When exacerbated by climate related issues, differentiated community organizations responses were observed.

Some community leaders in Prospect, Manchester resigned themselves to their fate as they believed "they had no choice" but to absorb as much as they could the outcomes of being doubly exposed to global changes. They are awaiting the government to step in and provide the assistance they had lost with the closure of the bauxite company in the parish. As communities began to feel the futility of investing in the farms and mobilizing community groups to investigate options of building resilience, individual farmers decided to invest in the education of their children rather than the farm and steer the children away from agricultural production, undoubtedly setting in train uncertain impacts for future food insecurity.

Jeffrey Town and Trench Town, however, expressed a different interpretation and understanding of double exposure and decided to adjust how their communities responded to these changes in a sustainable way. As the impacts are an interaction between global economic and global environmental changes, the communities had to devise multiple and simultaneous responses relating to how they adjust socially,

environmentally and economically. In essence they altered their civic participation (to be discussed in Chapters 7 and 8) adjusted how they participated in the market and changed their approach to environmental management.

In Jeffrey Town, for example, motivated by these global threats farmers decided to mobilize themselves into a group to tackle the effects of globalization and natural hazards, thus the evolution of the Jeffrey Town Farmers' Association (JTFA) in 1991, while in Trench Town, the community decided to cooperate with the Agency for Inner City Renewal (AIR) to plan and strategize on viable options of adaptation and transformation in community social life using food as the tool to teach and implement transformation. The Jeffrey Town community led by the JTFA abandoned slash and burn and deforestation approaches to farming; built retaining structures and gabion baskets to prevent landslides, market their goods collectively, engaged the community in several building activities, established a local radio station to disseminate information on sustainability including on climate change and agricultural best practices for food security and attract donor funding and sponsorship to create a community wide plan to tackle disaster risk management and food security issues.

Trench Town used the learning community approach to community development as a tool to gain insight from its own experiences and the experiences of others, and to modify community behaviours to reflect new knowledge and insights. Using food grown on open range farms and in greenhouses as a point of departure, AIR, conducted a number of behavioural transformation classes to instil a sense of dignity and purpose in the community.

AIR engaged the farmers in the area to develop strategies to create viable business enterprises that would ensure some level of food security even after a natural hazard event. AIR began working with the community to develop viable markets to ensure profitability, entrepreneurship among the vulnerable, livelihood stability among local farmers and food availability in the community at all times. The CBO partnered with leading food manufacturers and financial institutions to place food products in the corner shops therefore ensuring availability and food access at all times.

There were winners and losers to be identified. The removal of subsidies from dairy products increased the price of local cow's milk but introduced the reduced cost powdered milk which many consumers especially within the urban centres welcome. The powdered milk did not require refrigeration and therefore had long shelf life thus making it an ideal 'hurricane food'. Poor families in urban communities were clear winners. Small farmers and middle class households however, tended to suffer as the combined impact of economic and environmental change left small farmers unable to compete as they deal with the repeated loss of crops from hazards events in short periods of times without enough recovery time combined with subsidized competition therefore pushing some out of the domestic market. There were some farmers in communities across Jamaica that chose to be innovative and competitive and chose to switch their production from domestic to export crops especially within the areas identified by the government as emerging markets, for example, in scotch bonnet pepper and ginger.

In Prospect, a number of farmers retired from full time farming and found innovative ways of engaging in non-farm activities inclusive of opening bars and corner

shops and depending on remittances but these activities have not proven to be sustainable to effect transformational change for resilience building.

The government has therefore begun to examine more deliberately the linkages between food and livelihood security issues notably in terms of nutrition and productivity, and the need for investment in agriculture. In the Memorandum of Economic and Financial Policies filed with the International Monetary Fund (IMF) to support its position for a loan agreement, the Jamaican Government outlined its commitment for tri- partnership with the private sector and civil society to establish nine agro-parks aimed at stabilizing the agricultural supply chain, deepen inter-industry linkages, increase competitive import substitution, and activate un and under - utilized rural land and labor (Clarke, 2013, p. 16; Tufton, 2014).

Consequently, the Government committed over $1billion for investments in these parks, none of which is located in the communities under study. Three of these nine agro-parks, namely Amity Hall in St Catherine, Ebony Park in Clarendon, and Plantain Garden in St Thomas have started productive activity, however, mismanagement of one of the agro farms by the Agro Invest Corporation (AIC) has resulted in the loss of a projected $50 million worth of onions and an angry community of farmers and their dependents who are eluded in their attempts at food security (Brown, 2014) and are victims of a well-intentioned plan at building food security resilience going wrong.

Scalable social change. Social projects geared towards food security resilience should result in positive, scalable social change, transformational change, even. Spatial insensitivity and inattention to local contexts and perceptions in the execution of projects can undermine well-intentioned resilience projects. Farmers in the failed St. Thomas

agro-parks onion project insisted that their local expertise and spatial context were ignored by the project managers. The farmers for example, objected to an overhead irrigation system that was proposed given their spatial context including soil type but their concern was ignored, resulting in significant revenue and production losses (Brown, 2014). More importantly, the farmers lost trust in the expertise of the technicians and began to doubt their own capacity and ability to meet the uncertainty of the future.

This initial failed agro park project suggests that resilience building intervention mechanisms can create more harm than good and impede social change if there is little regard for the local, spatial contexts. Understanding the processes involved in transforming government projects into local actions to build food security resilience needs further investigation. Are there spatial boundaries to building resilience? What is the best scale at which to attempt food security resilience and by which actors in society and in whose interest?

The Jamaica Red Cross for example is one of the more active humanitarian actors working to improve the lives of humanity through disaster preparedness and response.

> "We provide relief food in 24hours to communities. We don't store food in our storage here because rats may get to some of the things or the things may expire especially if there is no disaster. We have a virtual warehouse arrangement with food suppliers. We order a head of time. We have arrangements with companies – we pay in advance. When we get a warning to say there will be a hurricane our suppliers are already making the necessary arrangements with us …we try to ensure the branches get supplies just in case the roads get blocked. They send trucks to us to get their supplies. Some companies who have this arrangement with us once they hear of the impending hurricane they call us and ask where to send the supplies. Sometimes this has worked well and is effective but sometimes it is not…Our food packages are according to fair standards – which has an international minimum standard. It tells what amount of protein and so forth must be in the food package and so on. As a result of this the people prefer our packages to that of the other agencies." (Red Cross respondent).

By an Act of the Jamaican Parliament in 1964, the Jamaica Red Cross became responsible for the immediate response to disasters on the island. In June, 1980, the Jamaican Parliament established the Office of Disaster Preparedness and Emergency Relief Coordination (ODIPERC) which had a name change to the Office of Disaster Preparedness and Emergency Management (ODPEM) following the passing of the Disaster Preparedness and Emergency Management Act, 1993.

> "In 1964 there was no ODPEM so things have evolved. We have been working with ODPEM as partners realizing it is ODPEMs role to lead out and respond quickly; realizing that things have changed but the Act has not changed and our mind set has not changed, so we work in the first 72 hours. The work that we do is what the Act of Parliament speaks to. We realize that ODPEM is the coordinating body – we don't have the main function – we don't run the show as we used to. ODPEM now runs the show so we support them etc. We are not on ODPEMs board but we are on disaster committees across the island," (Red Cross respondent)

Being able to respond quickly to the needs of victims has become the litmus test of food access and security in a hazard event. Of such, the humanitarian groups have become key actors in ensuring food availability within the first 72 hours of an event. Privileging the work of the humanitarian groups to react quickly has become integral to the process of providing food access but should not be seen as an effective mechanism for building food security or food security resilience.

> "When we look at providing food we want to look at sustainability so that when we stop giving during the first few days people will still eat. We offer grants or help you get a skill or set you up with the first investment. At the Red Cross we call those Livelihood Solutions. Where food security is concerned we need to remember that sometimes people lose the breadwinner and main source of income etc and so their food security and their livelihood are gone. Some had a business and the business was wiped out after a storm so we are trying to think about food security differently these days" (Red Cross respondent).
>
> "In farming communities we are not on the priority list for food by the government. In the early stages we are not priority for the Red Cross and the Food for the Poor either as they say we should have food in the early stage. It is in the later stages that you will see people walking around asking you questions. They

> want to know what damage, what happen. You see the Red Cross walking around collecting data. You would see the church groups coming too. They would give away things like seeds, but is a long time they haven't given seeds to this community," (male respondent in rural community).
>
> "They assume we have food but I have been in a spot as the farmer when the people come during the storm and take everything. They didn't leave any food for me. If I didn't have a breadfruit tree in my backyard I wouldn't have food. I see the church groups and the Red Cross handing out food in my area but it is the same people getting the food. Is one and two people benefit," (female respondent in rural community)

Without doubt there is a role for humanitarian groups in the disaster alleviation process and in assuring people's basic food needs during the crisis of a hurricane or drought. However, providing immediate relief and food access after every hazard event has not advanced communities food security goals. At most there are individuals who have benefited in the immediate to short term.

Is there a role for NGO activities to be aimed towards the transformational capacities of communities to become self- sufficient? Is there scope for humanitarian groups to be more dominant in the prevention phase of a disaster cycle rather than the response phase? The sustainability that the Jamaica Red Cross envisions would necessitate long term commitments to ensuring resilience as recurring short term interventions pose a problem for Small Island Developing States that are dependent on external actors to support its development vision and policies. Rapid response to provide food is good, very good, but does not result in scalable social change. The charitable work of the Jamaica Red Cross and other humanitarian groups may inadvertently result in dependency as communities are conditioned to expect the emergency food response but have not developed their capacity and their psychological positioning to be resilient.

There is also the possibility for discord to develop between community members as well as discord among these humanitarian agencies especially if the quality of the food

packages being delivered becomes a measurement of agency performance. Furthermore, the role of the government is unclear within these partnerships with the NGOs in the minds of the people and the lines demarcating the scale of the responsibility of the various actors become blurred.

In re-imaging the role of NGOs and the government in assuring food security as a hazard mitigation mechanism, three processes need to be revisited:

1. food security needs to be written into the urban and rural plans of communities and towns. Urban planners and long range planners need to ensure that food planning is added to the standards needed to receive state approval for development. The converse is also applicable, food system managers and advocates need to consider the long term implications of their short term interventions. A re-think of how to ensure sustainability of the food system that interrogates and incorporates the coping and adaptation practices of communities is needed to disrupt the charity dependency pathology
2. Food security resilience needs to be governed from an inter-scalar perspective. In essence, food security resilience cannot be viewed from a singular scale – the community, the individual, the nation, the region or the global community. Food security needs to be planned from a multi-inter scalar perspective. In Jamaica, the administrative division of the island into three counties – Cornwall, Middlesex and Surrey (see Chapter 4.1) serves no purpose at the moment. Deliberately planning the food system on the island with the aim of using the counties to establish regional food hubs may be a first step in addressing some of the long term connectivity issues being faced by the farmers and consumers, and between

the national and community scales. Creating county-wide food hubs and farmers markets operated by food policy councils may allow for more effective local governance to achieve food security. Some communities are unable to function effectively on their own. Through the already organised quasi-governmental structure of the Social Development Commission (SDC) or the Rural Agricultural Development Agency (RADA), consistent leadership and structure maybe given to the county-level food hub.

3. Food security challenges should be seen as an opportunity to attempt innovative solutions to contend with the new reality of uncertainties and insecurities. A social contract or partnership approach to ensuring food security among the various stakeholders on the island is worth attempting. This partnership would incorporate the collective views and models of food security by the stakeholders as opposed to embracing a single model or view. The aim of course is to empower communities to be active participants in finding the solutions to their challenges therefore dissuading the 'dependency' and 'scarcity' mentality that some participants exhibited. Advocating for interdependence and a social partnership among unequal stakeholders has proven to be challenging and, contentious but not impossible in the Caribbean. The experience of Barbados, a CARICOM member state that engaged national stakeholders in a social partnership to overcome the social and economic crises it faced at the end of the 1980s into the 1990s, has been dubbed a resounding success and the model of good governance for SIDS to emulate (Minto-Coy, 2011).

Former prime minister of Barbados, Owen Arthurs however, advised that careful examination of the stakeholders' capacity and capabilities to offer pragmatic deliverables on the collectively identified goals must be ensured before a partnership is forged. Failure to do this he says is a "recipe for inertia" as there are groups like the Church and some elements of civil society which are "noisemakers" with little practical contribution to deliver to a social partnership (Virtue, 2015). While learning from others, Jamaica needs to forge a partnership that is applicable to its socio-economic and environmental contexts. The partnering groups being used therefore must have the substance to be effective and this may differ from community to community.

This gives hope for scalable social changes to occur as such an approach to food security resilience will have to consider improving community social connections and civic engagement to build social capital which is the corner stone to ensuring food security.

Concluding Thoughts

The results revealed that in using the resilience approach to food security an analysis of the threats to building resilience should emphasize elements that may not be considered by the government in its approach to food security which helps to account for a differentiation of response by communities to policies designed by the government. Understanding the continuum of threats should help to inform stakeholders' funding and intervention especially during a disaster or hazards event.

In alignment with Dilley & Boudreau, (2001), a more useful understanding of the food security concept must be analysed within a deliberate framework that takes into consideration — the events, susceptibility to them, probability of their occurrence and the

resulting outcomes. As communities experience new hazard events or experience old events in new ways, persons who were not previously food insecure are becoming insecure like the middle class and some ethnic groups. To prevent negative outcomes it is necessary to identify events that may lead to these outcomes *before* the outcome itself materializes. Thus one key conceptual element required is a clear separation between selected causal events and outcomes (Dilley & Boudreau, 2001).

The results also proved that a given event will not affect every community in the same way, therefore when seeking to prevent harmful consequences, it is important to identify the threats and events that could potentially create harm to the different communities. Finally, the results revealed that with some degree of predictability given persons perception and behaviour, hazard events can lead some communities toward increasing food insecurity thus, any attempt at food security resilience by communities and other stakeholders especially governments must be informed by the perception and understanding of the people being impacted.

Perceptions of the likelihood of key hazards events occurring, their magnitude, timing, duration and how these are being interpreted by the people affected are pivotal to resilience. These concepts – the hazard events, susceptibility to them, and the interpretation of one's capacity to respond, undoubtedly provide a framework for prevention, preparedness and resilience.

Defining resilience in relation to outcomes, and processes (see Chapter 2, Section 3) rather than to events, positioning, planning and the interpretive lens through which communities experience and respond to these events has allowed the concept to appear to be insufficiently developed. Resilience, this research project is advocating should not

have its being linked to a condition (like vulnerability) but to a position and cognitive belief as its starting point. The degree of susceptibility ascribed by a community to the threats and stressors it faces is a function of not so much its vulnerability and defenselessness but how it perceives its position in relation to the threat, the stress, the shock, the perturbation and the community's interpretation of the circumstances and ability to render self- help, to resist and to plan and bounce forward sustainably.

Chapter 7

Coping and Adaptation Strategies in Trench Town

Introduction

This chapter examines how food insecurity is manifest in Trench Town, the coping (absorption) and adaptation measures that have been taken as well as initiatives that are intended to transform social structural constraints that have limited the effectiveness of conventional responses to food insecurity.

Poverty, Social Stress and Food Insecurity in Trench Town

In Jamaica food insecurity is closely linked to poverty. Most of the Jamaican poor (61.0%) live in rural areas and are dependent on agriculture (Planning Institute of Jamaica, 2012.1 [Revised]). While rural poverty receives more attention from researchers (Beckford & Barker, 2007; Graham, 2012; Tufton, 2014; Wyss & White, 2004) the urban poverty rate is growing and now exceeds 52% (2001), up from 40.6% in 1970 (Planning Institute of Jamaica, n.d.; McGranahan, 2011; Tacoli, Bukhari, & Fischer, 2013; Barker, Dodman, & McGregor, 2009).

Trench Town is an urban neighborhood where the problems caused by poverty are compounded by over forty years of politically motivated crime and violence (see Figure 18, Map of Trench Town). As one of Jamaica's so-called "garrison" communities it is characterized by homogenous voting patterns, tight political controls and comparatively high levels of violence (Moncrieffe, 2008, p. 7). Crime destroys social capital and retards community development. Violence creates conditions that are even more unsuitable for job creation, the provision of services (UNDP, 2012) and the mobilization of a people. Not all inner-city areas of Jamaica are classified as garrisons but they are all affected by

crime, violence and depressed social conditions, and they exist largely outside state control. Trench Town is under control of the progressive or left wing People's National Party (PNP), one of the two major political parties in Jamaica (Its opponent – the Jamaica Labour Party (JLP) - espouses more right wing or conservative ideology).

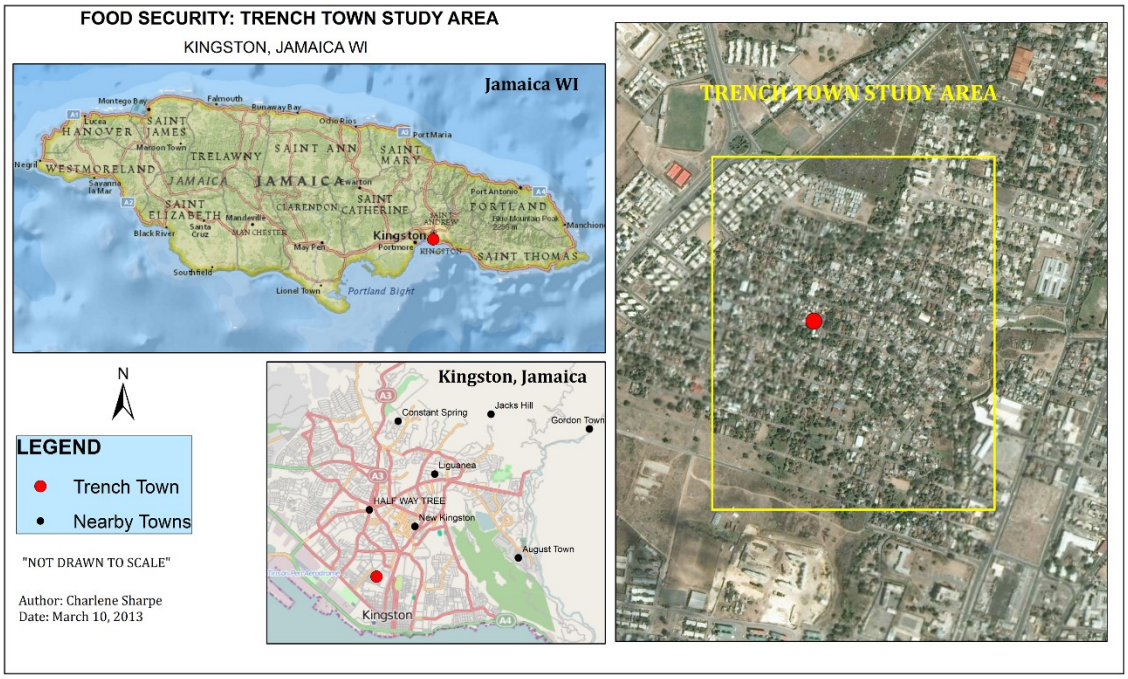


Figure 18. Location of Trench Town: A Kingston garrison community.

Unemployed young men in the inner-city areas with limited access to opportunities have become easy targets for politicians who recruit them to secure the territory - if necessary by violence. In the past these so-called "shottas" "fought bloody battles in the names of their respective parties" (Gray, 2004, p. 27). Violence has therefore become an organized means for defence and security (Moncrieffe, 2008, p. 12). A parcel of land that separates the chief Jamaica Labour Party garrison from the boundaries of Trench Town is named "No Man's Land", and functions as 'a real frontier

between the two territories' that 'few individuals - some politicians excepted - would be rash enough to risk crossing' (Eyre, 1984, p. 24). No Man's Land also marks the boundary between Trench Town and Coronation Market, the Caribbean region's largest farmers' market, thus exacerbating the challenges faced by Trench Town to access food, even when there are no hydro-meteorological threats – no droughts, no hurricanes.

A Social Development Commission (2011) survey noted that 9.3% of the households in Trench Town have been engaged in farming/agricultural activities and that the majority of these households (80%) farmed to feed themselves and their families while the remaining 20% also sold their farm produce at the local market as well as producing for export. Yet these city dwellers are not the focus of the Jamaican government's agricultural risk management policies. Urban farmers are not counted in the national agricultural census of Jamaica so they do not benefit from the formal government-sponsored cooperative arrangements that are usually available to rural farmers (Graham, 2012).

Price Fluctuations as Indicators of Food Insecurity

Residents of Trench Town identified droughts, earthquakes and hurricanes as the chief "natural" hazards impacting their community (see Chapter 4). Rising prices, theft of food, migration and violence are common consequences of storms and droughts. These effects have been noted by a wide range of local people:

> rise in food prices and less people being employed *<ref>P306: Trench Town Group transcript.docx - 306:27 [(52:52)]*
>
> Dramatic rise in price – when Gilbert blow or even Dean, Ivan, and worse yet the last drought we used to get a pound of flour or even yam for little or let me say reasonable money but after each hurricane we see basic commodity prices going roof high with these drastic inflation
> *<ref>P306: Trench Town Group transcript.docx - 306:29 [(56:56)]*

> I have my guineps in a bag at the gate and turn mi back to get something and the bags gone! (everybody laughing). People thief my chicken very often from the coop. Even the little farm tools dem thief and it gets worse during hard times like the drought
> *<ref>P306: Trench Town Group transcript.docx - 306:32 [(61:62)]*
>
> My ackee or my mango tree is everybody's it would seem. At one point, when they pick your mango from the limb hanging over your fence then that is fine but they are stealing out of proportion. Anything hanging over your fence is for the public. If it hangs over your neighbours' yard is your neighbours. That's how we understand it. But during a drought or hurricane everything becomes thy neighbours.
> *<ref>P306: Trench Town Group transcript.docx - 306:33 [(65:67)]*
>
> We can't do anything about praedial larceny. We have to live with it. Is food them stealing. It is hard to fight over food. *<ref>P306: Trench Town Group transcript.docx - 306:34 [(72:72)]*
>
> Scarcity of food cause migration and people move out. The violence cause loss of jobs and people can't do business in the community so it's the lack of food combined with the violence that lead to migration. We now have hope in the community with our greenhouse. There is a light and it is not an oncoming train. We are responding. We are dedicated to this community. We will not migrate and run. We the dedicated people have to stay.
> *<ref>P306: Trench Town Group transcript.docx - 306:28 [(53:55)]*

Fluctuations in commodity prices and other economic indicators provide a useful barometer of hazard-induced pressures on food supplies (see, for example, Scoufias, 2003, p. 1089). Following the 2013/14 all island drought period, the Consumer Affairs Commission (CAC) of Jamaica revealed that the price of local produce outstripped the price of similar imported goods. Data for the larger urban areas of Kingston and St. Andrew substantiated the Trench Town experience. As seen in Table 7.1, in these places the price of domestic cabbage rose by 101%, local carrots 134%, Irish potatoes 100% and yellow yams 102%. (By contrast, the price of tomatoes decreased by 8%, partly because tomato prices were already elevated and persons were using tomato substitutes or they abandoned their use of tomatoes altogether. As the shelf- life on tomatoes is short, vendors had to reduce the price or risk spoilage.)

Table 36

Impact of 2013/14 Drought on Selected Food Commodity in Kingston and St. Andrew

			Apr-14	**Nov-14**	
			KINGSTON & ST. ANDREW		**% Change**
CABBAGE (Green) [NT]	IMPORTED	1 kg	N/A	N/A	N/A
CABBAGE (Green) [NT]	LOCAL	1 kg	169.13	339.47	101%
CARROT [NT]	IMPORTED	1 kg		451.11	
CARROT [NT]	LOCAL	1 kg	249.15	584.07	134%
IRISH POTATO [NT]	IMPORTED	1 kg		311.97	
IRISH POTATO [NT]	LOCAL	1 kg	208.83	418.25	100%
TOMATOES (Plummy) [NT]	LOCAL	1 kg	233.92	215.50	-8%
YELLOW YAM [NT]	LOCAL	1 kg	175.29	353.88	102%

Source: Data received from the Consumer Affairs Commission, Jamaica 2014

Compared with the prices in rural parishes within the study area (see Tables 37 and 38), the urban communities were more severely impacted by post-disaster price hikes.

Table 37

Impact of 2013/14 drought on selected food commodity in Manchester

			Apr-14	Nov-14	
			MANCHESTER		% Change
CABBAGE (Green) [NT]	IMPORTED	1 kg		528.89	
CABBAGE (Green) [NT]	LOCAL	1 kg	147.71	252.68	71%
CARROT [NT]	IMPORTED	1 kg		468.51	
CARROT [NT]	LOCAL	1 kg	200.45	449.08	124%
IRISH POTATO [NT]	IMPORTED	1 kg		310.93	
IRISH POTATO [NT]	LOCAL	1 kg	224.45	405.73	81%
TOMATOES (Plummy) [NT]	LOCAL	1 kg	239.52	269.04	12%
YELLOW YAM [NT]	LOCAL	1 kg	132.32	353.87	167%

Source: Data received from the Consumer Affairs Commission, Jamaica, 2014

Table 38

Impact of 2013/14 Drought on Selected Food Commodity in St. Mary

			Apr-14	**Nov-14**	
			ST. MARY		% Change
CABBAGE (Green) [NT]	IMPORTED	1 kg			
CABBAGE (Green) [NT]	LOCAL	1 kg	219.11	300.00	37%
CARROT [NT]	IMPORTED	1 kg			
CARROT [NT]	LOCAL	1 kg	287.96	650.00	126%
IRISH POTATO [NT]	IMPORTED	1 kg		305.60	
IRISH POTATO [NT]	LOCAL	1 kg	187.15		-100%
TOMATOES (Plummy) [NT]	LOCAL	1 kg	220.00	450.00	105%
YELLOW YAM [NT]	LOCAL	1 kg	170.00	395.00	132%

Source: Data received from the Consumer Affairs Commission, Jamaica, 2014

Care must be taken when evaluating post-disaster price changes to take account of the generally lower starting prices of rural foods. In cases where the percentage increase is greater for a food commodity in the rural community than the urban community, for example yellow yam, the price of the yellow yam was lower before the hike in the rural community and after the drought onset prices became more or less similar. Parishes display varying agro-climatic characteristics given the differentiated topography, soil

condition, rainfall pattern, hydrology and socio-cultural practices (see Batjes, 1994). Each parish has its own comparative advantage in production.

Price gouging is a further indicator of food insecurity during natural disasters. Gouging occurs mainly at the corner stores and the farmers market during and immediately after a hazard event. The prices in larger grocery stores and supermarket chains are less elastic but they are perceived to be gradually increasing over time. Respondents indicated that supermarket prices are stealth prices – "they creep." As one respondent explained:

> "I don't know when the supermarkets price increase; I just know that I am paying more for the same items eventually. At first you don't recognize it but then it hits like a brick. Supermarket prices they creep up every month" (middle aged female respondent)

It would be instructive to identify the factors that affect decision making by small shopkeepers versus larger supermarkets during hazard periods, especially how they impact pricing. But it is clear that an increase in prices adds to the spectrum of existing stresses that are experienced by consumers during hazard events.

Building Resilience

Food resilience measures employed by Trench Town respondents are displayed in Tables 39 – 40. They include various mechanisms to improve coping (absorption), adaption and transformation capacities. Coping (absorption) is defined as a short-term response to an immediate decline in access to food, while adaptation refers to a permanent change in the mix of ways in which food is acquired, irrespective of the shocks and stressors faced (Campbell & Beckford, 2009, p. 1368; Davies, 1993, p. 60; Maxwell & Smith, 1992). If exposure to risks cannot be minimized absorptive capacity focuses on how quickly the community takes to recover.

The mechanisms used can be either positive or negative. Positive mechanisms allow people to withstand shocks without endangering future livelihood or nutrition security; negative ones compromise future livelihood and well-being (Frankenberger & Nelson, 2013). Adaptation means that communities are deliberately making informed choices to manage risks within the context of changing conditions and uncertainty. Adaptation strategies are proactive not reactive. For example, communities invest in improving their human capital and diversify their livelihood streams to cope with future eventualities (Frankenberger & Nelson, 2013).

Transformation involves the restructuring of foundational societal factors that shape perceptions and attitudes about food insecurity and constrain the receptivity of communities to new types of response. Transformed communities are able to convert the gains from their absorptive and adaptive capacities to ensure bouncing back and bouncing forward from natural hazard stresses. Transformative mechanisms are structural and social – improving roads, communications networks, early warning systems, safety nets, social capital and so forth. They also include ensuring the effective management of the natural resources on which livelihood security depends (Frankenberger & Nelson, 2013).

Absorption and adaptation strategies keep evolving and the priority given to food needs may not be the same across communities experiencing the same stressors and shocks. How communities respond to food stressors reflects their decision-making capacities (Maxwell & Smith, 1992). Sometimes even the most challenged and disadvantaged communities have significant (even astonishing) strengths, capacities and assets that can be used to nurture greater resilience as they cope with, adapt to, and enhance their food security (Hancock, 2009). In Trench Town, transformative measures

have mainly been attempted by a Community-Based Organization, the Agency for Inner-City Renewal (AIR) (see also Chapters 2 & 4); they are currently ongoing and will take some time to mature.

Table 39

Absorptive Coping Mechanisms for Managing Risks in Trench Town

ABSORPTIVE MECHANISM	
Positive Mechanisms	Negative Mechanisms
Postpone purchases of non-essential foods; switch to cheaper less nutritious brands; do not eat out; reduce waste (for example, cover leftovers); buy smaller packages; buy cheaper foreign foods	Withdraw cash savings to purchase emergency food, for example tinned foods
Depend on family and friends to send remittances and food-packed barrels.	Refuse to go to the emergency shelters
Join with neighbours to purchase wholesale food in bulk; Stock up on batteries and flashlights; protect essential papers and medications in plastic (waterproof) containers; strap down roofs; prune overhanging trees	Tolerate praedial larceny (agricultural theft)
Stock up on food 24 hours before the hurricane	Change behavior - Reduce food intake; accept increased levels of stress
Change diet by eliminating food requiring refrigeration that may lack power after storm	Employ child labour
Employ food utilization techniques; cook one pot meals; cook everything that can spoil	Use credit cards
Evacuate to safer location	Food Traceability mechanisms are implemented that have negative repercussions on farmers

Table 39 shows that community members engage in a mix of positive and negative measures some of which are primary about disaster preparedness and others enhance food security. Disaster preparedness activities can have an impact on food security especially when funds are diverted from securing food to securing property. In Jamaica, disaster preparedness also gives high priority to securing lives as well as property; official messages from the disaster management agencies do not usually refer to food security except when evacuations are called for; in which case, evacuees are reminded to bring enough food to sustain themselves for the first 24 hours.

Positive Absorptive Coping Strategies

Data from Trench Town reveal that coping strategies are often motivated by concerns about food quality and safety; they also occur on several scales, from the level of individuals to the level of households and groups of households.

> We have a little savings and I go to the bank and take those *<ref>P306: Trench Town Group transcript.docx - 306:41 [(83:83)]*
>
> I use credit card *<ref>P306: Trench Town Group transcript.docx - 306:42 [(84:84)]*
>
> We anticipate that this period is gonna be a short time so during the hurricane we eat much less so stretch how long the food will serve us. We ban we belly and don't bother to eat. Because from experience we know that the real hunger problem comes days into months after the hurricane.
> *<ref>P306: Trench Town Group transcript.docx - 306:50 [(98:98)]*
>
> Our family go into a type of fasting. In Trench Town we know people don't want to come here. So we eat sparingly for the first three or so days and we eat food that will fill us. We eat one good meal for the day and that is mainly flour based things. We do like fried dumplings and fritters as those fill you up. The real problem is by day four for a few weeks.
> *<ref>P306: Trench Town Group transcript.docx - 306:51 [(100:100)]*

Avoid food spoilage. Food spoilage is a pervasive worry during disaster and judgments about safety enter into decisions about the preparation and content of meals. Because they anticipated electricity disruptions, people cooked one-pot meals ahead of

the storm, composed of everything they had in freezers. A similar disaster anticipation mechanism seems to be in widespread use well beyond the Caribbean. Residents of poor U.S. neighbourhoods affected by Hurricane Katrina have reported comparable behaviour (Pyles, Kulkarni, & Lein, 2008, p. 47).

Multiple household strategies include families pooling resources and entering into informal partnerships to purchase wholesale food items that are usually sold in large bundles. At the same time in response to increased demands, shopkeepers make smaller quantities of food available to more people as hurricanes approach.

Switch to purchase of imported foods and cheaper brands. During disasters shifts in the mix of foods consumed are also common. Exorbitant increases in the price of domestic agricultural produce during hurricanes and droughts pushed urban dwellers to purchase more imported food because it was generally cheaper. Some respondents regarded the processed imported foods as less nutritious and less culturally appropriate than local produce; however, because they are cheaper they are more accessible. Respondents noted that they not only switched to cheaper foreign foods but they also switched to cheaper brands like LASCO from more expensive local brands of emergency food (for example, Grace). Other respondents said that they stocked up during the pre-event phase on the brands of their choice to avoid compromising what they believe to be taste and nutritional values. One corner store owner explained it like this:

> "When there is a drought or a hurricane there is a slight difference in people's behaviour. In the community we are not seeing an increase in the people who come out to buy and stock up but what most shopkeepers notice is an increase in what the regular people would buy. They would buy tin food and food that can store, that does not need cooking. Just before the hurricane or just after the hurricane people will come to buy things. So when we hear that there is going to be a hurricane we stock up more as we are going to sell more. Some people have cash and some people 'trust the food' as they intend to pay for it over a

> while. During a drought now, we sell more rice, flour, water and juice, while during the hurricane is mainly tin stuff. When I say tin stuff, I mean mainly tin mackerel not anything else. They go for LASCO and Grace; LASCO because it is cheaper and still taste good but Grace because it tastes better and we can trust the Grace brand. Grace has been around for donkey years. Some people will tell you that it doesn't make sense you buy the cheaper thing and it doesn't taste good so even though you have cheaper than LASCO we don't have those in our stores. You can go to any store in the community and look on the shelves all you will see is LASCO and Grace. That's what the people choose when there is no disaster and that's the choice they still have when there's a disaster." (Corner store respondent)

On being informed of these views, one GraceKennedy (Company) respondent noted:

> "It is a part of the company's view that quality is important in all that we do – so to ensure we bring good quality to the market place we select the best raw material and the best people to oversee the finished goods including third party suppliers where needed. Food security for us is linked to people's confidence in our brand. The brand is very strong. Grace was founded in Jamaica on Feb 14, 1922 and has grown with the current population. Every Jamaican knows Grace. Now, because of the strength of the brand often times other companies offering similar products are unlikely to price above Grace. We are the market leader and the benchmark – so a new company wouldn't want to price at Grace or above – so it is by default that Grace's price is the highest. It cost money to bring quality to the consumer table. In the eyes of the consumer we appear to be more expensive, but this is marginally so. We work hard to maintain the company's philosophy that says each time you open our product you will choose it again. Our products are safe and that's food security." (GraceKennedy respondent)

Migration. Migration is another method for coping with food stresses. Some people leave the community while others send their children to stay with friends and relatives who are better able to care for them. In follow up discussions on the psychological impact experienced by children who are sent away from the home, it was revealed that such disruption was temporary and only occurred during hurricanes, not during the slow onslaught of a drought. Migration is not willingly practiced because it may expose migrants to additional risks. Thus, children and young male adults practiced

short term migration during a hurricane only when the government declares a state of emergency.

However, states of emergency are marked by tense relationships between residents and the army or police personnel. Respondents explained that the stigma attached to their community resulted in what they called "community arrest" as they felt "imprisoned by the state". The army and the police are usually utilized to maintain peace and to prevent looting in the capital city's central business district next door to Trench Town. During curfew hours respondents complain that community members are harassed by the police and searched unnecessarily. Many times they feel traumatized as they are treated like criminals when their only crime is entering their community to get home from work after the stated curfew hours.

The heightened tension that is created between citizens and the armed forces is not healthy for the present and future relationship between the children, the young males in the community and the armed forces. The children and young male adults are therefore a vulnerable group whose attempts to become food secure are complicated by other contextual factors. Food security is but one among many types of securities this community needs (as cited in Blaikie Cannon, Davis, & Wisner, 1994, p. 69).

> "Survival might not always be the primary objective of coping strategies in the face of adverse events because vulnerable people may seek other human needs…"

Food security may not even be an immediate need. One young male respondent grimly noted that:

> "Miss, with all respect, it is more likely that I will die from a stray bullet than from lack of food, and I don't want that to be a police stray, so I rather tek weh (take way) myself". (young male respondent)

Being food secure is not a unique need but must be measured against the community's perception of competing needs. Furthermore, natural hazards are but one among many other threats the community faces, and within the wider scheme of understanding food security, lack of resilience may not be a priority threat in the immediate future.

Given the imminence and uncertainty cloaking climate change and the resultant increases in intensity and frequency of some natural hazards, hazards are becoming more salient in public discourse. The integration of hazards loss management is also gaining traction in community discussions, plans and strategies. Coping strategies for food security therefore may not be directly motivated by reduced access to food but by the perception of increased insecurity as a result of uncertainty about environmental changes.

Engaging in short term coping strategies is not enough to build resilience against climate change. At times informal group mechanisms that are normally used to cope become ineffective. When one loses a job for example, being a member of an unemployed group defeats the social capital advantages of group membership (Murdoch, 1999). AIR became a distribution point for the Food for the Poor Jamaica, charity relief organization; in so doing it exposed the limitations of community development organizations that are forced to act as disaster relief agents.

> "We distribute rice, cornmeal, sardines, etc. We distribute to schools too but it's the charity model, the hand me down model which is not sustainable" (AIR representative)

Negative Absorptive Coping Strategies

Not all absorptive strategies are positive. Some strategies have reduced the community's capacity to withstand future risks. Negative absorptive coping strategies are those mechanisms that compromise the future well-being of a community.

> "There are many things about the realities of being poor that people who are not poor will never understand unless they experience it and there are other things someone has to point it out to them, and even then they may not understand" (female respondent)

Theft. "Praedial larceny" was identified as an adjustment to food stress. This is the name by which theft of agricultural produce is referred to locally. Some Trench Town respondents viewed this practice as an understandable reaction to food shortages and were willing to tolerate limited thefts because they recognized that the existing legitimate food system was unable to meet the needs of all people. Similar assessments were recorded in the rural community of Leith Hall in St. Thomas Parish during the preparatory (scoping) phase of this study. Others did not share this sentiment and believed that, if left unchecked, some thieves would take an entire harvest, thereby making farm families destitute.

Economic and non-governmental stakeholders in Jamaica have been calling on the government to improve what they term the "food traceability" process. They are recommending that the government should be able to follow products in the food chain from the farm to the plate. Farmers are therefore expected to write receipts for products sold in the market. Customers should be able to produce receipts for agricultural products bought. The response to this suggestion has been eclectic. Some farmers believe the process is cumbersome, and there are farmers who are illiterate and would not be able to produce and maintain receipt books. Some consumers were also sceptical about the

proposal indicating that praedial larcenists are better motivated than the farmers to produce receipt books and the Jamaican system would be slow to react to counterfeit receipts. There is need therefore for a re-think on the approach to dealing with agricultural theft. A typology of praedial larcenist that reflects the gravity of the theft and also provides guidance about appropriate penalties and remedies need to be clearly articulated.

The slow response of the government to find a workable solution to the widespread incidents of agricultural theft, has resulted in some farmers devising their own 'food traceability" mechanisms to deter theft. These include, but are not limited to, poisoning or threatening to poison the crops.

> A farmer friend of mine get some green tobacco leaf and put it over the pumpkin. He said "Ras, any man who eat this would be dead 'cause him a lick me hard". My friend said even though this cause him to lose his crop he is willing to do this as the thief will not benefit from his hard work, and in the end he would have saved the seeds to use again. *<ref>P306: Trench Town Group transcript.docx - 306:35 [(73:74)]*
>
> I put up a sign – "Poisoned eat at your own risk" . I was trying to trick them. But they steal it still *<ref>P306: Trench Town Group transcript.docx - 306:35 [(73:74)]*

During the scoping phase of the research, residents in Eastern Jamaica elaborated on a mechanism they've been debating to use to deter the larcenists. They placed needles and pins within some products. They reasoned that the larcenists would sell the products to unsuspecting consumers. It is hoped that the impacted consumer would in turn demand redress thus tracing their purchase to a specific vendor who would be a critical piece of the puzzle in locating the larcenists. The farmers agreed that this was not a fool-proof security system, but they felt it was a step towards finding a solution. All the food traceability methods devised in the communities have not proven effective in deterring

agricultural theft. Instead the urban farmers have suffered greater loss as not only have they lost the crops but they have also lost the financial assets that they invested in protecting them.

The Government of Jamaica (GoJ) has also uncovered the illegal "guns for agricultural goods" exchange between Jamaica and Haiti especially in the eastern parishes. There are Jamaicans who are sending food to Haiti and receiving guns as payment. The eastern parishes' respondents described their parishes as the "headquarters for hurricane in Jamaica". Their geographic position is as such that they are always the first to be hit by hurricanes. Even if Jamaica escapes being directly hit by a hurricane, eastern parishes tend to suffer from residual impacts. These parishes tend therefore to suffer more severely from food shortages during a disaster. The monetary value attached to a gun brings premium dollars compared to the value attached to food commodities. Persons are therefore better able to secure an income to build food security capacities. However, crime and gun related violence is a major concern on the island.

Prioritizing burdens and indebtedness. Respondents have identified other ways in which natural disasters have placed strains on their finances. Some noted that in times of threatened disaster they prioritized building material over food. They thought this trade-off ensured future security even though it diverted money from immediate food access and resulted in "temporary hunger". The lack of shelter was deemed to be a more serious and immediate life threat than temporary hunger. Furthermore, the lack of purpose-made storage facilities for agricultural products has pressed homes into service for storage purposes.

Some respondents borrowed money from neighbours when family help was lacking while others over-spent on their credit cards. Failure to repay these debts exacerbates community tensions. One informant recalled an incident following Tropical Storm Gustav in 2008. She did not have cash to participate in the traditional stocking up of food from the corner stores just before the storm so she decided to borrow money from two sets of neighbours with the hope of repaying at the end of the month. She anticipated receiving remittances from family members overseas. The remittances came but were used for other disaster mitigation purposes; therefore she was unable to repay the neighbours for months. She went into hiding and reported feeling like a prisoner in her own house because she did not venture outside to conduct regular daily business. There were also behavioral repercussions for her family members. She felt distressed to the point of being less tolerant with the children and her relationship with her friends was irreparably damaged. There was a multiplier effect throughout the community as neighbours became aware of the situation and debated possible sanctions that might be meted out to the borrower. After a while neighbours became generally less willing to lend financial resources to avert hunger, however, they would still share their food resources. In retrospect the consequences of borrowing the money and not being able to repay it or negotiate new terms of payment seemed worse than the possibility of facing hunger for a few days.

This informant was not alone. Others noted that they were less willing to borrow money if they could not repay it; a few days of hunger was more manageable than the embarrassment of not re-paying. In other words the roles of cultural norms, dignity and pride are crucial to the process of building resilience. The approach settled on by the

community was to not borrow or lend financial resources and to share available food resources when possible; unfortunately this does not provide food security when food is insufficient or inappropriate. Moreover, this approach is still charity based and does not build a capacity for resilience.

Dietary change. Some respondents reported that they were forced to change their diets while others consumed less food in general or consumed more wheat (flour) based meals along with water. That combination is more filling and staves off hunger for longer periods.

> "We eat a lot of flour that way we won't get hungry quick. Bread and bulla is what we eat as when water touch this it swells in your belly. It doesn't matter if it's a hurricane or a drought, hunger is hunger and the government doesn't really help us like that"*<ref>P306: Trench Town Group transcript.docx - 306:49 [(96:96)]*

Adaptive Mechanisms

In this section the focus is on measures employed in Trench Town by the Agency for Inner city Renewal (AIR) to adapt to the constraints on effective responses to hazard that are posed by: (1) a lack of geographical mobility of the local population; and (2) a lack of trust between local residents and externally-based helping organizations.

AIR is different from typical CBOs (community-based organizations) and non-governmental organizations (NGOs) in two ways. First, unlike other CBOs in Jamaica, it focuses on transforming an impoverished inner-city population (residents of Trench Town) by means of *community*-wide economic renewal. Second, AIR does not address just one local problem but seeks to engage the *full spectrum of problems* that beset the community (for example, unemployment, crime and violence, food insecurity, hazards management, child labor). This is a spatially targeted, integrated and holistic approach

that aims to improve not only the capacity to absorb shocks generated by existing problems but also to renew and transform the community. With respect to food security AIR focused not on hazards mitigation but on building resilience through the use of urban agriculture that employs greenhouse technology and open field farming techniques.

Due to threats of crime and violence certain parts of Trench Town were out of bounds to some groups of residents and Trench Town residents were not welcomed in other districts of Kingston. This restricted employment opportunities for Trench Town residents had hampered possibilities for locally based agriculture because farmers, traders and consumers could not move freely to places like the nearby Coronation Market, the largest farmers' market in the Caribbean region. In the words of an AIR official:

> "So to build a market economy we need economies of scale and we need freedom of movement. We also need to change the mindset of the people in the community. After accomplishing that we can now look at how to locate greenhouses in Trench Town and have people come over and cross the street that is in front of their houses which they have not crossed in decades and begin to see the integration of people who share a community space. Until there is movement of people we couldn't move towards the greenhouses and the open fields and the farmers' market and the trade shows we have had and so on and that's the beginning of building food security" (AIR representative)

A second problem that faced AIR was the degree to which a new externally originating organization could gain the trust of community residents. Spending quality time in the community was a necessary but insufficient strategy. One older respondent noted:

> "You can't trust some of these outside people who want to come in to say they are helping so we don't look favourably on those people. You can tell those people because they want to see immediate results and if they are not seeing immediate results they are gone. They are not here for the long haul. Then you have a person like doc who has proven that he cares about the community and the people in the community".

Developing trust is a long-term commitment. Once, the community members realized that AIR could be trusted, community members openly provided data that allowed for a nuanced understanding of the factors supporting crime.

> "So we did research and saw that there are six things that lead to high crime and then use these six things to design a matrix on to which we have further designed programs and solutions. Food security didn't factor in at first. Neither did hazards and disasters. The matrix AIR designed came with an economic model built on social entrepreneurship. This model could not work in a place with upheaval. Can't build a market into a community of upheaval, can't build social enterprise that way. You can't build a market that way. It is easier for a man with a child to go to a Western Union to receive money for child support than to build a market and get job to support this child. We realized a huge problem was the mind-set. We needed to improve the mind-set". (AIR executive)

Adaptive strategies employed by AIR in Trench Town were predicated on constructing a new social identity and transforming the "mind-set" of the community. In other words AIR had to re-write the playbook on how to operate a CBO. For example, AIR ensured its operations had no perceived or actual link or interest to the people and processes that support criminality. This required careful negotiation. The leaders of AIR recognized that it is possible for CBOs to be entrenched in a violent community and receive immunity from the community. If the social rules and mores of the community are not violated there is almost guaranteed protection from crime and violence. There is however, a cost attached to immunity because the CBOs that receive it forego efforts to change the dominant culture of the community to one that is acceptable to outsiders. If such efforts were to be detected the immunity would disappear and resilience-building attempts would come to an end.

Paradoxically, it would seem that in order to carry out its disaster resilience-building work in Trench Town a CBO would have to operate within the rules of a dominant local culture that undermined resilience. But disaster resilience in Trench

Town does not mean ignoring crime and violence, other stressors and disturbances or the sites of permanent disfigurements, defacements, scars, loss and erosion in the community's landscape. Instead, efforts to build resilience and recovery need to address the antecedent social and contextual factors that construct disaster at the local level (Cutter et al., 2008b). Instead of being viewed as permanent pathologies these scars on the landscape should be viewed as indicators of disaster susceptibility and vulnerability. If deliberate action is not taken to build (or recover/discover past mechanisms associated with) resilience, these vulnerabilities (for example, to crime and violence) will continue to dominate. Resilience-building activities can proceed alongside sites of vulnerability that act as powerful reminders of the alternative to resilience. If the community does not deliberately engage in building resilience and choose transformation for themselves the entire community will become extension of these sites of vulnerability and suffer further decay. Communities, like Trench Town are therefore at liberty to recover and respond in differentiated and unique ways. In practice, three clusters of adaptive strategies were used to respond to the stressors. These are listed in Table 40 and discussed in the pages that follow.

Table 40

Adaptive Mechanisms for Managing Food Security Risk in Trench Town

Adaptive Mechanisms
Improve the social construction of food and identity through improved human capital (i.e. education and training)
Improve link to other productive assets in the community (shopkeepers, credit union, food enterprise)
New farming practices using greenhouse technology, establishing kitchen gardens and farmers' group.

Improving human capital (i.e. education and training). Deliberate programmes to improve human capital were organized around the social construction of identity. The teachings of Marcus Mosiah Garvey played an important role in these efforts. Born in St Ann, Jamaica in 1887, Garvey established the Universal Negro Improvement Association (UNIA) which promoted the philosophy of self and racial pride; respect for each other, and the idea of black economy and entrepreneurship. Garvey emphasised education, and an awareness and appreciation of the rich African heritage, as avenues to locate a deep sense of self-identity. His influence reached well beyond Jamaica to Britain, the United States and other countries and he was eventually honored as the first national hero of the newly independent Jamaican state (Grant, 2008; Lewis, 1988; Lewis, 1994).

AIR drew on some of Garvey's ideas. One of AIR's messages to the community stressed that any success at food security would be based on what the community members thought they deserved as well as how they perceived themselves. AIRs leaders realized that a number of community members were not convinced they deserved better

than what they already had. The community was therefore challenged to see themselves through the eyes of Garveyism and its message of racial pride by means of which the community's approach to life and to food security resilience would be positively inspired, especially during periods of man-made or natural hazards.

The notion of developing a strong economic base for the community with financial independence from the politicians and the dons was crucial to building food system resilience. An urban agricultural plan was generated to promote community-wide economic development rather than being hinged on individual entrepreneurial pursuits. As I discovered on my first visit to Trench Town, regular systematic education and training classes were organized to facilitate this goal (see Figure 19). I was surprised upon being ushered into a class session where community leaders were being instructed in the philosophy of Marcus Garvey. The surprise was not in the sizeable number of persons who turned out for the class or the content of the class (which I was familiar with prior to my visit); my surprise was in the identity of the class facilitator. He was the son of the Jamaica Labour Party leader and former Prime Minister of the country; someone who would normally be considered an arch enemy of this People's National Party garrison. From the outset it was evident that the practice of non-discrimination and inclusiveness was important to AIR's success at building adaptive strategies in Trench Town. Community entrepreneurial projects were started which addressed not just issues of identity but livelihood challenges needed to ensure food security. AIR took the training and education one step further by partnering with a local university to begin a Master's in Business Administration (MBA) with a social entrepreneur emphasis. The first cohort of 12 students were on track to graduate in 2013.

Figure 19. Training sessions at Trench Town with community members. (Credit: AIR)

Improving links to other productive assets in the community (shopkeepers, credit union, food enterprise). According to AIR's philosophy, making individual farmers more resilient is only the first step in a process that should extend forward to include the community's shopkeepers and other food users as well as backwards to the suppliers of farm credit, seed and other material or services necessary for the production of food.

AIR's director, Dr. Henley Morgan, stated that

> "…people need to spend money in the community if we are to build the economic base of the economy. People's first thought should not be to go outside of the community to the MEGAMARTS and wholesale stores. Jamaicans spend over $J150b on food each year. Of this figure, $J30b represents what is consumed by people living in the 650 informal communities in Jamaica, yet only $J11b worth is sold in these communities. This means $J19-20b of inner city spending is done outside of their community thus not developing their own communities but other communities. If we could get $J10b of that money back into the inner city this could lead to wealth creation" (personal communication with Dr. Morgan, 2013)

Therefore, it is crucial to understand factors that discouraged inner-city people from spending their tax dollars in the community. For example, community residents could not find any place to purchase the full range of food items they needed. AIR

therefore persuaded the largest regional distributor of Caribbean food – the Grace Kennedy Group - to sell their products directly to small shopkeepers and corner store owners in Trench Town as well as the larger stores and supermarket chains in more affluent and safer communities. Through an AIR-backed social entrepreneurship programme students studying for MBA degrees were paired as consultants to each shopkeeper. AIR was able to use this consultancy feature as leverage to convince Grace Kennedy to invest in the small shopkeepers of the inner-city community. As AIR's chairman exclaimed:

> "this is food security resilience being operationalized" (AIR representative)

In short, AIR realized that if they could not make the enterprise collectively successful for local shopkeepers, citizens and Grace Kennedy then the community would be back where they started – insecure and losing hope. This finding underscores the importance of making access to food locally available in deprived communities and suggests that conventional definitions of food security require modification to encompass this spatial dimension.

AIR orchestrated further strategic partnerships and linkages with financial institutions to ensure micro lending and cash support were available to the shopkeepers on a revolving basis. An amalgamation of credit unions resulted in the formation of First Heritage Credit Cooperative Credit Union, the largest of its kind on the island. Interest on monies borrowed by the shopkeepers to purchase goods from Grace Kennedy primarily would be repaid below the commercial rate.

> "It is like grant money from Grace to the shopkeepers, but without the charity. This means we are giving the shopkeepers variety and economies of scale. So food security has a process and we are concerned with how to replicate

> this model in other communities. During a storm these people in this community know the shopkeepers and can make arrangements plus the government makes arrangements for people to get food on a trust basis. This is social entrepreneurship and wealth". (AIR executive)

Not only were the adults' productive assets gainfully interlinked but there was an attempt to link the human productive assets (i.e. students attending the community high school). Continuing violence in Trench Town has gradually driven down attendance at the once vibrant High School to less than half of its capacity. AIR proposed placing a major food processing plant in unused school space to function as a training facility for students going into the food sciences thereby hoping to have the double effect of providing education and increasing production. Although a friend of AIR donated an entire food processing plant, this project did not materialize. But AIR was able to partner with another prominent community based group, Boys' Town Vocational Training Centre, in a related venture. Boys' Town had received funding from the Canadian International Development Agency (CIDA) to expand their services to include training in food processing. Boys' Town also had plans to establish a farmers' market on the outskirts of the Trench Town community to sell their products – fertilizers, jams, jellies and pastes from their food processing plant. AIR also ventured into workforce development strategies. In this project they trained over 180 persons to provide the labor for the large food conglomerate LASCO and the Jamaica Flour Mills Limited. By broadening the base of resilience in the manners noted it was possible to improve long-term adjustment (i.e. adaptation) to current natural hazards but also those likely to accompany expected climatic changes.

New farming practices. AIR signed an agreement with the United States Agency for International Development (USAID) in August 2012 to implement the Productivity Empowerment Project, (PEP) (see Figure 20). One of PEP's primary mandates was to oversee the creation of an agricultural enterprise, owned and operated by the Trench Town residents. This consisted of three (3) greenhouse units (Agency for Inner-city Renewal, 2013). Interestingly, the main aim of the project proposal was not food security. The Development Grant Program (DGP) of the USAID has a broad focus on strengthening community based organizations rather than a specific focus on improved food security.

Figure 20. Ground-breaking of the PEP USAID sponsored project at Trench Town Photo. (Credit: *Agency for Inner-city Renewal*)

Training courses were developed to introduce concepts like good governance and quality management to the community as it contemplated going into agri-business – in this case, greenhouses and open field farming (see Figure 7). The project also had an ancillary benefit of job-creation.

> "Greenhouse farming is to cause people to spend money in their own communities. Don't get me wrong though, real hunger is present especially in times of crisis. It's not so much the immediate employment we are claiming but giving the community the tool needed to build long term resilience. Eventually we want a farming industry with value added. We saw the open lands. We didn't see backyard farms rather we saw open lands, we saw economic promise… So we decided to do greenhouse farms which will be market driven. In this way we will provide nutrients and livelihood. So, food security is meeting a social need through building an economy". (AIR executive)

Community projects, AIR contends, have tended to fail because they freely give away their goods and services, therefore reducing their perceived value to workers and leaving them open to predation by criminals. In building the economy AIR used a social entrepreneurship model wherein the surplus from the businesses are not seen as individual profit but re-invested into the community to foster sustainability. Job-creation became a long-term livelihood security objective. Farmers' groups were also established to support the projects. Without a social enterprise approach that remuneratively values and rewards the goods and services produced by local people, they become less invested in the project and criminal groups are likely to appropriate its products unless deterred by barricades and other expensive technologies.

> "It is the social enterprise approach to resilience building and community development why you are able to be here talking about food security and not ducking gun shots". (AIR executive)

It is within this framework that the urban community of Trench Town embarked upon the adaptive strategies of greenhouse technology, open farms, kitchen gardens and farmers' groups.

> "It is a challenge for most of us to secure our food individually as we don't have land space to plant so we are doing bucket farming and kitchen gardens. The community operates the greenhouses. Some persons are into bee hive business using No Man's Land. We plant little things in our yard. As a community we are taking food security seriously. We have organized our farming groups within the community and we work with AIR to look at food security. *<ref>P306: Trench Town Group transcript.docx - 306:61 [(124:127)]*

Building the community's capacity to operate as a successful farmer's group was important. Deliberately engaging community members in social connectedness activities and engendering a culture of volunteerism were also critical. The use of No Man's Land as sites of agricultural production for the common benefit of the communities which were previously at war speaks volumes to the resilience building approach emphasized by AIR. Furthermore, the former Minister of Agriculture and Lands, in acknowledging the threat climate change poses to (urban) agriculture has endorsed the introduction of greenhouse technology in farming.

> "This technology, will assist in reducing the food security risk posed by climate change…some of them can withstand some of the hurricanes and they are in a way able to help you to produce even in drought conditions (or) in rainy conditions because they (the crops) are not exposed so much to the elements...The major threat would be the hurricanes, if they are of a certain intensity, but with the greenhouse (technology) you can produce right throughout the year and it helps because a major problem that we face is that we depend on rainfall" (Myers, 2006)

Figure 21. Trench Town residents constructing their greenhouse units. (Credit: *Agency for Inner-city Renewal*)

Taken as a whole the adaptive strategies of investing in social capital, broadening the targeted participant groups and introducing new styles of farming have helped Trench Town to prepare for and withstand periodic shocks that are inflicted by natural hazards as well as improving the nutritional status and food security of residents.

Transformative Mechanisms

Few adaptation strategies have been truly transformative of Trench Town (i.e. have overcome the wider structural constraints that prevent communities from building food system resilience). For this task a mixture of innovation and ingenuity is needed (see Table 41). Building resilience requires helping people adapt to new and changing

circumstances, including facilitating governance and institutional changes that promote good policies, plans and programmes to support wider development at sufficient scale and over a long enough time period to have lasting benefits**.** AIR's focus is on building capacity, improving the governance structure of CBOs and the coordination of the work between NGOs, government agencies and CBOs operating in Trench Town. AIR has also liaised with governmental agencies to strengthen formal safety net programmes including housing.

> "We had the National Housing Trust (NHT) write it into the housing contract that home owners had to do the community training offered by AIR before they could get their keys. If you walk around you will notice there is no fence yet no don can take over the community and certain things are no longer welcome" (AIR executive)

Because the transformation process is not yet far advanced it is not feasible to conduct a detailed evaluation. However, changes in the role of emergency shelters, the expenditure of R&D funds and the use of traditional agricultural knowledge, as well as the practices that it supported, merit close attention as indicators of the transformation challenges and progress toward overcoming them.

Table 41

Sample of Transformative Mechanisms for managing food security risk in Trench Town

Transformative Mechanisms
Improve community based organizations' (CBOs) governance structure and operation in the community and the promotion of grassroots activities
Improved participation in disaster management and preparedness activities inclusive of local knowledge and communication and the ability to plan and organize for resilience; collaboration with the National Housing Trust(NHT) to improve communal setting
Improve formal safety nets

Introduce peace building efforts and strong place attachment activities
Promote sustainable farming and good environmental practices
Collaborate with research entities to take the human dimension of natural hazards into account including people's perceptions

Reconceiving the use of Emergency Shelters

Emergency shelters are intended to provide safe spaces where the needs of populations at risk to disaster can be met for limited periods of time. However, the relationship between physical safety at times of high winds, flooding and droughts and food availability is complex. When food security concerns are overlaid with disaster preparedness imperatives, a rethink of the concept and design for emergency shelters may be warranted. The use of shelters may need to be transformed.

The Government of Jamaica (GoJ) has been encouraging persons to voluntarily evacuate to designated shelters if they are in danger during a hurricane. There are no parallel arrangements during a drought event. Community members however, unanimously resisted the idea of using the shelters.

> "The people who get the most damage don't come to the shelter. You have to come with your mattress as there's nothing to lie on. They have more to lose when they leave their things when they come to the shelter. They can't afford to lose everything. If you leave your stuff people will steal it" (Female respondent).

Even persons who had experienced continuous flooding of their dwellings during a hurricane were not keen on utilizing the shelters. They feared losing personal belongings which would be unprotected if they evacuated and cannot be sure that the shelters will have adequate food supplies. This kind of behaviour recalls the so-called "faustian bargain" that poor people are forced to make in disaster (Woods, 2003). In the minds of the Jamaican poor evacuation may increase their physical safety but leave them exposed to unacceptable material losses and perhaps hunger. Over time that assessment

becomes entrenched in their thinking and makes them wary of social capital-based mechanisms that depend on cooperative behaviour and the creation of voluntaristic networks among non-family members (Putnam, 2000).

The food that comes is just enough to put me into trouble and have people cuss and fight for the food. Whenever there is a hurricane we need to put things in place to give people food. Everything that's being donated gets to the shelter – because it not going to the community.

People who come to the shelter come for food. Nothing is wrong with their house – but they come for the food. We have to register people and so they come and even sleep overnight to get the food. When we investigate nothing is wrong with their houses so they are here for the food.

> Some people get a lot of stuff while others don't get. Very rare when people get food we have had like 72 people in the shelter and enough food come for 10 persons. (female shelter manager -respondent)

In other words shelters were associated with lack of dignity and "quarrels" with others over the unfair distribution of inadequate food supplies. Respondents were traumatized by boisterous disagreements with other shelter users including neighbours with whom they normally have shared positive, healthy relationships. The insufficient food at the shelter created a temporary situation which was damaging to social relations that would need to be drawn on after the storm. As such, respondents were choosing to reject the shelter system and the temporary haven they provided during a storm to ensure their relationships with their neighbours were intact in the long term.

It seems that *shelters are not widely used for shelter; instead they seem to function more as centers for the distribution of emergency food.* One respondent who

worked as a shelter manager noted that as soon as people received food they would leave the shelter. Persons who were at risk of being flooded out of their homes and who might need to utilize the shelter were not willing to lose their few belongings at home by leaving them unguarded. Reconciling differences between the intended use of shelters and their actual usage is a recommended first step in ensuring that shelters are effective risk absorption mechanisms for poor inner city communities. A deliberate attempt to understand the demographics of the users of the shelters and their food needs would modify the functions of emergency shelters in light of their value as an alternate pathway to access food during a disaster. Moreover, reluctance to utilize the shelters is not unique to Trench Town. During the scoping phase of the research, members of the rural community of Manchioneal in St. Thomas shared similar concerns.

> "They tell us to take 72 hours non-perishable food to the shelter. But nobody carries food to the shelter. As a shelter manager I know that as people come they want food. But we don't have enough food at the shelter to share. We have to be begging food. Is a really little bit of food they send to the shelter. The people start to say the shelter managers take the food for themselves. But that is not true. They don't understand that that is all the food we get. We now have to decide who to give food and who not to give food to as we have a better idea of who is outside of shelter and will need food. In some situations you have to try get food to give even those not in the shelter but it already can't serve for those in the shelter. It is a bad situation all over, so those in need stay away from the shelters most times". (female respondent in Manchioneal)

Making food support a disaster-relief function rather than investing in a continuing effort to improve long-term food security has several disadvantages. First it makes the food system hostage to disaster. If there are no disasters the system is less likely to gain resilience because it is not tested. Furthermore, given that hurricanes and drought do not always occur in the same way, the coping strategies that worked in one event may not work in another, thereby requiring residents to make various types of

trade-offs as they prioritize amongst competing threats. There are also incompatibilities between food improvement programs enacted in non-disaster periods and those that are brought in during disasters. As Frankenberger and Nelson (2013) noted: "shocks are unpredictable and may not occur within the timeframe of implementation programmes" sponsored by various donors (p. 8). The validity of attempting to build resilience in the absence of (hazard) stressors is being raised. Furthermore, there is need to evaluate and monitor the impact of all intervention mechanisms in enhancing community resilience even in the absence of disturbances. There is also the need to examine whether international assistance hinders the attempts of communities to build their resilience or entrenches communities' vulnerability status. The urban community of Trench Town has been providing evidence of their ability to build their own capacity to ensure resilience with the help of a CBO and to use this to redefine the way they are perceived in the society. The possibility that more communities are not inherently sites of vulnerability exists.

Applying Traditional Knowledge

In many SIDS, there has been a decline in traditional social systems, and a shift away from a focus on strong family units and community towards consumerism and individualism (UNESCO, 2014, p. 25). In assessing the food security coping mechanisms used as disaster risk reduction strategies by the citizens of Trench Town to build resilience, it became clear that resilience also included the re-discovery of old mechanisms, pathways and practices and their extended uses in new ways thus ensuring recovery or discovery of past mechanisms associated with risk reduction.

One respondent spoke of a tuber called Himba that only grew during the dry periods. In describing and expounding on the Himba, a moment of generational information exchange was shared as no-one else in the circle had heard of Himba. Throughout the data gathering period, few of the older respondents remembered the tuber, however, there was disagreement as to whether to call it a yam or a type of wild cocoa or wild dasheen. One older respondent confirmed that the Himba could not be cultivated and had to left in the wild. She remembered farmers on a number of occasions trying to cultivate the wild tuber to no avail. She remembered the tuber in the non-dry season was infested with worms and could not be ingested. This she said was dry-season food and there were others like it across the hilly regions of southern parishes in Jamaica.

The Himba leaves were said to have medicinal value. The art of recognizing and reaping wild tubers during the period of drought for food and medicinal purposes may be lost to the new generation of farmers. In consultation with the extension officers who served as respondents from the Rural Agricultural Development Agency (RADA) in this study, none of them had heard of Himba though they were aware of wild tubers across the island. These wild tubers however, are not considered as agricultural products and are therefore not researched for their nutritional value or the contribution they can make to the food basket during periods of drought.

The respondents of Trench Town described traditional methods of living that they resorted to during periods of hurricanes and droughts. These coping mechanisms characterized the way of life in Jamaica prior to independence in 1962. After 1962, Jamaica embarked on a journey of development (as that term is understood by western cultures.) In the process they abandoned many of the cultural practices that were seen as

"un-developed" and "backward" in the face of new technologies and new ways of living introduced from industrial societies. When asked to describe these traditional ways that are being used today as coping mechanism, respondents noted a range of mechanisms that were used to preserve the food in the absence of electricity and the modern convenience of a refrigerator (see Table 42), or of adding value turning fruits to chutneys and jams.

As seen in Table 42, there is an awareness that cultural practices supportive of food security were not being transferred generationally. A deliberate effort had to be made to ensure that the older generation's knowledge about these practices did not die out. In essence, that Jamaica would lose ways of life and practices that are now proving to be coping strategies suitable for tackling emerging perturbations associated with climate change. In Trench Town, creating the spaces to advance these dialogues and support strategic conversations to discover these old pathways became an important transformative mechanism used by AIR in community meetings.

Table 42

Traditional Coping Practices

We smoked the meat and that preserves it *<ref>P306: TT Group transcript.docx - 306:43 [(86:86)]*
My grandparents dug the earth and place saw dust in there and then place ice and cover it with earth. The ice lasts all day and more if we cover it well and we do not keep going for a piece. This way we preserve the perishable foods a little longer and we don't have to cook everything at once. *<ref>P306: TT Group transcript.docx - 306:44 [(88:88)]*
My parents dig a hole and put the Cassava and other tuber in the ground and that will keep them *<ref>P306: TT Group transcript.docx - 306:47 [(94:94)]*

We rub the food items in ash and that keep them dry and they don't spoil. So we try to preserve the food. We turn our fruits into jams especially if we have June Plums and mango. We boil them into honey and get a chutney.
<ref>P306: TT Group transcript.docx - 306:48 [(95:95)]

We heard a health program on the radio that was looking at traditional doctor and local knowledge and how to grow herbs that we can use instead of the expert doctor. The community members were exchanging the bush and the use of the bush and helping each other. They educate each other. Everybody was willing to say what they knew about the bush. What their grandparents and great parents used to do. And people are using simple bush to come together and to change their community and their lives. This opened our eyes so that we have to apply this to food instead of medicine. So we are looking into this and we are going back to the old people to say – tell us what you know. We need to recapture these old ways before the old people die and we lose the knowledge completely
<ref>P306: TT Group transcript.docx - 306:65 [(140:142)]

We used to do it. We use to help each other out and exchange things and there was no shame in that. But then we start to hear how developed people live and people don't get developed bartering things. People get developed making big money. As I see it those days are gone and never to return. We don't want to go back to being called least developed. No sah.
<ref>P10: Manchioneal Transcript.docx - 10:28 [(76:76)]

We know how to cook one pot meal. We have to go back to what our fore parents taught us and not these new, easy, instant modern ways where everybody is for himself.
<ref>P 8: Leith Hall transcript.docx - 8:52 [(146:146)] by Super</ref>

When we were growing up and went to the country to holiday for summers – I went to St. Ann. I used to get some nice parshed corn hasham, with avocado pear, and drink some lemonade and we good fi di day you know brethren. We ate chicken once a week. That's on Sunday, with rice and peas. We didn't see this again till the following week. We didn't feel deprived because we were not eating nuff meat. We ate corn by boiling, roasting, grate it and made flour, we roasted potato and so on. We have changed the way we eat and what we consider to be good, healthy food. Coming out of the US we are teaching that you must have balanced meal and then they want to tell us what balanced is… We were told that what we were eating and the portions we were eating didn't match up to the food pyramid standards where we needed to eat from every food group and eat this ounces and that kilogram of rice and wheat…
<ref>P32: Senior Govt repTRANSCRIPT.docx - 32:3 [(26:26)]

My parents used to watch the moon closely. When the moon point turn up that's drought coming and turn down is rain coming, but nobody does that or even teach the youth about these anymore. (female respondent)

When we see swallow bird in abundance it means dry period coming and we start to prepare for it, for example, we used to put ash at the end of the Renta yam and that would keep it up to a year and we would bury the other yams in a cool place and cover it with coconut bow . We used to use the yam whisp to make mulch for the yam and the tomato also we used a special grass as mulch not the one I see us using now. The one we using now we have to be careful it doesn't take over the farm as it seeds up quickly and reproduce. (female respondent)
We used to corn the meat with salt and pimento and put it in a tight bucket and it is important that no air gets into the bucket until you are ready to use the meat.
As a child we would hang the meat over the fire side so that the smoke would cure it. We didn't have fridge and we didn't want the meat to spoil. We used to thief a piece of the meat every time we passed the kitchen and saw it hanging there. Those were good days. (male respondent)

We used to cut certain bush to make medicine but we couldn't cut them after mid-day otherwise you won't get the best use as it loses its medicinal value. Those bush made good herbs for some meals. (male respondent)

With hurricane only the yam sticks break or blow down – so when planting the yam now we realize that we cannot afford for them to run on each other. Cause when this yam vine runs on the other and breeze carry down one like a domino it carries down all the others. So, before a hurricane we make sure the yam vines are not running on each other as you get to save some if not all. (female respondent)

In the rural areas we used to build a portion of the house elevated from the ground. Urban houses don't build like that unless it is split roof. The house bottom acted as storage and my father would place food under the house bottom; ruminants like goats placed under the house bottom to protect them from the wind. We dug drains around the house to drain off the excess water not only from entering the house but drowning the animals (male respondent)

We depended on the network of family not just to work the farm and give day's work but to have inter family sharing – community wide sharing; communal system of eating and helping each other. Did not have piped water thus stored rain water in drums; some of this water was harvested from the roof of the houses (female respondent)

Most houses had two kitchens – one attached to the house but it wasn't for cooking except in storms and times of crisis like in the nights but it was used mainly for storage purposes with "hamper" like structures that were used to store the commodities. Donkeys used the hampers to carry food from the farm up and down hilly terrains to the house. This kitchen attached to the house kept the food cool and it didn't spoil as easily. Then there was the outside/outdoor unattached kitchen that was built away from the house that used wood fire that would black up everything. That's where the cooking and chatting and storytelling would take place. People get rich now

and switch, they have stove and their kitchen inside their houses and you cannot have everybody in your house so we stop doing many things (female respondent)

We have to look at how the fruit bearing to know if a hurricane is coming. When you see the fruit growing 'wagga wagga" know that a disaster is coming. That is long before the weather man tell us and so we start to prepare. We taking down the fitter breadfruit and begin to fry them dry, dry. (female respondent)

The opportunity for the older generation to demonstrate the forgotten practices and for the current generation to build on these old pathways and extend their utility was birthed. A young male respondent shared the following example:

> "We have a fruit that grows around here called noni fruit. It is ugly. We have had it for years and we used to call it duppy guinep and we would throw it away. Now that we are learning from our old people about this fruit and we are just re-learning about this fruit. But we are now hearing where other people are using this fruit while we were playing cricket with it. It is as if the value was never passed down through the generation. But now that we know, we are promoting the use of the fruit and trying to find not just the nutritional value but the medicinal value and anything else we can find. We thinking to do this for other foods and things like that (male youth respondent)
> *<ref>P306: Trench Town Group transcript.docx - 306:63 [(130:133)]*

In the past old communal practices reduced the impact of hurricanes and droughts on urban food security practices; small island states were demonstrable sites of resilience. In a study of rural coping in Jamaica Campbell (2009) concluded that traditional knowledge and agro-ecological practices were effective in minimizing crop loss and damage. The concept of communities being sites of resilience can therefore provide an alternate and impactful lens through which to analyse traditional practices of food security. In discarding these traditional measures, the misrepresentation of SIDS as "inherent" sites of vulnerability was encouraged.

Research and Development

As voiced by the team of government advisors, the absence of a rigorous agricultural research and development environment has served to weaken the structures of resilience the island once enjoyed. The role of research and development (R&D) in ensuring sustained agricultural productivity for food security is well documented in the literature (Pray, Johnson, & Fuhglie, 2007; Pray & Nagarajan, 2010). The absence of a rigorous support for agricultural research and development has weakened the resilience Jamaica once enjoyed (see Table 43). R&D is dominated by public R&D especially in China, however, R&D by private companies is on the increase (Hu, 2011). Countries like India, Brazil and South Africa have benefited tremendously from their governments investment in R &D (Food and Agricultural Organization, 2014). Brazil's Cerrado miracle is a product of R &D (Rada, 2013); India's success in cultivating drought resistant rice is a result of R&D (Babu, 2010). Though the rates of growth and the amount of investment in developing states' R &D are important, having strong government policies to support an enabling environment in the affected localities is also crucial.

Table 43

The Role of Research in the Development Process

The universities on the island are not producing the science as they used to thus the link to get the food security process through R&D in agriculture is broken. Where did the chain begin to lose its link? Is it government's lack of support for agriculture as we see government is not supporting agricultural research as it used to. Is it that students are not interested in agriculture or is it that children are steered away from the agricultural field into office work? This is what we need to understand (Government advisor, respondent)
What has brought us this far is research but the universities are no longer engaged in research. As a matter of fact, we don't even have a department of agriculture at UWI

anymore. I did agriculture at UWI but that department died 89/90 and we have not since produced the number of professional – agronomist to drive the sector. If I need three good agronomist now we can't find it. The College of Agriculture Science and Education (C.A.S.E.) still not accredited as it should be because don't have the visionary thinking. They don't have a tractor; they don't have a plow etc to teach and so R&D on the decline!
<ref>P32: Senior Govt repTRANSCRIPT.docx - 32:23 [(71:71)]

…whatever traction and gains we have had in agriculture is as a result of research by many of our pioneers – Hendricks, McCleod, Thomas Lecky, McLaren, etc who use to go into the field and do the research to get their PhD. The new breed of scientist we have sat in their offices and google the science and don't go out in the field. This is aided and abetted by a supporting cast at UWI who don't continue to train agricultural scientist – UWI train natural scientist but this is not an agricultural scientist. A person who does botany does not an agronomist make – a zoologist does not a livestock officer make and I can't see why UWI administrators can't understand that.
<ref>P32: Senior Govt repTRANSCRIPT.docx - 32:24 [(71:71)]

We have contributed to many other countries through research. Jamaica for example, gave Cuba plant material and they are doing well with it and Jamaica gave pineapple to Hawaii and you see what they are doing with it, while we do nothing much.
<ref>P32: Senior Govt repTRANSCRIPT.docx - 32:25 [(71:71)]

In the 70s we used to supply about 20% of our own rice from Westmoreland where a bulk of the Indian population in this country lives. We used to do BRUMDEC which is the Black River Upper Morass Project – Roger Clarke (late agricultural minister) used to do rice there – also agricultural development corporation (ADC) used to do rice there until it was divested and transformed and it became fashionable to import. Before the 1970s/60s how much of our food was being imported compared to now? Data may suggest that we have the capacity if the will is there and we had the programs and policies to ensure food security. We had that resilience once you know and wasn't importing so much of our food. We used to do onions in St. Thomas and St. Elizabeth in the early days and we used to be self –sufficient, (Government advisor)

When I was growing up we had strong family and community ties. We used to do day fi day work, morning work, man go a next man bush and chop one acre then next day you do the same for somebody else and fork up man farm and your neighbour yard etc that used to be wi culture.

As a child in St. Elizabeth, when the dry season came we would go into the hills and dig a special yam called Himba. Funny thing is himba only came up in the dry season. You wouldn't find it unless it was dry. It wasn't something you could plant and it would grow. People tried to plant it but it nuh come. We used to make it like how you do green plantain. Himba grow between the rocks. I haven't seen it in Kingston. Himba yam man, Himba. *<ref>P31: JT transcript.docx - 31:53 [(85:85)]*

Current state of R& D in Jamaica. In recent years the government of Jamaica has focused on catalysing and improving innovation in the country. Toward that end increased expenditure on Research & Development (R&D) has increased from 0.1 per cent of GDP in 2001 to 0.3 in 2004 - a 57 per cent rise from 2001 (Science &Technology Indicator's Report, 2005 as quoted by Kelly, 2008). But it is still below the region's average (see Table 44).

Table 44

Current State of R&D in Jamaica and the Caribbean

Country	**R&D Expenditure /% GDP**	**Number of researchers in R&D/per million persons**
Jamaica	0.3	-
Latin America and the Caribbean	0.6	261

Source: Kelly 2008

The National Commission on Science and Technology (NCST), the Scientific Research Council (SRC) and the R&D departments of several government ministries are involved in R&D and Science and Technology (S&T) activities that seek to promote innovation. S&T/ R&D also occur within the main tertiary institutions such as the public universities - University of the West Indies, the University of Technology, and the College of Agriculture, Science and Education as well as the private university, Northern Caribbean University. Kelly (2008) posited that while the level and type of R&D activity

has been important there is still a huge gap between R&D and inventions, especially in meeting the needs of the local private sector and agricultural needs. He further noted that R&D in the private sector is relatively weak with few firms having the confidence to carryout significant research.

R& D in Jamaica's agricultural sector. R&D in the agricultural sector in Jamaica is limited. It includes collecting plant species for the plant gene bank and attempting to model the impact of climate change on future agricultural productivity. The Scientific Research Council has created hundreds of plant species using tissue culture within its gene bank –many of which are designated as tuber, fruit and vegetables deemed important to the country. The greatest R&D contribution however to agriculture comes from the cattle industry.

R & D in the dairy industry – The Jamaica Hope. Jamaica Hope (also known as Jersey-Zebu or Montgomery-Jersey) originated from the Hope Farm in Jamaica. Breeding of this breed of dairy cattle started in 1910, and was an attempt to develop an animal that was adjusted to the island's climate. It is heat tolerant, has high resistance to ticks and their attendant diseases and produces much milk even where the pastures are not rich in nutrients. The state university in Oklahoma department of Animal Science described the breed as consisting of Holstein, Jersey, and Zebu. Dr. Thomas Lecky, a pioneer in Jamaican agricultural science was credited with this process (Tortello 2003). Apart from the "Indian Taylor" breed, and the newly developed "Australian Milking Zebu", the Jamaican Hope is the only tropical dairy breed that results from crossing Zebu with regular cattle (Wellington & Mahadevan, 1977). Given its successful

adaptation to tropical conditions, the Jamaica Hope could be dubbed a "tropical resistant cow" and therefore the possibilities to positively impact livelihood security and wages.

Domestic market possibilities. Jennings (2006) claimed that Jamaica's dairy sector has the potential to produce beyond 25 million liters of milk annually from current animal and land resources. He further stated that the escalation in international prices of milk solids indicates the increasing unaffordability of these products. At 2006 international prices he noted, whole-milk powder retailed locally at J$38 – $42 per 80g sachet, equivalent to a reconstituted cost to the householder, of approximately $60.00 per liter, compared with a retail price for fresh milk of $78-80 per liter. He further noted that milk powder prices since 2010 has been trading at US$3200 per metric ton, at which price, given current trade margins, the reconstituted price of milk powder has surpassed the current price of fresh milk. Consequently, locally produced milk, purely as a commodity, has fast approached international competitiveness. This ignores the vast opportunities which currently exist, to competitively diversify into high-value dairy products (for example, ice cream and cheese).

The reduced cost powdered milk that many consumers welcomed in the 1990s is now proving to be more expensive than fresh milk. Though powdered milk does not require refrigeration, and therefore has a long shelf life - making it an ideal 'hurricane food', many poor families are weighing the advantages of fresh versus powdered milk carefully, especially in the urban spaces. The shelf life of fresh milk is also proving to be acceptable once all the content is consumed shortly after opening. Producers are therefore trying to supply fresh milk in cheaper and smaller packages to ensure single usage and reduction in the opportunity for spoilage. However, there needs to be greater

coordination within the dairy industry of the key stakeholders to ensure the health of the industry.

The historical situation has been one in which there can are no guarantees of consistent public resource allocation to assist breed development. Therefore, it becomes incumbent on Breed Society members, who stand to gain the most, to take responsibility for managing the development of the breed, as well as for the state to create a favorable policy environment supported by technical assistance through R & D. Recognition of the cattle sector as strategic to the goals of food security, livelihood protection and rural development is needed (Jennings 2006; Jennings 2007; Jennings 2008; Jennings, Miller, Ffrench, & Duffus, 2009; Miller, Ffrench, Duffus, & Jennings, 2007). A clear commitment to improvement of the factor endowments critical to the dairy and wider cattle sector through sustained investment in research and required technological competencies is a priority (Jennings, 2006) if the society wishes to embrace consumerism.

Other Factors for the Decline in Resilience

Pelling and Uitto (2001, p. 56) noted that globalization and modernisation (including consumerism and individualism) have brought about the decline of many facets of resilience that once existed in small island states. Following extreme events in the Pacific Islands, the people were able to process sago a food used in times of famine. This practice has been documented as far back as 1910. However, by 1936, food relief intervention became a major way of coping with food shortages following extreme events. By 1980 and after several tropical cyclones sago was never used again and the art of using sago was lost (Campbell, 2009).

Similar experiences have been found in the Jamaican communities wherein the traditional art of preparing for droughts and hurricanes and preserving foods for long periods is slowly being lost. Maybe, as has happened in the Pacific Islands the intervention process of providing charity relief has contributed to communities losing their culture and generational advantage of social resource management which had prevented hunger in times of storms or drought.

As seen in Table 44, communities have perceived that practices that rendered former generations to be able to plan for their food in-take especially during crises are being lost. These indigenous practices though rudimentary had proven to be effective means of ensuring persons were not hungry. Improving on these former arrangements instead of discarding them could possibly be a way forward to bolster the current efforts at coping and adaptation to deal with the uncertainty associated with climate change. Understanding the causes that contributed to the reduction in these traditional methods may reveal that disaster risk reduction and food security concerns did not impact on the decision making, but more than likely globalization and its attendant disruptors to the culture of societies that were not fully integrated into the wider global economy.

Societies have therefore changed and new sets of arrangements and responses are being practiced that seem to produce sites of vulnerability as communities are left doubly exposed to forces of a changing climate and the global economy without the requisite skills to adequately understand the disruptions caused by this double exposure nor are many able to successfully mobilizing social capital to deliberately plan attainable goals and a realistic vision for the community. Communities however, must continue to appraise the environment and seek opportunities for renewal, anticipating risk, and

limiting negative impacts, and bounce back rapidly through, adaptability and evolution as they embrace discarded generational pathways to surviving hunger.

Concluding Thought: Sites of Vulnerability can become Sites of Resilience

Many individuals in Jamaica today are still ill-prepared to cope with the unavailability of and reduced access to food they experience due to extreme events manifested in more intense hurricanes and prolonged droughts. The experience of Trench Town offers pointers for constructing an urban food system for Jamaica that is resilient to natural stressors like hurricanes and droughts. It suggests that existing absorptive and adaptive responses to these hazards have only limited success because they do not address underlying factors that structure vulnerability to these natural hazards. On the other hand it holds out the promise of improvements brought about by the transformational initiatives of the AIR program.

These are aimed at redressing social inequities and political schisms that limit the geographical (i.e. spatial) mobility of residents and undermine trust among different sectors of the resident population, thereby preventing the growth of a comprehensive unified approach to ensuring food security. This case study reveals that there are unexploited avenues for additional improvements in the form of reconceived functions for emergency shelters, a recommitment to unearthing and applying tradition knowledge about food security, and a public strategy for research and development that goes beyond scientific and technical innovations to address the needs of farmers, traders and consumers at the grass roots.

Finally, the story of Trench Town highlights the notion that some communities need assistance to build resilience as they cannot build resilience on their own. The role

of the community based organization, Agency for Inner-city Renewal (AIR) to negotiate with large food conglomerates like Grace Kennedy and the housing development authority, The National Housing Trust (NHT) to build a sense of community and economy is critical to the process of ensuring food security resilience.

Other communities may not have the assistance (external or internal to the community) to broker the needed relationships and social connections needed to successfully access and mobilize resources for resilience. Understanding the coping and adaptation strategies employed by the poor especially in urban spaces to deal with extreme events whether natural, socio-political and market related will become integral for any policy conversations and plans in small island developing states.

For practical reasons therefore food security should be approached from a resilience rather than a vulnerability perspective in small island developing states (SIDS) as it offers considerable latitude to the communities to analyse its psychological positioning, it's starting point and assess the arsenals it has in its camp to attack the external stressors rather than to accept helplessness and the supposedly inevitable outcomes expected in vulnerable spaces in the face of an incoming army.

What is important therefore is not so much the specific immediate outcome of the stressors, but the recognition that communities can value their unique history and characteristics and the inevitable cross-fertilization of experiences and perceptions to change future outcomes. In so doing SIDS would be able to assess themselves as sites of resilience rather than sites of vulnerability and see the merit in a resilience approach to building food security. Positioning small island states as sites of resilience rather than sites of vulnerability is not therefore a far-fetched concept.

Chapter 8

Social Capital and Food System Resilience in Two Rural Communities

Introduction

This chapter examines the status of food insecurity in Prospect and Jeffrey Town, two rural communities of Jamaica, and assesses their efforts to create food systems that are more resilient in the face of hurricanes and droughts. In the case of hurricanes, which are rapid-onset acute hazards, food system responses are assessed separately for each of four widely recognized disaster stages: preparedness, impact, recovery and mitigation. Since droughts tend to be slow-onset, long-lasting phenomena, wherein these four stages often are conflated, food system responses are treated as a single set.

Prospect and Jeffrey Town have faced similar threats to their food security before, during and after hurricanes and droughts. However their capacities to cope and devise resilience strategies greatly differ because of the ways they have used and developed their social capital. These differences are summarized in Tables 45- 46 and discussed in Sections 8.2 and 8.3. Perceptions and ratings of hazard threats in these communities were reported in Chapters 4 and 6 and are only briefly summarized here.

Threats and Responses in Prospect

Food security issues surfaced in Prospect as early as the 1970s mainly during major droughts and floods. At that time, during droughts, Prospect was able to participate in a community water distribution system made available by Alpart's, a major bauxite company. Some farmers built make-shift conduits to divert water to their farms from a water main that serviced an Alpart owned ore conveyor belt. However that system was disrupted by global economic shifts. World output of alumina fell precipitously in 2008

and all bauxite companies reduced production significantly; many of the projects they shared with neighboring communities were halted. For the first time in over twenty years, Alpart was unable to provide a steady supply of water to farmers and they had to face the challenges of building resilience on their own. Now that Alpart has closed, Prospect's citizens are finding it difficult to cope with the onset of drought.

Detailed data about Prospect were published in the Manchester Local Sustainable Development Plan, 2008. During focus group discussions in 2013, those data were used to construct an updated timeline of hazards and responses. Additional data on volunteerism, trust building activities, social support, social connectedness and networking were extracted from The Social Capital Community Benchmark Survey[14] . The results are depicted in Table 45. During the seven decades between 1944 and 2013 seven major hurricanes, 4 periods of drought and one period of flooding are known to have affected Prospect.

Table 45

[14] "Social Capital Community Benchmark Survey short form, July 2002 version, Saguaro Seminar: Civic Engagement in America project, John F. Kennedy School of Government, Harvard University."

Prospect Community Coping Strategies and Social Capital Development

Hazard year	**General Impact**	COPING STRATEGIES – Prospect Community	SOCIAL CAPITAL DEVELOPMENT ACTIVITIES
Hurricane 1944	-	-	-
Hurricane Charlie, and the 1950s	Some thatched houses destroyed	Significant migration began to other communities	Volunteers helped neighbours and friends to re-build thatched houses
Bauxite company bought out 80% of land	A little flooding	Water buckets carried from well in Logwood district	Creation of stronger "Spanish walls" using bauxite as a bonding material
	Lack of access to clean water	Meat salted and smoked for storage; ate mainly saltfish and produce from own land	Communal cooking and sharing of food with emphasis on feeding children
	Some farmers lost crops and fruit trees		
1970s Drought	Early signs visible 72/73	Water received from bauxite company; suckers planted; part time employment	Partnered with the bauxite company for assistance to improve social network
Resettlement started as the bauxite company took more land	Food security an emergent issue	Received barrels from overseas family members	Some migration to Kingston as well as USA, Canada and Great Britain with maintenance of social connectedness and networks
	Rural Electrification		

	Programme; storing food in refrigerators		
Early 1980s Drought	Drought in early 80s difficult to manage	Growth of small businesses – grocery and hardware shops; dress-making and tailoring	Early attempts at forming a community problem solving group phased out as some leaders migrated
Temporary closure of bauxite company	Crops lost but not animals	Government-sponsored informal commercial importers (ICIs) program allows products purchased in USA to be sold back to Jamaicans.	
1988 Hurricane Gilbert	Minor wind damage to houses mainly loss of metal (zinc) roofs	NGOs and government began distribution of zinc	Church and schools used as shelters for displaced persons.
	Farmers welcome rain brought by the hurricane	NGOs and family networks provide food assistance	Community meetings examine collective assets – social connectedness increases
		Use of candles and kerosene lamps for a year following loss of electricity; perishable items cooked and shared with neighbours	Church groups mobilized to distribute food items in immediate period after the hurricane. Churches began to cooperate for a common cause – social connectedness and networking increases.
		Shelter population helped with food and clothing by others	

		Increased dependence on tinned (canned) food and ground provisions	Bauxite company gave scholarships to the community's children for secondary school increases social connectedness and trust
1996-98 Drought	Severe Drought in 1998 with a few bush fires	New Montpelier housing development features community organization	Community group was convened again to look at issues facing the community and possible solutions. This
	Loss of mulch material	Bauxite company allotted land to employees	group approached the bauxite company about irrigation system; training
		Water trucked in by bauxite company	opportunity for community youth; scholarships to universities.
	Residents of Butt Up affected; mainly infrastructure damage with little crop loss	Dependence on family, friends and social network for finances to replace flood damage	Computer lab installed with help of bauxite company and the community
		High unemployment. Community leaders approached Social Development Commission (SDC) for aid	Contacted agencies and organizations for assistance in community development :- -Manchester Chamber of Commerce; Manchester Parish Council; Manchester Parish Development Committee; International Development Agency;

			Northern Caribbean University Community enthusiasm and increased networking but lack of organizational structure blocked meaningful results
Hurricane Ivan, 2004	Flooding and crop loss	Bauxite Company assists by partnering with RADA to request seeds and fertilizers	Stronger ties to bauxite company and RADA. Some community members willing to register with RADA
	Many farmers without land titles cannot get rebuilding loans from banks	RADA's assistance was slow and limited	Farmers' group met with government representatives about their land title concerns
Hurricanes Dennis and Emily, 2005	No major losses; receives limited amount of rain needed by crops		
Tropical Storm Gustav, 2008	Receives needed rain; a few places report limited flooding Evidence of climate change emerges	Search for new well following example of other communities Migration from the community	Community association that includes returning residents from overseas formed to examine issues affecting returnees

	Other family members
Societal trends	with different skills
add complexity:	provide more help
returning	
residents bring	Remittances from family
new ways,	and friends
younger	
generation have	Pulling out of agriculture
different	or doing agriculture part
attitudes from	time
parents, many	
youth move to	Starting other
Kingston;	entrepreneurial activities –
everybody for	bars and mini restaurants
themselves;	
limited	Started a community
government	group again to look at
help; bauxite	community development
company in	especially for the farming
decline;	community
unemployment	
high; food	
security is an	
emergent issue	
and people are	
not coping as	
they used to	
Bush Fires	
destroying	
mulch	

2009/2010 Drought and bush fire Beet Armyworm pest appears 2009 Bauxite company closed	Crops lost; yields small; no wide-scale irrigation system Infected crops burned Community dying; youth migrating rapidly; less help on farms threatens food security Praedial larceny increasing and unemployment high; Little government aid; food security is an emergent concern	Black drums and tanks installed to improve water storage capacity Farmers' group restarted Farmers encouraged to register for help from Rural Agricultural Development Agency (RADA) Altered farming practices – planting other crops; change cycle of planting Working more with the parish council and the fire department to ensure Rapid Water Truck is available to truck water to the area;	Farmers' Association uses GoJ Production and Marketing Organisation (PMO) Government sponsored educational campaign on causes of bush fire – community members volunteered to be trained as 'wardens' Community establishes a water container business to help farmers who could not afford more expensive irrigation Farmers approaching the GoJ about land title concerns
2012/13 Drought	Beet army worm resurfaced in	Building moats to keep the beet worms away. Filling the moats with water - an expensive venture	Community group is weak and fledging. Trust issues are identified

Bauxite industry dead	2012; crops eaten Praedial larceny is number one problem Crops and animals stolen during the drought (adds to financial pressure and lack of food) food security especially during periods of drought is a real concern	Individual farmers setting traps in the field; others using simple surveillance cameras to help with the praedial larceny	A small community group is active and wants to try greenhouse technology but finds it is too expensive; farming is too expensive; community can't survive; they need external assistance Community adopts unsuccessful neighbourhood watch to deter thieves

Source: MLSDP, 2007 and focus group discussions 2009 and 2013.

As seen in Table 45, the collective memory of hazard events impacting the Prospect Community started from the 1940s with hurricanes. Drought conditions were not registered by the collective until the 1970s. Unlike, farmers on the eastern side of the island, hurricanes even with its attendant flooding and crop losses are welcomed by many farmers in Prospect as they provide the needed water to stave off the mitigating impact of drought. The community's response to these hazard risks are at best only partially successful as repeated attempts at developing a governance structure or organising into groups to strengthen the community's capacity to respond tend to whimper and die. The

community governance would coalesce around broad based socio-economic issues not limited to food security. The bauxite company and the returning residents (i.e. Jamaicans who lived overseas and have returned home) have played a significant role at attempting to support the community structures to create bonding among community members as well as with community partners to develop effective coping mechanisms at the community level. At times these roles have been complementary as where one is absent or weak the other is present or strong.

Threats and Responses in Jeffrey Town

Local farmers, who were often devastated by natural disasters, lacked a community information platform through which to discuss climate change prevention and resilience building measures. Those who had built their houses in hazardous spaces exposed to water run-off, landslides or flood risks were often overwhelmed socially and economically. Three of the affected individuals began to mobilize farmers in a self-help initiative organized around the issue of mitigating natural hazards. In 1991 this became the Jeffrey Town Farmers' Association. Coincidentally there were changes in international trade rules that left banana growers in Jamaica without preferential markets and decimated the industry (UNDP, 2015; personal communication with community leaders, 2015). The Jeffrey Town Farmers' Association decided to use their experiences with these shocks to devise mechanisms for encouraging resilience and sustainability that stressed self- reliance and volunteerism (see Tables 46 & 47). Wider recognition of their efforts within and outside of Jamaica came in the form of awards and participation in national, regional and international workshops or conferences[15]. In contrast to Prospect,

[15] They have won a number of awards and participated in a number of regional and international conferences including, among others,: Most beautiful community in St. Mary, 2011 ; Jamaica Environmental Trust Award – Best

where lack of organization led to reliance on individuals and national government, Jeffrey Town has been heralded as a success story that has become a model of community leadership and community self-help as avenues toward sustainability, resilience and food security.

Table 46

Jeffrey Town Coping Strategies and Social Capital Development

HAZARD YEAR	GENERAL IMPACT	COPING STRATEGIES – Jeffrey Town Community	SELECTED SOCIAL CAPITAL DEVELOPMENT ACTIVITIES
Hurricane, 1944	Sweet potatoes blown out of the ground Banana plants blown down Many houses flattened	Parents and children housed by neighbours Switched to consuming cocoa and cassava crops unaffected by storm	Community farmers practiced in "day fi day" work –each farmer works in the field of another farmer for a day and the effort is

Environmental Community 2012; - Best sustainable agriculture and best youth in agriculture, 2012; 2nd place Scotia Goes green Eco Award, 2011; 2 Michael Manley awards for community self- reliance; Best environmental community in recognition of outstanding effort to protect Jamaica's natural environment; Prestigious Equator Prize, 2014; made presentations at the DRR conference in Sendai, Japan, 2025; one of three finalists of 88 countries which vied for the coveted UN Sasakawa Award for Disaster Risk Reduction in Sendai, Japan 2015; made presentation at the UNFCCC COP21 Climate Change Conference in Paris, France 2015; Participated in the Breadfruit Conference, Trinidad, 2015 as well as a Community Disaster Risk Management Forum in Belgium, 2015

Hurricane Charlie, 1951	One house lost roof and windows Ground produce uprooted Animals died	Affected persons sheltered with neighbours Royal Palm Leaves (Bunna) used to make roof Salvaged produce buried for preservation Injured animals slaughtered, "corned" and smoked on "Creng Creng"	reciprocated Volunteerism Community members went to the river and filled each other's water drums Children encouraged to: engage in farming as a community activity, propagate a love for agriculture; and pass on skills to the next generation
Drought, 1974	Crops destroyed, animals died Animals suffered malnutrition and dehydration Food and water shortage	Water carried manually from spring and gullies Food provided by government at collection points Roasted food such as banana and plantain consumed. Cane juiced to provide drinks and used as sweetener	
Flood, 1979	Many animals died Landslides Rivers overflowed Fish and shrimp washed on road Houses split in two Farms destroyed Graves destroyed	Residents ate stranded fish and shrimp Affected persons sheltered with neighbours Community cooking – shared resources, members planned rehabilitation strategy –	

		citizens helped each other – "day for day" labour
Hurricane Allan, 1980	Crops destroyed Fruit trees blown down Roofs blown off	Affected persons sheltered with neighbours and family members, Citizens helped each other to rebuild, Banana farmers compensated by Banana Growers Association
Hurricane Gilbert, 1988	Trees destroyed Fruits flown off trees No leaves left on trees Trees died Houses destroyed Zinc blown off roofs Loss of electricity Landslides Hike in food price Long lines for food No water Several roads blocked	Affected persons sheltered with neighbours Corned chicken as means of preservation Rebuilding with zinc gathered from other places in community Use of emergency shelters Downed fruit eaten and used in a variety of ways Some persons sheltered under beds and in cellars Young bananas covered until they were mature

		Battery radios, kerosene lamps, flashlights, bottle torch were used to generate light Resort to old time storage for food Bamboo joints and calabash used as vessels to drink water. People boiled and sold water.	
Hurricane Ivan, 2004	Roofs flown off Trees fell on houses Loss of electricity Food spoiled Roads blocked	Chicken corned as means of preservation; some given away Affected persons sheltered in schools and churches Power saw operators assisted in clearing roads	Extended deliberations about sustainability (see Table 46) Jeffrey Town Farmers' Association (JTFA) convened, to spearhead community sustainable development activities
Hurricane Dean, 2007	Loss of crops, vegetables, loss of electricity, trees fell and blocked roads; flooding in some areas	Farmers replanted crops quicker, Generators used; Designated a vulnerable area as "no build zone" to prevent further losses	around issues of farming and climate change (see Table 47). JTFA sought to aid farmers strengthen community ties.
Tropical Storm Gustav, 2008	Loss of crops/vegetables Loss of electricity Fallen trees block roads	Farmers replanted crops Individuals invested in generators Kerosene lamps, flashlights used. Cell phone owners charged $100 to charge	National Labour Day* activities focused on community uplift

Tropical Storm Nicole, 2010	Destroyed banana, plantain, fruit trees Landslides Electricity out for almost 1 week.	phones using solar energy	Designed a community disaster reduction plan; Plans to begin a community food security plan by 2015
Drought, 2013	Loss of crops Abnormally long drought is a recent phenomenon	Used radio station to inform community members about best practices to combat drought Plant crops among grass that acts as a mulch Use water from drums during late evening and nights Collect recyclable bottles Place filled and performated bottles at plant roots for slow drip irrigation Control waste water through contouring, Harvest waste water from the streets and roofs	Received funding from a number of national and international agencies (for example, the Caribbean Development Bank and the European Union) to strengthen capacity for food security and sustainability in an era of climate change (see Table 47)

Source: ODEPM, 2011 and focus group discussion, 2013

*Labour Day is a national day of community voluntary participation in beneficial projects throughout the island.

Table 47

Selected Social Capital Development Activities in Jeffrey Town

Training of volunteers to support community wide projects; major training in no-till farming, composting, terracing and gradual greening of community. Also, started community greenhouse farming of strawberries - sold produce to hotels began collective growing and marketing of crops developed a community chicken rearing group to provide jobs and absorb losses
Began a computer centre for youths along with a community radio station. Through the national Human Employment and Resource Training Agency (HEART) and the Commonwealth of Learning, offered training for internet café and a wide range of other services. The aim is to encourage youths to remain in the community or to give back to the community if they should leave Jeffrey Town Farmers' Association (JTFA) applied and won funding for a number of projects to help build capacity. Among these included: Environmental Foundation of Jamaica (EFJ) funding to:- train volunteers to operate community projects install a hybrid alternate energy system. Started with 22 solar panels and a windmill; community now receives 20% of electricity from the state and 80% from renewable energy
European Union (EU) funding to:- build capacity for all sectors of the community including literacy support, under age 12 computer course and the youth media course focusing on resilience. developed community radio programmes geared at educating the community about different social issues for example climate change, food security and human trafficking; used "Anancy stories" – this is an oral tradition of story- telling which touches on the rich culture of the country and community to convey messages
Caribbean Development Bank funding of $US 649, 644 to:- support disaster risk management activities inclusive of water tanks, improved gutters and roofing build community resilience in agriculture, food security, education and information sharing To help secure and protect vulnerable areas in the community the JTFA and the community voluntarily:- • built 5 sets of gabion baskets to help prevent land slippage • built check dams, a major water catchment intervention as no rivers close by, • introduced solar pump and solar street lights • planted hundreds of trees in the community not only for beautification but for sustainability as good environmental practice

Started a number of other community social connectedness activities to encourage community engagement and participation and build trust for example, the community Breadfruit Festival ; Police Youth Group; cottage industries where persons are taught to prepare food items for sale outside of the community
Invited experts to the community to discuss community hydrology and to examine the geological structure to for future community water plans

Tables 46 and 47 confirm the differentiated impact of hazards events on communities. The Jeffrey Town Community presents with more hurricanes and floods than Prospect as well as fewer droughts. The role of returning residents in consolidating and guiding the social capital asset of the collective is underscored as an important step in building resilience through self- reliance. Community self-reliance is fostered by a system of volunteerism and community plans and projects supported by bridging connections with community partners to supplement the skill set of members.

Responses to Hurricanes in Prospect and Jeffrey Town

Food issues during the preparedness stage of the hurricane cycle. The preparedness stage of hurricanes is defined as up to 48 hours before the impact of the storm. This is a time when attention is focused on stocking up food and water as well as securing shelter until the storm passes. Prospect residents identified more types of perceived threats than Jeffrey Town but residents of both communities believed they had sufficient capacity to cope with the hurricanes (see Table 48).

Table 48

Selected Matrix of threats in the Preparedness Stage

Key			
Jeffrey Town	Prospect	Both communities	
	No/Low Capacity	Medium Capacity	High capacity
Severe and likely		Supermarket, shop shelves low on 'hurricane' food Don't understand warning code communicated in the local media by government Cost of water	Focus on securing the house not the food No money to stack up on extra food Water scarcity
Neither severe or likely			
Likely but not severe		Supermarket, shop shelves low on 'hurricane' food quickly	Don't know where the shelters are located or where to find food
Severe but unlikely			

For many the harrowing and traumatic experience of Hurricane Gilbert in September 1988 is still vivid in their minds. "Wild Gilbert", as the hurricane was later called, has become the point of reference for most community preparedness plans. The only other remembered storm before Gilbert was Charlie (1951). It was associated with romanticized stories of heroic deeds by many persons. These fostered a relative lack of preparedness for Gilbert, combined with great anticipation, zeal and some trepidation. After Gilbert passed, the then Prime Minister, Edward Seaga, compared the devastation of Jamaica to the atomic bomb destruction of Hiroshima during World War II.

Small-scale and subsistence farmers tend to feel the greatest impact of hurricanes in SIDS and Jamaica is no different (Spence, 2009, p. 8). They may lose their source of

income. As people prepare to receive a storm their major priority is stocking up on food and water. Typically this involves a rush to the supermarkets and stores to acquire more than the usual number of food items. Typical comments made in focus groups include the following:

> "Gilbert taught us that you can't have too much food and water in your house" (male respondent)
>
> "After Gilbert, I eat tin mackerel and corn beef till I sick! There was no light for a year and all we could get to eat was tin things. The hurricane flattens all the crops, all the trees, everything on the ground. That leaves us with flour, rice and tin things, morning, noon and night" (female respondent)
>
> "Well yes, we learn how to pack up on dry stuff. Every time you hear it on the radio to pack up on dry stuff. But many of us can't really pack up on dry stuff. We don't have the money to do that. We have to tough it out and do without. We have no jobs. So yes, we build resilience. In our minds we know this won't last forever so in our minds we know we have to tough it out. So we build resilience – our resilience is to tough it out and do without most things. The sun will shine again". (middle aged female respondent)

In Prospect and Jeffrey Town residents collect perishable food items that can be consumed "as is" or that can be stored for a few days to complete the ripening process. Some people in Jeffrey Town for example explained that they "trusted" items from the shopkeepers. This means they made arrangements to pay for food using promissory notes, whereas in Prospect they awaited assistance from NGOs and the churches.

In Prospect respondents also noted that that they revised the cycle for receipt of food barrels from their families overseas. Customarily, Christmas would be the expected time to receive a barrel, however, some routinely opted to receive their barrels in the spring and early summer, the season for hurricanes. If necessary this would allow them to reallocate income to other types of hurricane preparednesss. Respondents agreed that a more systematic approach at the community level needs to be devised to complement these household mechanisms. But the two approaches are reinforcing; if the households

were secure there would be less pressure on the community, thereby making it easier for the community to be efficient first-responders.

One example of innovative "bridging" of social connections is worth noting. The Jamaica Exotic Flavour and Essence Company has a plant in St. Elizabeth, established in 2004 that some respondents think of as their "savior". The plant has provided farmers with an alternate outlet for fruits and herbs which would have spoiled or been destroyed as a result of a hurricane. Farmers cooperate to reap under ripe fruits and young herbs during the run up to a forecast hurricane. After the hurricane moves away, fruits and herbs that can be salvaged, but could not be sold directly to the public, are sold for their essence and flavours. (Essence from crops is used in pharmaceutical, body and beauty products). This "no waste" policy ensured that every part of the crop is used for productive purposes.

However, this mechanism is not without limitations. First, not all crops are eligible to be taken to the processing plant, only those from which rich flavours can be extracted. This includes fruits, ginger, peppers and scallions. Tuber crops like sweet potatoes and yams do not qualify and a number of farmers only grow tubers. Second, the factory is relatively new and small. With over two thousand farmers trying to access it, they have been asked to organize themselves into cooperatives and work through those organizations rather than individually. Given the factory's limited storage capacity, at times it is unable to accept the volume of crops farmers are selling. Despite these limitations, farmers are confident the essence and flavour industry is poised for future growth.

These arrangements have given the communities confidence that they have sufficient capacity to cope during the preparedness phase of hurricanes. However, the unpredictability of hurricanes and the costs of always being prepared act as dampers to their enthusiasm. It was recalled on many occasions that a predicted hurricane did not hit and many persons were left with unnecessary supplies and debts incurred by purchasing them. Others were simply inconvenienced. Some respondents waited until the very last moment to shop for food and water but found the supermarket shelves were already empty by the time they went there. These folk preferred to run that risk rather than be left indebted. Holding back from making a commitment to acquire emergency food supplies was not confined to the two study communities; throughout the scoping phase of the research, similar sentiments were echoed elsewhere:

> I don't have money to buy tin things and stack up for false alarms. I am not working. The government pension is so small it don't even reach up to us in Manchioneal sometimes. So like everybody around here I rather do without than put myself in trouble. If the hurricane really comes, the little shop around the corner is where I go to trust things, if they still have anything
> *ref>P10: Manchioneal Transcript.docx - 10:15 [(50:51)] by Super</ref>*
>
> If we have money and food still on the shelf we buy but we not rushing to buy what we can't afford for a storm that is not coming. Nuff times the storm don't come, but if it come we lean on the mercies of God.
> *<ref>P10: Manchioneal Transcript.docx - 10:4 [(12:13)]*
>
> Interviewer:
>
> What does leaning on the mercies of God look like?
>
> What God provides we take and God sometimes use other people to provide. We can't complain when people give us things. We have to see it as God provide. We have to wait on somebody to help - that is whoever will help, help. Mainly the Red Cross help. When the Red Cross comes, if God didn't have mercy on us- they would come to meet a funeral as we woulda all dead
> *<ref>P10: Leith Hall Transcript.docx - 10:5 [(14:19)]*

Among preferred changes that might help in the future are more accurate and understandable warning systems (Prospect). "Credibility of something probabilistic seems like an oxymoron in a sense, but this is fundamentally one of the problems across

the Jamaican landscape" (Bennett, 2011, p. 32). How does one treat with certainty that which is uncertain? A few respondents noted that they did not understand the warning codes communicated in the local media. This was particularly true of the five categories that are employed by meteorologists to designate storm intensities.

> "Sometimes they tell you it is a tropical storm and not a hurricane or it is category 3 or 5 hurricane yet still the tropical storm and the category 3 do more damage than the category 5. You would think the bigger category means bigger trouble but no sah. Every hurricane different and that is what they must tell we so we can better prepare", (male respondent).
>
> "As bad as Ivan was, him never bad like Gilbert and me never really prepare for any of them. None beat Gilbert so far. Some come with more water than wind and some come with more wind than water, but all of them different no care the number them give them. Them just confuse me when they tell me is category this or that. Them need to tell me to expect more than what I saw in Gilbert or less. Them need to help me to understand what to expect so them have to give me something I know. Them can't give me 3 and 4 and 5, that don't mean much. I can't decide if I will need supplies for one week or ten" (male respondent)

For example, hurricane Gilbert hit Jamaica directly as a category 3 storm, while the track of category 5 hurricane Ivan shifted, sparing the island catastrophic damage. Nevertheless, Ivan was deemed one of the most intense hurricanes ever recorded in Jamaica's history (Carby, 2015[16] personal communication; Carby, Burrel, & Samuels, 2012). Both hurricanes decimated the agricultural sector and wiped out the banana industry of St. Mary. Agricultural losses accounted for 40% of the $J4 Billion total losses charged to Gilbert. Drawing on these experiences, the Jeffrey Town Farmers' Association - in partnership with ODPEM - devised a community disaster preparedness plan that provided a framework for responding to hazards (CSGM, 2013). The plan however appears insufficient to deal with threats to the food system associated with climate

[16]Dr. Barbara Carby was director of the Office of Disaster Preparedness and Emergency Management (ODPEM) during the period of Hurricane Ivan

change. A new approach to disaster management that privileges the food system has been embarked on

> "… we are now seeing the need to focus on food security for climate change. So our project document is focusing on our starches. So doing more drying, milling to store our starches… working towards a seed bank so we can store our indigenous seeds…we don't have the seed bank as yet…we are working on this now… because of our experience on how long it takes to recover, if you do get seeds its some seeds that might germinate or you wait a long time to get seeds. If eventually they remember you the most you'll get from the government is tarpaulin which stay on your roof and burn out. "(JTFA male executive)
>
> "We are doing the drying of the food– and we will use it and replace it – so it is not the same dried one that will be there for a long time. We are not thinking only about for climate change, not just for hurricane but for any eventuality that might affect our food security" (JFTA female executive)

While some respondents focused on securing their food, others were more concerned about trying to secure their houses but this diverted resources that could be used to secure food. On the other hand, safe housing contributed to future food security even if people might go hungry in the immediate aftermath of the storm.

> " …we have to look after the house first. That is a major investment. Any assistance from the government takes a while, a long while to come and the repairs to a house take a lot of money, and some of it is the food money…but we know how to get help with food. People will always give food but who going to give house? (female respondent)
>
> "The little house here is wi storage for all our seeds and sometimes the new birth animals; is we little pension and collateral this". (male respondent)

Respondents thought the community had great capacity in the short term because neighborliness became mobilized during crises and people were more willing to shelter their neighbors than see them go to the public shelter. But ownership of real estate property is seen as a valuable indicator of future capacity to respond appropriately to environmental threats. The physical security and emotional peace of mind attached to owning real property was deemed to be more important than the short-term discomfort of hunger. Evacuating from one's home to seek shelter during a hurricane was seen as

foolhardy. Perhaps perversely, informants' ignorance of the location of the shelters was also perceived as a threat. This stance reflects local experience with bureaucratic procedures.

Residents knew that some NGOs accept access to emergency shelters as an indicator of a community's capacity to mitigate risk. Being unable to identify and show proof of appropriate shelters can affect the type and amount of funding that governments make available to retrofit schools and NGOs make available to retrofit churches. Instead, informants believed that if they were assisted in retrofitting their homes to withstand hurricane winds and prevent flooding, they would have greater livelihood protection. The monies saved from constant repairs of houses could be spent in strengthening the resilience of the food system. They judged that most people might not know where the shelters are located but this would not be particularly harmful to their overall wellbeing.

Food issues during the emergency phase of the hurricane cycle. The emergency response phase consists of two sub-phases First is the 72 hours after a hurricane has passed and the second runs from then until roughly three weeks after the hurricane. The first sub-phase is usually the more taxing on the social capital reserves of a community. Depending on the magnitude and severity of the disaster, community members tend to be the first responders available to assist with emergency and recovery needs. Some NGOs are also mandated to offer emergency response within the first 72 hours.

> "We work in the first 72 hours. This is what the Act of Parliament speaks to. We realize that ODPEM is the coordinating body – we don't take the main function – we don't run the show as we used to, ODPEM now runs the show so we support them... (by) being present as an emergency responder…" (Red Cross respondent)

> "If we need to get a project proposal that requires external assistance, this must be done in the first 72 hours of the disaster …we need to be able to define and quantify the damage…who is without food and who is without water…" (Help Age International respondent)

Both communities identified exorbitant hike in food prices as a major threat to accessing food during the emergency phase. They also agreed that they received help from family members at this time thereby reducing the burden on the community (see Table 49). Jeffrey Town community members thought the churches' practice of distributing emergency food to their congregants first had the potential to harm those who are not members. At times, the churches' supply is inadequate for more than the congregants. A "members first" policy was resented by those who believe that need, not membership, should be the main criterion for distributing aid. Those critics argued that a needs-based approach would increase the number of people with access to food resources and would give the churches opportunities to foster greater social connection and recruit members. Alas, the current practice divides the community and weakens community capacity to effectively respond to the emergency needs of its citizen.

Table 49

Selected Matrix of Threats in the Emergency Stage

Key Jeffrey Town	Prospect		Both communities
	No/Low Capacity	Medium Capacity	High capacity
Severe and likely		Perception that Government aid is linked to political tribalism Poor coordination among agencies Poor coordination between agencies and communities No electricity/ domestic water for days	Exorbitant hike in food prices No electricity/ domestic water for days
Neither severe or likely			Little or no help from family Received culturally inappropriate food from NGOs
Likely but not severe		Churches give their members first; usually not enough to spill over to non-members – JT	Perception that Government aid linked to political tribalism – JT Poor coordination among agencies – JT Received culturally inappropriate food from NGOs
Severe but unlikely			

Prospect residents viewed the receipt of culturally inappropriate food through the emergency food system as a significant problem. They noted that sometimes food distributions are inappropriate for recipients with religious or health and diet restrictions.

One respondent who suffered from diabetes and hypertension noted that the food was rich in "MSG, salt and sugar" and he could not consume it. The Red Cross of Jamaica concurred with Prospect's observation about culturally unacceptable food:

> "We have been around long enough to see many disasters including Gilbert in 1988. We insist on money instead of kind from the other Red Cross because we get a lot of food but they are not culturally relevant. As a hurricane island we get a lot of beans from a South American country – a mashed out beans and the Jamaicans wouldn't eat it. During Gilbert we got crab claws and delicacies and the Jamaicans will not eat those. Jamaicans want to eat Jamaican food and something near to and compared to what we eat. So we insist on money. Unless there is a shortage we get money, (Red Cross respondent)

There are a number of religious sects in Jamaica that do not consume shellfish and have other dietary restrictions; therefore the crab claws and other delicacies distributed by the Red Cross would not have alleviated their lack of food. Food would have been available but not accessible to these groups. Lack of clean water and reliable electricity are generic problems in rural Jamaica so individuals have invested in private water storage and those who can afford it have acquired a generator. Neighbors are always willing to share these resources during the initial emergency phase of the hurricane, but they become progressively less willing to bear the cost as the emergency continues.

Prospect community informants believed that government assistance should be distributed equitably to all taxpayers but complained that persons in the community who were known affiliates of the political structure were privileged to receive assistance in reward for their faithfulness. In Jeffrey Town, they agreed that food had been just such a political tool. However by acting communally through their organizations Jeffrey Town residents have been able to limit dependence on individual politicians. Instead they have been honing their bridging and linking social capital for the betterment of the community

as a whole. Thus a politically partisan approach to disaster assistance has changed to one that includes food distribution according to need.

> "We know our elected representative. We just don't get any help, they help their own party supporters. But what we do in this community is to try to have a good working relationship with the parish council. We had to put them under pressure. When there is a disaster it seems as if it is only the major town Port Maria that they cater to. And since we have a really good working relationship with all the surrounding areas we can't be the humble calf we have to buck the breast to get the milk. In doing that their attitude to us is changing for the better" (JTFA executive respondent)

Jeffrey Town respondents contend that access to emergency food is also a function of distance from the larger towns of Jamaica.

> "The farther you are from the capital city of the town the less integrated you are in the disaster structures that are present to offer assistance. The disaster relief takes a while to get from the capital city of Kingston to the capital city of each parish and then from the capital towns of each parish to us. It took us years to do what we are doing now. So I guess in many more years it will filter to the communities eventually. But until then, we can't wait or we will die". (JTFA executive respondent)

They concluded there was a need to integrate peripheral communities with core towns in the parishes. This requires thoughtful and measured co-ordination among and between the various agencies and the community itself. This process has been ongoing in Jeffrey Town and after years of negotiating and building these bridging and linking connections, they believe they have high capacity to deal with the threats associated with poor agency coordination. The Prospect community respondents thought that having completed the Manchester visioning exercise and having worked with the various agencies to accomplish the task, they had the capacity to better coordinate emergency food aid. However, for this to happen they needed to work through a neutral entity, not one associated with one of the existing partisan groups. It is believed that many farmers in Prospect were unable to benefit from a government led marketing strategy, Production

and Marketing Organization (PMO) because the initiative was not from the political party they supported.

In the emergency phase of a hurricane perceived availability of social support was critical to both communities. But the type of support is equally important. Tangible support (i.e. goods and services) and belongingness (the sense of being embedded in a social network) appear to be more important than appraisal support (i.e. listening and gaining information and advice). Moreover, concrete actions such as provision of culturally appropriate tangible food aid were in greater demand than monetary or other forms of support (Cook & Bickman, 1990; Zautra, 2013). To ensure that this holds true for all communities, development workers need to be engaged in community needs assessment rather than lead an intervention based on available resources.

The difference between what is needed and what is available can create tensions during the emergency phase. One NGO recounted the counterproductive experience of delivering seeds to a community however where they were not the highest priority need. Flores et al. (2005) notes that these commodity-focussed interventions have the propensity to foreclose other (perhaps more appropriate) forms of intervention.

Food Issues during the Recovery Phase of the Hurricane Cycle

Recovery is the least understood, and often the longest, phase of the hurricane cycle, typically spanning from three weeks post-storm until communities have bounced back to "normal" (Smith & Wenger, 2006). For market availability of domestic foods in sufficient volumes to satisfy demand this might take up to two years. Residents' evaluations of threats to their food security are outlined in Table 50. All identified threats were classified as severe and highly probable, though some were judged unlikely to create harm.

Table 50

Selected Matrix of threats in the Recovery Stage

Key Jeffrey Town		Prospect	Both communities
	No/Low Capacity	Medium Capacity	High capacity
Severe and likely	Exorbitant price on local agricultural products Imported agricultural items are cheaper	Reap unfit food Lack of leadership on way forward Culturally appropriate foods inaccessible or unavailable Long wait to receive promised help (for example, seeds, fertilizer) Waiting for shaded agricultural ,Green House or GMO foods Non-organic food cheaper Too expensive to farm; too expensive to start over	Culturally appropriate foods (yam, bananas, etc) inaccessible and unavailable Wait long to receive promised help (for example, seeds, fertilizer) Lack of government support
Neither severe or likely			
Likely but not severe			
Severe but unlikely			

Both communities agreed that the prices of local agricultural products were inflated and extortionate, thereby creating a barrier to food access for most consumers.

This reduced farm incomes. The farmers however, saw this as a no win situation. One farmer explained it this way:

> "We are not making a great profit you know Miss, is how everything gone up. The oil for the transport and they going to tell you the road mash up and dem mashing up dem vehicle to come get the provision. Worse when a drought and we paying an arm and a leg for the water. We just recovering cost"

The gravity of this situation for farmers is compounded by the easy accessibility of cheaper imports that can be used as substitutes. Farmers protest that they have sat in the markets for days without a sale or without enough to repay transportation costs. Both groups feel their capacity to counter the effect of the high prices at this time is low thereby hampering their abilities to recover in the event of a hurricane. Governmental attempts to control price gorging are perceived as inadequate. Instead, informants would prefer government policies that temporarily subsidize them or provide a more equitable means of sharing the costs.

Both communities judge their post-disaster capacity to handle threats as medium to high. The Prospect community for example noted that domestic tubers, like yams and potatoes, which make up the bulk of the diet of rural people were scarce across the island. Types of scarce food items varied from parish to parish. Most Jamaicans favor breadfruit, which grows in abundance in eastern parishes that have lain in the direct path of every hurricane that passed through Jamaica.

> "We a go dead soon though – people are hungry. As the breadfruit dem start to bear people pick dem. People can't afford to allow dem to fit pon di tree. So come next year there won't be any breadfruit still as dem can't stay on the tree. So we a pray dere will not be any hurricane", (Manchioneal male respondent – almost a year after Hurricane Sandy).
>
> "Almost a year after Sandy we still can't get yam, banana and ground provision. This is not the same under drought" (female respondent Leith Hall)

The threat of unavailable cultural food as a direct result of the hurricane or of persons picking unfit food was not confined to the two rural case study communities. Jeffrey Town residents however, noted that they have been partnering with former community residents in the overseas diaspora and that this has strengthened their capacity to recover from post-storm food shortages.

> "Breadfruit shouldn't be falling from the trees. We are making a powdered mix from the breadfruit. That's value added. We are talking about sustainability so we have to be sustainable for ourselves and so we are giving the porridge mix to our children in the schools in the community. We are giving the mix every morning so children will not be hungry in school…That's how we build resilience – you have to build it before you need it" (Jeffrey Town executive)
>
> "We got funding from abroad to do the breadfruit breakfast mix project– we dried the breadfruit so as to make porridge mix and through the ministry of Education we are putting it in our schools. Three things immediately happen:-
> 1. Farmers get paid for what they wouldn't otherwise produce and they get a better price too for this value added product. For us this is food security. We are speaking of sustainable food security
> 2. We get better nutrition for our kids – so they are not getting any bag juice and these sugary snacks
> 3. We are teaching them to eat what we grow and that's food security. So we grow what we want to eat and we eat what we grow" (Jeffrey Town female Executive).

During good years the Jeffrey Town Farmers Association (JFTA) dries starches for conversion into other edible commodities like breadfruit-based porridge. Porridge mix is designed to serve also as an emergency food because a healthy filling meal only requires the addition of water. Not all community members actively engage in this process because not all cultivate breadfruit. The diversified nature of individual farms provides opportunities for new value added products to be birthed but this is a slow and tedious process; until such times as this occurs the community perceives it has medium capacity to handle threats. Furthermore, some respondents from Jeffrey Town noted that in the aftermath of a hurricane, rebuilding is very expensive. One respondent noted that it

was “too expensive to start over and too expensive to continue”, especially for farmers who engaged in organic farming. “There should be a clearer role outlined for the country in assisting organic farmers to recover” the respondent also noted. Another said “the re-development of the community’s economy is ignored in the recovery phase” and yet another added that it takes an inordinate period for seeds and greenhouse technology to be delivered by the responsible government agency.

Respondents from both communities agreed that the recovery phase was the most difficult for them because NGOs and the national government tend to be interested in speedy recovery. Even as they accept that assistance the communities are recognizing the need for greater coordination between the objectives of the NGOs and the needs of the communities; resilience for them speaks more to better recovery rather than speedy recovery.

Food issues during the prevention stage of the hurricane cycle.

Table 51

Selected Matrix of Threats in the Prevention/Mitigation Stage

Key Jeffrey Town	Prospect	Both communities	
	No/Low Capacity	Medium Capacity	High capacity
Severe and likely	Infertile mined out land Blocked roads Lack of a community resilience/food security plan Flooding	Lack of alternate energy Lack of storage facilities Weak institutional relationships Unemployment high Lack of land title Weak community group/social organization Little or no transferal for risk (for example, no insurance) Praedial larceny (agricultural theft) Lack of trust	Lack of trust Landslide
Neither severe or likely			
Likely but not severe		Lack of volunteers Little or no training to build resilience	
Severe but unlikely		**Little or no assistance from RADA in a timely fashion**	

Prevention (sometimes known as mitigation) can occur as a separate stage of response to hurricanes, that occurs after recovery ends, but preventative activities can (and probably should) be pursued at any stage of a disaster. Community respondents believed that disproportionately great improvements in prevention would be achievable if

threats that are judged to be both severe and likely were successfully addressed (see Table 51).

Prospect residents recognized four “severe and likely’ threats, infertile mined out land, blocked roads, flooding and lack of a community food security plan. Some of these were judged to lie outside the community’s area of responsibility. For example, fertile agricultural soils were lost during mining. Farmers became overly dependent on imported, expensive fertilizers which added to their production costs and were passed on to the consumers. Consumers were unwilling to absorb the costs and refuse to purchase the food items. Farmers at times are left with little option but to sell below the production cost and this paradoxically lessens their food security. Community members believe it is the responsibility of the bauxite company and the government to invest in mechanisms to restore the fertility of the mined out bauxite lands or to compensate the farmers with subsidized fertilizer, water and seeds. It is also the responsibility of the government to repair roads prone to being blocked and flooded as a direct result of bauxite operations.

But how to accomplish these goals is unclear. Prospect residents had envisioned the community disaster plan as a valuable joint venture among the community, the local NGOs, the Office of Disaster and Emergency Management (ODPEM) and a number of local government agencies. But their experience of participating in the Manchester Parish Development Committee’s Vision Planning 2030 was not encouraging. They felt overwhelmed by the number of agencies, institutions, legislative and other processes that had to be consulted. One respondent noted that she did not know anyone from the university ‘to explain the theory they will need to use to gather the data for the information to be useable’; at each step of the visioning process they were introduced to a

new theory and new ways of collecting valid data. She further noted that the community had not seen many tangible outcomes from the exercise to date and given the number of actors who were involved the community benefitted the least. Local residents are thus wary of experts and outside persons 'who come bearing gifts'. She justified their reticence about accepting outside assistance by noting that the process of bridging and linking social capital extracted more from the community than it deposited.

The experience of Prospect in participation in the Manchester Local Sustainable Development Plan has tainted their perception of planning and has left some believing that developing their social capital is beyond their capacity. They voiced a need for expert intervention to enable them to engage in community planning. Further research on the local acceptability of expert designed methods for expanding social capital is warranted.

In contrast, Jeffrey Town respondents did not identify any threats for which they believed they lacked the capacity to overcome. After gaining years of success and recognition by international experts they are convinced they can cope with and adapt to any challenge they may face though lack of trust among members of the community was identified as a threat that could undo the years of hard work already accomplished to build bonding, bridging and linking social capital. During the focus group discussions issues of financial transparency for grant funding were raised as well as concerns regarding the distribution of narrow benefits to selected individuals as opposed to to the wider community. One community member strongly shared his view noting:

> "People don't work together in this community or want to work together because when we start a group it ends up as a one man thing as eventually only one person benefits. For example, a co-op shop started, people put money in it and only one man benefit at the end of the day… As soon as things start to get big

> and the community starts to get recognition then one man start to behave like is him; if you interview the people especially the older ones they'll tell you it doesn't make sense to work together because of their experience and this has been passed down from generation to generation. A lot of people can tell you a lot of activity used to take place in the community until one person start to – like the person want to say is them do it, like is not a community effort… After I hear my father tell me what happened in his days and I come and experience it then don't think I am going to try again to get the same results and I won't let my children go through that"

Being able to identify the pockets of distrust, understand the source of the trust discord and deliberately and consistently engaging the community in the issues spurring the distrust is important. Reporting on grant funding at every community meeting has become a key mechanism to ensure transparency and accountability. Funding agencies expect fiscal prudence and do not hesitate to withdraw and/or refuse further funding for acts of non-compliance and corruption, which will stymie the efforts at food and community sustainability.

> "Because the mentality is there to say people thieving even if thieving is not happening then that's a problem. If people think that people are stealing it doesn't matter how transparent and open and honest things are these people still think that thieving will take place. This mentality has to stop and we have to find ways to trust each other. Fortunately international governments realize the thieving going on in Jamaica and so they put stringent measure on grant funding to ensure that thieving doesn't happen on the projects as there won't be anything to thief. Many people not going after grant funding as there is nothing to thief… With the issue of accountability, JTFA has an excellent track record of accountability - documented proof of accountability but people still say grant money is taken away from its purpose even with documented proof that that is not the case." (JTFA executive respondent)

The Jeffrey Town Farmers Association (JFTA) is passionate about sound fiduciary management. Its excellent track record in this regard has made it possible to expand (bridging and linking) social capital even with imperfect mechanisms. This has opened other opportunities to access additional funds. The JTFA is confident its members possess the skills and resources necessary to think through challenges of trust and

bonding. The Jeffrey Town community also rated their capacity to tackle landslides as high. Landslides contribute to direct loss of agricultural land and coping with them diverts funds that might buttress the food system. Under JTFA leadership sections of the community were mobilized to contribute cash and labor to construct gabion baskets that stabilize slopes, resulting in a major reduction in landslides (see Figure 22).

Figure 22. Jeffrey Town community members constructing gabion baskets to reduce landslides. (Credit: JTFA)

Taken together, the rural communities of Jeffrey Town and Prospect were confident that they had the bonding social capital needed to cope with most of the threats they consider will be likely to impact their food system. More so than Jeffrey Town, Prospect residents were much less confident about coping with hurricanes and droughts. Both communities identified a need to engage with external resources to overcome those challenges. Prospect residents, in particular, bemoaned a lack of trust among community groups. Both communities clamoured for assistance to overcome the lack of an alternate

(cheaper) source of energy to gas. Situated at a higher altitude, Jeffrey Town has already been experimenting with wind energy and solar energy.

Applying this knowledge to a storage facility is a major aim. Prospect residents noted their close proximity to one of Jamaica's leading wind farms (Wigton Windfarm) in Manchester and therefore the access to expertise that this permitted. Prospect community members also noted that residents in the community had worked in similar facilities overseas prior to retiring to Jamaica. These expatriates were willing to share their experience with the community.

Many respondents expect that acquisition of a food storage facility powered by alternate energy will have an immediately effect on persistent problems that best their communities (example, high unemployment, praedial larceny, lack of risk transfer mechanisms). Farmers lost thousands of dollars each year as a result of poor reaping, distribution and post-harvesting arrangements. Being able to store food during periods of excess will assist in the marketing and distribution arrangements for periods of scarcity during hurricanes and droughts. This will ensure a stable supply of agricultural produce which will guarantee stability in income. With a stable income farmers will be better able to make decisions on their food access as well as be able to participate in an insurance/ risk transfer scheme. But many farmers opined that their income base was unstable given the number of human and natural interruptions to agricultural activities. Therefore they could not consistently contribute to an insurance policy even if they were given the opportunity.

Finally, both communities needed assistance in obtaining titles for their lands. Many farmers were unable to further invest in their lands as they had no legitimate land

titles to use as collaterals on which to borrow money. Instead some farmers invested in their children's education. Female farmers in Prospect said they were disproportionately disadvantaged as they did not own the land they farmed.

Threats during Drought

Drought in Jamaica. The Water Resources Authority of Jamaica states that 'drought conditions occur when the bimonthly rainfall depth is less than 60 % of the normal rainfall within that same period' (Water Resources Authority, 2010). Although it receives significant rainfall Jamaica is a country that suffers from periods of drought mainly triggered by increasing human vulnerabilities. Various types of drought (agricultural, hydrological, socio-economic, meteorological) affect Jamaica periodically from February to March and July to August causing problems for water supplies and agriculture. Droughts have impacted Jamaican farmers consistently in recent years while climate change is a cause for concern in the future (Simpson et al., 2012).

Drought in Prospect. In Prospect farming is mainly rain-fed and has been experiencing drought for as long as respondents can recall. Ten of the parish's twelve rivers run underground and the water catchment area is inadequate. The few operating wells were mainly controlled and maintained mainly by the bauxite company. Respondents described the closure of the bauxite company as a 'rug being pulled from under us'. People resorted to the purchase of water from private vendors for farming and domestic use. Appeals to elected representatives brought government-sponsored trucked water to the area at cheaper rates than the private vendors though the supplies were deemed "unreliable and insufficient". The success of this effort encouraged the belief that Prospect has high capacity to meet the challenges of costly water and lack of community

wide irrigation (see Table 52). But the groups that press for improved water supplies are short lived and only resurrected during crises.

Table 52

Matrix of Threats during a Drought

Key Jeffrey Town	Prospect	Both communities	
	No/Low Capacity	Medium Capacity	High capacity
Severe and likely	No community resilience/food security plan	Local catchment areas are small, outdated and need repair Low social connectedness to coordinate activities Roads to the market need repair Better early warning system needed for farmers Little or no risk transfer	Hilly terrain difficult to mechanize Irrigation system is too expensive High cost of water Lack of rainwater harvesting Cost to purchase mulch is prohibitive at this time Middle men do not want to pay the price farmers are asking Prefer to take loans to improve children's education than the farm Customers do not want to pay the higher price
Neither severe or likely			
Likely but not severe			Lack of trained volunteers
Severe but unlikely			

Lack of active public involvement in social networks is the same for drought as for hurricanes. Young parents do not support the parent teachers' association and most

are not involved in youth clubs or other church groups. Speaking of the local youth one respondent noted:

> "They want something that is already started and going big they don't want to put the work in and start anything. They want to come for the food and not the meeting – so if want them at these meetings you have to provide food and we don't always have food to feed everybody". (male corner shop respondent)

When prompted to describe a successful community initiative that made them proud, respondents spoke of water conservation strategies that are widely practiced in the community. For example, farmers agreed that during abnormal droughts they did not water their crops daily or watered only once a day. Tips like this were shared through a community forum. All the farmers in the focus group also had water storage facilities of varying sizes as seen in Figure 23; however, they did not have food storage facilities as that required a source of energy to be profitable. As noted previously, the high cost of energy in Jamaica frustrates public or private attempts at building food storage facilities. Farmers in the focus group believed if the government restored the cold storage facility at Coleyville in the parish of Manchester as well as build other cold storages then this would be a major solution to the problem of drought. The Ministry of Agriculture and Fisheries (MoAF) and RADA agree with this sentiment but point to the lack of cheap energy to fuel storage plants. The strategic plan for the MoAF aims to redress this problem in the future.

A different drought-coping mechanism is the use of guinea grass as mulch to reduce moisture losses through evaporation as well as to minimize weed and pests growth. Some farmers also installed mini-irrigation systems (see Figure 23). Though an overwhelming majority of the respondents purchased their mulch, the community believes they have the physical and bonding social capital to produce mulch as a

community business project if they had the assistance of a project manager (bridging social capital) to help them with grant writing and project management.

Figure 23. Types of water storage facilities used by farmers in South Manchester. (Photo credit: Researcher)

As a means of coping with the drought in the last five years, some farmers opted to reduce their farming output or simply quit farming during this period while others changed their farming cycle, thus planting crops earlier than the ideal time required. Nearly half of the participants explained that farming was their sole source of income; for them the impacts of drought were more devastating than for persons who had alternative

sources of income. The community has not been able to agree on a collective approach to marketing their products whether through middle men, who come to the community to purchase products at farm gate prices, or to consumers at the farmers market. The community was also divided along political lines and some did not engage in drought management initiatives of the governing party.

Responses to some threats were perceived as the sole responsibility of the government using tax revenues (for example, road and water catchment repair, provision of a mechanism for risk transfer). They believed however, that there were threats that they had the capacity to overcome if they could submerge their political differences and if multi-income farming households would agree to cooperate with the households that weren't. Furthermore, the farmers in south Manchester believed they should have greater control over the price of their products especially during the period of a drought. They felt confident that mutual aid and collective wisdom would help them realize greater yields but their lack of effective links to the private sector, the academic community and the government left them hopeless and unwilling to invest further in their farms.

> "More than ever farming is becoming too expensive. It is too unpredictable especially with this new weather and the soil is now unforgiving. Too much fertilizing over the years. We no longer have soils."

Figure 24. Examples of mulching and irrigation practices in South Manchester. (Photo credit: Researcher)

> "We can't get loans for the land because we don't have land titles and most of us don't own the land. Is not our name on the land but is family land or is the bauxite people land, but is we farm it, so we can't get any money to borrow as we don't have titles." (female respondent)

Two systematic problems affected drought responses in Prospect: landownership and gendered risks.

Landownership concerns. More than half of the community members are currently farming parcels of land previously worked by family members or leasors. During droughts farmers who own land tend to have better outcomes than farmers who lease lands from Alpart (the bauxite company) or other entities. This is illustrated by the report of a farmer who had ventured on a long term crop project in which he had invested heavily. A year into the 8 year project, he was given notice to quit the land by the owner, the National Land Agency. Another farmer recounted that the land he farmed was previously farmed by his grandfather but his father opted to go into teaching and the land lay fallow for many years. When the grandson begun farming he realized that his land did not present many of the environmental problems other farmers who had not rested the land had faced. He explained that rapid turnover of leases worked against investing to upgrade land fertility. He also revealed that his family's farm was medium-sized and had never been subdivided among his brothers. He was able to rotate his crops and better able to experiment with drought resistant seeds on one quarter of his farm, irrigate a traditional crop on a second quarter and collect government assistance from the Rural Agricultural Development Authority (RADA) for the third quarter of his farm. On the fourth quarter he grows his own guinea grass which he uses as mulch to minimize evaporation from the soil. When he has extra guinea grass he sells it to his neighbours. A truck load of guinea grass can cover ¾ acres of a land and earns him $JM35, 000.00 - $40,000.00 per load especially during a drought period (see Figure 24). While this may not be a universal practice on all medium sized farms, this man's insight provides an illustration of the complex means by which farmers develop the capacity for hazard resilience.

Gender and risk transfer. Risk transfer is a critical concern of farmers in Prospect. What factors impede or encourage risk transfer among farmers? It was uncovered that most of the female farmers saved through an informal pooling of monetary resources called “the partner system”, while the men (some are husbands of these female farmers) saved mainly through commercial banks. As a female farmer explained, she was able to have three and sometimes four ‘hands’/accounts in any one partner, valuing $JM100,000 each. When she participated in the partner plan she was able to have greater management of her finances and her future. She was able to plan when she wanted to collect her lump sum for specific projects without having to contend with high interest rates or banking officials with limited experience of farming deciding on which project was worth funding. She was empowered through the partner system to take control of her farming decisions and not be dependent on experts.

Farmers argued that they needed project management skills. They insisted they knew what projects were essential to the development of their farms and to keep them viable during a drought, for example drip irrigation systems. Getting a bank loan was a tedious, difficult, and sometimes embarrassing process. This was true of the People’s Co-operative (P.C.) Banks that were established to assist small business persons as well as the commercial banks. Among the P.C. Bank regulations is a requirement for farmers to register with RADA and possess a tax payer registration number (TRN), the National Insurance Scheme number (NIS) and collateral for the loan. The female farmer interviewed, insisted that it is more difficult for many female farmers who are heads of their households to present collaterals as they did not own the land on which they farmed. They however, had common law titles.

This is a common problem throughout Jamaica and is only slowly being addressed by successive national governments. The P.C. Banks insisted that common law titles are not eligible for use to access loans. Moreover, a number of the farmers do not possess TRNs, often because they do not have birth certificates. Being able to get birth papers would solve a huge portion of the problems faced by these farmers. The Parish Council is aware of the problem and has suggested that in lieu of birth certificates the P.C. Banks should accept the National Identification number. To date however, this suggestion has not been accepted and the farmers are still unable to access loans from P.C. Banks. Farmers believe risk transfer is the hardest hurdle to climb in building resilience especially when looked at from a gender perspective. Through the partner relationship, the female farmer was able to invest in an irrigation system that allowed her to keep her crops watered throughout the drought, especially as she had built a tank holding over 10,000 gallons of water.

One former Minister of Agriculture, when asked about assistance to enable risk transfer among farmers, lamented that 'farming insurance' is the solution to the problem. He noted that since 2006, most agricultural insurance products ceased to operate leaving the sector exposed to weather risks. The history of agricultural insurance in Jamaica is fitful, marked by promising starts and sudden stops. The Government of Jamaica (GoJ) requested support from the Inter-American Development Bank and the World Bank to design agricultural insurance products for better managing non-catastrophic climate risks in the agricultural sector. Both institutions agreed and terms of reference were developed to hire consultants to undertake a prefeasibility study which included:-

- Conducting a review of the Legal and Regulatory Framework governing insurance products – identifying constraints, inadequacies and uncertainties in the current laws and commercial code that would impede the promotion, introduction and/or rapid expansion of parametric insurance products in Jamaica
- Identifying the options for the private and public sectors in developing an agricultural risk management program.

This parametric insurance plan would not be gender specific however, but the farmer's ability to buy into the insurance plan might become a factor even if the plan is operated by the government. This ability to pay has the propensity to become a factor of gender and if not managed properly identifying the most vulnerable farmers, not just by gender, but possibly by age, education and experience, the parametric insurance may not solve the problem of gender and risk transfer. Assisting farmers to access their birth papers as well as legal land titles are both important ways of building food system resilience to droughts.

Drought in Jeffrey Town. In Jeffrey Town drought was not yet considered a major threat but more of an emerging one with a high likelihood of potentially severe impacts in the future. With support provided by the Canada Caribbean Disaster Risk Management Fund (CCDRMF), the Jeffrey Town Farmers Association began to harvest water from springs using a solar powered mechanism they designed and installed. This pumps water to a centrally located standpipe and thence to irrigation stations (CLP, 2015). The JTFA also invited geologists and hydrologists to their community meetings. They commissioned a study from these resource experts and used the results to inform successful project proposals seeking funds to implement community disaster risk

management strategies. In the future they expect to be better able to cope and adapt to drought conditions and build food system resilience.

Discussion

Jeffrey Town and Prospect are two rural communities in Jamaica with relatively similar resource bases and stressors (see Chapter 4) but significantly different approaches to the task of building food systems that are resilient before, during and after natural disasters. The key difference between them seems to lie in their contrasting capacities to mobilize social capital through grass roots voluntary efforts. In this respect Jeffrey Town has been more successful than Prospect. The sections that follow examine a number of factors that enable social capital formation and application to food issues. These include: existing levels of social cohesion, volunteerism, trust, the role of social media and partnerships among different interest groups. We begin by examining the roots of citizen participation.

‘‘Citizen participation’’ is the engagement of community members in formal organizations, including religious congregations, school and resident associations, neighbourhood watches, and self-help groups (Perkins & Long, 2002; Wandersman & Florin, 2000). According to Klesner (2007), participation is affected by four groups of factors that shape the attitude and behaviour of participating politically: resources, political values, social capital and institutional opportunities and constraints. Of these, social capital seems to be the most influential for building food system resilience within a Caribbean region composed of Small Island Developing States that are bombarded by natural hazards and weather related disasters.

Citizen participation and the development of social capital are facilitated in Jamaica by existing formal NGOs (Non-governmental organizations), that operate throughout the country, as well as by local grass roots ones. It is useful to briefly review some of the national organizations although the main focus in this study is on locally established groups.

The role of nationwide NGOs in creating and maintaining social capital. Red Cross Jamaica is a primary responder in times of crisis and a chief provider of emergency food. Together with many other local and international "development partners" they serve vulnerable populations. The partner organizations are aware of each other but they are not generally *au fait* with the nuances of the work being done by them in neighbouring communities. It is mainly through invitations to conferences or service on national joint committees that they become aware of each other's work. Even though they are encouraged to collaborate, the collaboration can at times appear superficial. Lack of coordination and consultation is the norm. Local communities are secondary in the reporting process because donor organizations are more interested in the role played by their agents than collaborative possibilities with the communities in which they work. Collaboration without duplication is desired but this creates problems because NGOs frequently provide complementary services.

Other organizations target different populations and perform different functions. While Red Cross of Jamaica distributes emergency items to vulnerable persons during the emergency and recovery phases of disasters, Help Age International, for example, focuses on disaster preparedness of the elderly. Help Age has been experimenting with local risk transfer schemes operated by community members in Eastern and Central

parishes but not in areas where there is Red Cross Jamaica presence. Ironically, Red Cross Jamaica targets the vulnerable communities who could benefit from risk transfer intervention mechanisms. Communities therefore do not benefit from the synergies that are possible from multi-agency assistance.

NGOs may provide access to emergency food but emergency food does not build long term health or address may of the factors that contribute to hunger during a crisis. Most NGOs do not consider the larger economic and environmental issues in the Jamaican food system such as the pressing need for more young people to be profitably engaged in farming, or for communities to practice organic farming or for farmers to own their own land. An NGO director noted that better coordination at the community level would have been achievable if more communities had a governance framework in place. However, the frequency of group failures would suggest that most communities and NGOs lacked the soft skills needed to develop the needed governance framework.

> "The leaders of the NGOs have to do the work or the communities' projects will stall. As a leader I have come to realize that you can't leave it up to the communities especially if it is their first project or their first attempt at building a framework or applying for funding. You have to take their hands and lead them through the process. Once they have done one successfully you can't stop them. They'll know what to do thereafter" (International NGO executive)
>
> "If the partners were coordinated so that some built the governance framework (soft skills) while others focused on the more technical side of the work then the partnering impact would have been greater. Even though all the partners are realizing they cannot implement their projects without first making sure the soft skills are in place no one is taking on that difficult task" (Regional NGO executive)

Apart from issues concerning food security resilience, questions as to how different intervention objectives of donors and development workers, diverse timeframes and skills set embedded within the various agencies and organisations should relate to each other at a technical and managerial level. Who is best able to provide the

coordination needed? Is it the Planning Institute of Jamaica or the Office of Disaster Preparedness and Emergency Management? Regardless of where the coordination functionality falls, there is certainty that a community's ability to access bridging and linking social capital, that is, partner with groups external to the community will facilitate the community's capacity to deal with idiosyncratic shocks.

> "Partnership outside of the community is a must. We couldn't do the thing we do without our friends, especially when we don't have the skills needed. We had to get help financially to get training but we got more help than the money could buy. At this moment because of the partnerships we have built over the years we can call RADA and ask what to spray on a particular crop and they wouldn't hesitate to tell us. To do projects we needed help. I remember our very first project, we couldn't balance the books. We called for help and some expert help from outside the community took us and lay the receipts on the table and taught us how to do it from scratch. The partners, who are willing to help, love to be attached to success stories. The more they see success the more the partners will put money in it as they know you'll do well and their names will spread. The Environmental Foundation of Jamaica (EFJ) for example told us we will give you because we know that if we don't give you, you will still make it happen! Those who believe in the process will make it happen. It has to happen. Friends like the EFJ want to partner with us" (JTFA executive).

Executive members of JFTA are engaged in knowledge building and peer-to-peer learning exchanges with other farmers groups and community. The Association regularly makes presentations at workshops and conferences locally, regionally and internationally sharing their successes and challenges. Nevertheless, many respondents from Prospect had never heard of Jeffrey Town. Social learning activities that should be used to foster adaptive capacity among community groups cannot be left to chance (Tidball & Krasny. 2007). Effective mechanisms for communicating and integrating communities that are less aware need to be deliberately implemented.

Citizen Participation within local communities – Volunteerism and trust.

Putnam (1995) sees participation as "dealings with one another that are built on networks, norms and trust" (pp. 664-665). At the community level it operates through community groups such as farmers' associations and citizens' organizations and at the national level, through political parties. In Jamaica, political arrangements are used by the less fortunate both to express their dissatisfaction with the status quo, and to express their need for assistance (Bourne, 2007; Bourne, Blake, Sharpe-Pryce, & Solan, 2012). Yet participation in formal national politics has left many Jamaicans frustrated and apathetic not just about the political process but in the utility of any group arrangements for achieving greater good. This seems to be the case among citizens of Prospect. Even in Jeffrey Town there had been evidence of deep mistrust which threatened to disrupt the successes of the community.

> "People don't work together in this community or want to work together because when we start a group it ends up as a one man thing as eventually only one person benefits". (Jeffrey Town community member)
>
> "Even with the excellent track record of accountability people say people taking something out of the grant… If people keep the thinking and eternal belief that thieving is going on then mistrust and division will happen'. (JTFA executive)

Volunteerism is possibly the most important factor identified by Jeffrey Town residents as contributing to the growth of social capital – trained volunteers who are willing to commit their collective futures to the cause, who truly love the community and are willing to sacrifice personal interests for the sake of the community. Jeffrey Town people developed a range of social network and sociability mechanisms that gave them considerable confidence about being able to cope with food security challenges during

hurricanes and droughts. Jeffrey Town's experience reveals the importance of a strong commitment to social cohesion, partnership and attachment to place.

> "This is where we live and even if you go overseas and come back you will see that this is where you come back to. I would sacrifice my happiness for this community as my kids live here so we have to sacrifice for here so our kids will have somewhere after we are gone. I wasn't born here. I came here but this is where my children were born so this is now home for us because of my children and future grandchildren. I will do anything to make this community succeed (JTFA community member).

Prospect presents a different story. Though individual residents are willing to make sacrifices for the community in support of building a more secure food system, residents cannot identify collaborative activities or common values that have been deliberately crafted to ensure that end. Prospect has not attempted community-wide projects aimed at fostering community bonding. There are many possible reasons for this, among them lack of confidence due to a misplaced emphasis on past failures or lack of knowledge about community bonding skills (Lang, 2015; Zautra, 2013). The fostering of social connectedness needs to be a deliberate process that is taught through collective behavior, as seen in Jeffrey Town and Trench Town (see Chapter 6). Resilience is social so communities need to "create opportunities for neighbouring and friendship formation outside of the home" (Zautra, 2013, p.14). The quality of a community's social development depends on its willingness to engage (Sander, 2002; Zautra, 2013).

Trust is an important but understudied variable that encourages participation and affects the construction of resilience. According to Earle, Siegrist, & Gutscher, (2007a), research on trust has only recently caught the attention of social scientists for whom the concept of trust rests on shared moral values, benevolence, integrity, inferred traits and intentions, fairness and caring. Social scientists also link trust with positive social

outcomes (Almond & Verba, 1963; Putman, 1993; Fukuyama, 1995; Bourne, Best, Francis, & Beckford, 2010) but a nationally representative sample of over 1,300 respondents in Jamaica revealed that 83.5% (n=1338) say people cannot be trusted to keep their promises (Powell, Bourne, & Walker, 2007). The study also reported that 84.8% indicated government cannot be trusted. The extent to which Jamaicans are prone to trust is a function of the tribal political system that is embedded in every fibre of society. (This contrasts with many capitalist states, wherein human actions are embedded in – and serve - the economic system.) In Jamaica, the political system is embedded in the economy and the cultural DNA of the people; every collective activity serves the tribal political culture which local people refer to as "a political beast".

Perceived corruption affects political participation in Jamaica, and lack of trust is a corollary (see Stone, 1978a, 1978b, 1981, 1987, 1988, 1992; Bourne et al., 2010a, 2010b; Boxill et al., 2007a; 2007b; Munroe, 1999, 2002; Powell et al., 2007). Trust operates on two levels - within and among groups. Trust within groups is a social phenomenon that binds the members to each other. On the other hand, trust across groups is expressed as willingness in conform to standards that are not derived from within any single group. (Giddens, 1990; Fukuyama, 1995; Becker, 1996). Echoing Earle et al. (2007b), trust is a forward looking phenomenon that can elicit change, that is essential to bouncing back and better yet, bouncing forward. Trust is a critical component of resilience.

As important as trust is to the building of social connectedness, the experience of Jeffrey Town reveals that effective participation also requires a critical mass of people who trust each other and who are able to work together to mobilize financial and human

resources for community projects like food system resilience. A community does not need to have homogenous displays of trust for even in the face of open and public distrust resilience building can occur. Thus, resilience is not just a process or an outcome but a point of departure for action, an orientation. Further, local groupings are not always equitable and sustainable. For example, Prospect community members were not able to invest the same amount of time and money as some members of the Jeffrey Town community in fostering the local institution needed and therefore benefit from the risk-sharing mechanisms associated with the group formation (Messer, 2003).

Role of social media. One way of fostering human interaction is through the use of social media. Here, Jeffrey Town outdoes Prospect. In Jeffrey Town daily contact with families and friends overseas through social media has helped to maintain a strong sense of community and a base for social and material exchange, especially during hard times (Pam & Henry, 2012). By this means Jeffrey Town residents keep members of the diaspora abreast of the community's successes and challenges. Thereby people who have never visited Jeffrey Town but who share its philosophy or support its vision discuss ideas about community sustainability with residents and encourage its efforts to ensure a productive food system. This helps to deepen the attachment of outsiders to Jeffrey Town. It is as if diasporic persons had never left the community and well-wishers are legitimate community members. Timely community developments are identified and uses of community funds disclosed, giving a feeling of accountable social actions to stakeholders and thus planting seeds of trust.

Concluding Thoughts

While the community specific nature of social capital's role in food system security makes it difficult to generalize, findings from this study indicate that social capital may be a useful lens through which to illuminate the power dynamics that shape food insecurity and the outcomes of interventions to address it. This chapter reveals that some Jamaican communities have been able to effectively build self-reliant food system resilience through social networking and successful partnerships that nurture, utilize and maintain their social capital while others cannot without external support (for example, Prospect). The development of resilience in such places is dependent on their ability to nurture and share consensus within their citizenry as well as to maintain a critical set of

community led social connections over a sustained period of time. Disasters may initially disrupt these positive social connections but eventually enhance them by revealing the communal interdependence of survivors.

Michael Manley (1975) asserted that "people need a heroic image of themselves if they are to be capable of heroic response" (p. 51). Building resilience to natural hazards and food insecurity is at times dependent on heroic responses of people to challenge the status quo, to build effective social connections, incorporate concepts of self-help and self-reliance and rely on the community spirit of volunteerism. In societies like Jamaica, Manley (1975, p. 51) stated, heroic episodes of the past are far too few. A la the spirit of Michael Manley community efforts to build food security resilience must not simply reflect that which seems possible, but also reflect the pursuit of the seemingly 'impossible'. In the process of striving to making Jamaica's communities "sites of resilience" people can banish their doubts and confirm their capacity for self-reliance.

Chapter 9

Food System Resilience and the Role of Place Attachment

Introduction

This chapter focuses on place attachment and its role in decisions about natural hazards and the construction of food system resilience. In the academic literature, attachment to place (and the community that occupies it) is a dimension of social capital

that is relatively neglected compared to factors of trust and reciprocity, social networking, sociability and social support (see Figure 25). Failure to emphasise the dimension of place attachment as a component of resilience may result in what Bailey (2008, p. 424) referred to as a "blinkered view of the challenges and possibilities ahead".

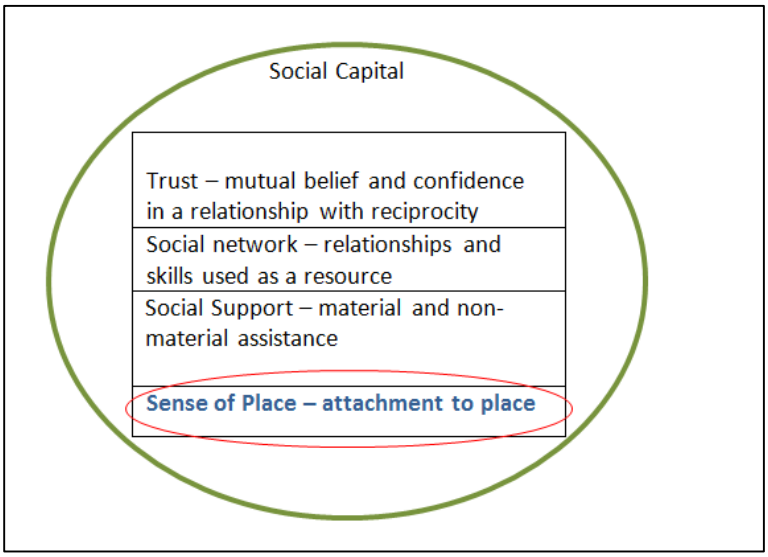


Figure 25. Place attachment as a dimension of social Capital

Scale and Place-focused Hazards

Scale is an important qualifier of place attachment. Public discourse about food system security and the forces that shape it have mostly focused on global and national scales of analysis. This is particularly true for discussions of the effects of climate change on food. Hulme (2008) for example, critiqued the lack of localism within natural science readings of climate change noting that ''by constructing climate change as a global problem, one that is distanced and un-situated relative to an individual's mental world, we make it easy for citizens to verbalise superficial concern with the problem, but a concern belied by little enthusiasm for behavioural change" (p. 8).

Scales can be defined as "the spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon" (Gibson, Ostrom, & Ahn, 2000). Problems like climate change, droughts and floods, pollution, food security and threats to biodiversity cut across traditional jurisdictions and scopes of organizations, and stretch across local to global scale levels (van Lieshout, Dewulf, Aarts, & Termeer, 2011). Scaling of a problem may prove to be a significant determinant of who responds and the structures of governance that are applied.

A spatial analysis lens can provide insights about relationships between people, places and the meanings humans attach to food systems that are a consequence of their sense of belonging to a community and/or a country. Studying a community's coping response (or lack thereof) as a function of place attachment, in relation to food system disturbance and climate variability is significant because "the spatial resolutions at which social processes take place and are perceived to take place, have significant implications for understanding our world" (Herod, 2011, p. xiv).

Jamaica the place. With an area of 10, 991 km^2 Jamaica is one of 52 territories classified by the United Nations as Small-Island Developing States (SIDS). "We little but we tallawah" is the zeitgeist fuelling notions of resiliency here. Jamaicans have unconditional support for the island state based on perceptions of what the brand "Jamaica" represents rather than how the state functions socio-economically. (Boxill et al., 2007a) Using national pride as a proxy for attachment and commitment, Boxill et al., (2007a, p. 38) noted that Jamaicans were extremely proud of their island state. Respondents were asked to indicate on a seven-point scale their sense of pride wherein 1 signified no pride while 7, indicated a high sense of national pride. The intensity of the

loyalty expressed by Jamaicans for their state was underlined by the fact that three out of every four Jamaicans choose 7, indicating they are extremely proud of their nation-state.

Jamaica is nested in a region plagued by natural and man-made hazards and underdevelopment. Without military might or colonizing power, the island has arguably had a most profound cultural influence beyond any place of comparable size, thereby challenging the view that globalization has resulted in the unidirectional flow of American and European culture to the rest of the world (Burton, n.d.).

Through the legendary emissaries of Robert (Bob) Marley and the Wailers, Peter Tosh, Alton Ellis. Jimmy Cliff and others, Reggae has diffused throughout the world as a new form of music that promotes love and resilience. In 1985, a category for reggae music was added to the American's Grammy awards indicating its acceptance into mainstream international music. In an issue ushering in the new millennium, *Time Magazine* in 1999, declared Bob Marley's album 'Exodus' as album of the 20th century while the British Broadcasting Corporation (BBC) named his "One Love" record as "Song of the Century" (Johnson, 2015). This small place, Jamaica, is recognized as the 7th most popular brand name in the world and is known for its indigenous Rastafarian religion, culture and life ways that made popular the dreadlocks hairstyle and the red, green and gold fashion colour combination.

The flags of a number of African states are designed with a black star commemorating the influence of Jamaica's first national hero, Marcus Garvey. Black power activist, Malcolm X, noted "every time you see another nation on the African continent become independent you know that Marcus Garvey is alive. Had it not been for Marcus Garvey and the foundations laid by him, you would find no independent nations

in the Caribbean today. All of the freedom movement that is taking place right here in America today was initiated by the work and teachings of Marcus Garvey" (No one remembers old Marcus Garvey, 2015).

In the realm of sports, Jamaica is known as the sprint factory of the world given the number of world class athletes it has produced. Usain Bolt for example is the only person to have won consecutive Olympic gold medals in the 100 and 200 meter events, setting new world records each time. He has been declared the fastest man the world has ever seen. The Jamaican bobsled team's historic participation in the 1988 Winter Olympics in Calgary, Canada was the inspiration for a popular Disney Film, *Cool Runnings*, which showcased the themes of perseverance and courage. On the commodities market, Jamaican Red Stripe Beer, Appleton Jamaica Rum and Blue Mountain coffee are world renown (Johnson, 2015).

It is within this globalized context, that a Jamaican cultural identity is nurtured and maintained; an identity that is grounded in location (Alcoff, 2000; Burton, n.d.) and which provides a lens through which to view the world. One that provides "the organising motif for understanding (and)… interpreting new experiences… (which) then provides a horizon from which to negotiate meanings" (Burton, n.d., p. 4). These attachments are reflected in much of the information gathered for this study as illustrated by the following extracts:

> "the food problem with the change in climate we experiencing is a universal thing, not just a Jamaican thing, so everybody have to fix them own problem we can't watch what others doing. We have to do our thing and fix our food problem especially with all the storms and landslides we having. The longer the government takes to act the more people will be going into poverty and can't feed themselves and them children. It really sad as it doesn't have to be like this; knowing Jamaicans and how them think, we can do better. Look how many successful Jamaicans and even rich ones live a foreign. We need to organize and

centralize our resources and pump it back into the island. We can do it if we want to. This is not the first global challenge we face and not the last and we will overcome. We will not roll over and die, this land is ours" (young female community leader from a rural community)

"There is a national decline in health, lack of education around nutrition, compounded by financial constraints to purchase the right food. Cheese trix and bag juice is what children are getting as food which amounts to our children eating sugar, water, flavouring and artificial things. Food security is answering the question - How do we ensure that kids get a balanced three set of meals per day. That's a national concern for national dialogue. If the household is undernourished, the workforce will be undernourished and that makes for poor production later on. Means we will not be able to respond to the needs of people in times of these natural disasters you talking about. But the government also understands that as Jamaicans we'll find a way out, we have no choice this is our land".

<ref>P30: EconSecW.docx - 30:8 [(54:55)]

"I think food security is a function of the lack of growth in the economy which has spurred a decline in the economy in general, a contraction of the economy. If as a country we had growth in the last 20 years we would have had better social services which would mean we would have had a better education system, better training for the workforce, and more young people coming out better trained to produce more and we could pay higher wages and they could afford to buy food. A big part of the food security concern we have is poverty. That's something the government has to address. This country has overcome much stringency and this is just one more but the government doesn't listen. They think they know it but they don't know a thing".

<ref>P30:EconSecW.docx - 30:11 [(66:68)]

"Backyard gardening is hand to mouth and that is not food security. Not because we little as a country mean every solution mus' little too. Backyard gardening? Is technology we need to feed everybody on the island. Backyard? Backyard? The land is green, the sun shineth and the people are resilient"

<ref>P31: CommR1 transcript.docx - 31:24 [(45:45)]

"Backyard gardening is another argument I hear the government with. They have people who are advising them to do backyard gardening but the government don't realize that the people recommending that we do backyard gardening go to their offices Mondays to Fridays and earn their pay then go to their backyards on Saturdays and plant 2 heads of cabbage and 2 tomatoes. Backyard gardening is not for livelihood. We in the community need a livelihood. Backyard is not income generating and this is a farming community. We need income. We depend on farming and the government not looking at that. The government needs to help people find ways to generate income and it is not beyond us. I am sure if we put we head to it we can do it. We are Jamaicans and this is our home".

<ref>P31: CommR1 transcript.docx - 31:25 [(46:46)]

The foregoing narratives allude to two fundamental underlying beliefs. First is that the challenges being experienced on the island should be framed as structural problem at the global and even national levels and second that there is a collective, homogeneous attachment to the land of Jamaica and the identity of "Jamaicaness".

Out of the first belief comes the view that the government has a responsibility to ensure citizens' well-being and their ability to respond to external challenges. Though the challenge is global in scope, a national fix is possible and is not beyond the capacity of the people. With reference to the colors of the Jamaican flag one informant commented: "The sun shineth, the land is green and the people are strong and creative". Black depicts the strength and creativity of the people; Gold, the natural wealth and beauty of sunlight; and green, hope and agricultural resources" (http://jis.gov.jm/symbols/jamaica-national-flag/). The second belief is linked to a sense of ownership, a feeling of belonging to shared physical space. Jamaican identity implies a certain understanding of the need for preserving that space in the midst of global uncertainties.

Community place attachment. People's adaptive or coping practices can be mediated by an attachment to place and a sense of belonging to a community. An emotional connection to one's community is not the same as being connected to the people who live and share the community space (Low & Altman, 1992; Manzo & Perkins, 2006). Brown and Perkins (1992) argue that place attachments are integral to self-definitions as they provide stability and often underlie citizens' efforts to revitalize their community.

Attachment occurs at both individual and group levels. At the individual level, the direct experiences a person has of a place are of central importance, while at the group level attachment is based on symbolic meanings of a place that are shared among members of those groups (Scannel & Gifford, 2010). These may be related to two types of rootedness – every day and ideological. Everyday rootedness refers to taken-for-granted sentiments, while ideological rootedness is associated with deliberate choices about living and participating in a place with the object of making it better (Lewicka, 2011, p. 677).

Residents of Prospect seem to take their attachment to the place for granted:

> "We love our community of course. It is an unwritten rule. It's a part of the problem as we don't come together as a community. Don't work together, no vibrant community organization".
> <ref>P 8: CommuP transcript.docx - 8:49 [(143:143)]
>
> "There is not an established community group. We are laggards and until something hit us we don't see the need, but is not because we don't love this community. Generations of farmers on this land. But we trying to do better now. We want this to be an established group. We are willing to work and to get other people to join. We don't give ourselves credit but we are a resilient people. After the storm, electricity gone so we eat up what we have and do one pot meals, we are survivors –. We are resilient and survivors".
> <ref>P 8: CommuP transcript.docx - 8:30 [(89:89)]

On the other hand, ideological rootedness is expressed in the narratives of Trench Town and Jeffrey Town:

> The "wants" of the place drive the projects. In 1989 when our citizens group started we never had running water. It was the year after Gilbert of 88 and that storm was the fiercest and only storm to impact the island in about 40 years and as a people we were no longer prepared. Nobody remembered what a storm was like - it did us bad. We worked without any rewards, worked our own transport, running up and down and it cost us. We started a little group - a farmer's cooperative to do things together but couldn't register it and things like that because not even education we had, not even enough money we had. There was no running water in the community. As a child I remember we had to go far to get water. I went to foreign to live nearly 40 years ago when there was no water and the same bloody thing I come back to see – no water! We decided to run 3 miles of pipe water voluntarily. Is here I live. We started another project - the dairy project to get milk. I bought milking cow and took it to the community myself and started this project to put money in the people's pocket in the 90s. Then we got more help from people who were also returning residents like the Gordons, they come to help. We are now looking to pass on to the younger generation. It was a long rugged road.
> <ref>P31: CommuJ transcript.docx - 31:82 [(125:128)]
>
> "I can speak for myself. When we had hurricane Ivan in 2004 I thought the world had come to an end. I am not from here originally. To spend 6 weeks without electricity I had to eat corned chicken or corned something every day and wash by hand!! I thought my life was over. I can't curl my hair to go to school. It was like the end of the world. ..That's why I write the projects for Jeffrey Town farmers because somebody has to care. That's why I do it! We live here. I live here. Everybody forgets Jeffrey Town but this is our community we live here," (JFTA executive member)
>
> "This is where we live and even if you go overseas and come back you will see that this is where you come back to. I would sacrifice my happiness for this community as my kids live here so we have to sacrifice for here so our kids will have somewhere after we are gone. I wasn't born here. I came here but this is where my children were born so this is now home for us because of my children and future grandchildren," (Jeffrey Town, Young man)
>
> "We now have hope in the community with our greenhouse. There is a light and it is not an oncoming train. We are responding. We are dedicated to this community. We will not migrate and run. We the dedicated people have to stay".
> <ref>P306: CommuTtranscript.docx - 306:29 [(56:56)]

Contrasts between these qualitative differences in place attachment help to provide better understanding of the motivations for community participation in resilience building activities. While walking through Prospect one middle age woman opined:

> "People around here is peace-loving and we learn from school days to keep quiet and not ask too much questions. We learn from very early to not push up we self into things, not to ex-up and ask too much questions. Otherwise you hear seh you feisty and don't have any manners and up-bringing. When I was going to school, you couldn't forward yourself into things. That was not acceptable behaviour. Teacher had to see your potential and invite you to do things. We had to sit down and wait even if you know you could do better than who Teacher picked. If you ex-up yourself, then you were a trouble maker. And then we hear of all the trouble makers, we can them national heroes now, but then they were all trouble makers and they all end up dead, bad". (Middle aged Female- Prospect Community)

As these and other examples show, something seems to be missing from public discourse about community resilience building efforts, especially in places like Prospect. It is a narrative about unintended consequences of cultural mores that are linked both to the Jamaican school system and to the maintenance of the status quo during the decolonization period and the early period of independence in Jamaica's history.

The school system became a major avenue of socialization and an advocate for upholding the cultural status quo of the colonial period (Bernard, n.d., p. 1). Children were taught to abide by the code of conduct expected for their socio-economic class as well as the general ethos of the community and would not offer themselves for service or leadership, instead exuding a sense of helpless deference, docility and submissiveness.

The socializing process may have inadvertently passed on this learned behaviour that results in poor social connectedness; citizens self-describe as "laggard' and lacking in the ability to come together as a community. People do not want to be labelled as "trouble makers". If resilience building behaviours are perceived as "trouble making" people may be reticent to engage in associated community activities. Intervening mechanisms are needed to better understand and take advantage of the yet untold stories

behind the current behaviour of communities as they struggle to create and sustain new resilient realities.

Trench Town and Jeffrey Town have tried to counter these regressive tendencies with a calculated attempt to cultivate a sense of place around the concept of food system resilience. Their deliberate and diverse programs have been geared towards underlining the importance of place and have resulted in transformational outcomes at the scale of the community. Community supported "place making" activities could therefore be the hall mark of food system resilience success stories of these communities. The process of place-making transformed the community spaces through the principles inherent in "growing and grazing" (see Chapter 3). In her study of social capital among young people Schaeffer-McDaniel (2004) noted the use of physical space in the everyday environments of a community to build social capital. She advocated the need to identify local spaces (for example, parks and socializing spaces) that foster or prohibit social interactions and by extension allow for the empowerment of citizens. It is within this context that the place-based approach to coping and building food system resilience has been analysed in this study.

***Meaning making places of encounter*.** Can we point to explicit examples of linking place attachment to building resilience in support of food security? The next section discusses two candidate cases: the Culture Yard experiment and the role of the church.

Culture Yard. The Culture Yard is an effort to create a deliberate space of encounter, a deliberate space for constructing identity, healing and meaning-making activities which are forerunners to creating a culture of resilience. Stories of Trench

Town told by mainstream media and circulated widely within society often perpetuate an image of notorious gangs, high homicide, low income, under and uneducated youth, high unemployment, little economic activity, caged within a squatter settlement overrun by politically induced tribalism and violence. Trench Town however has another history that is less told; a story that has been unfolding for years and is still unfolding.

Under the leadership of the Community Development Committee (CDC), the yard used by reggae icon Bob Marley was restored as a cultural space in which to engage in social capital strengthening activities and to construct new commodities and a new image for a community stigmatized by political violence and poverty (see Figure 26). Foods feature among these commodities; so do the new genres of music and cultural performances emanating from the space. Culture Yard formed part of a greater effort to redress the socio-economic status of the community to convert the community into a tourism product. In so doing, they re-script the discursive practices about Trench Town and physically re-direct traffic to a community that had been seen as violence–ridden and dangerous to outsiders.

> "Through the TEF (Tourism Enhancement Fund) – we have started to change the face of Trench Town overtime with new signage and with story boards telling our story and our history. There is community ownership in this process", (AIR executive).
>
> So we had to be creative in thinking of how to get people into the community. We did things like "Jamming at the Bass" to bring back people to the community; we had "Bob Marley's birthday bash" in January which had 25,000 people in attendance right here in Trench Town, can you imagine that? We hosted "Pastors in Concert" – these are ways of getting community ownership and getting people to come into the community and not be afraid. So we had people to ensure nobody is breaking into cars. We had to build the traffic. The aim was to build the traffic coming it," (Air Executive).
>
> "We realized that to deal with the matrix of problems in the community we needed to focus on food and build value added to raw food. We have down at Boys Town which is a part of the wider Trench Town area a culinary school. Their culinary area is already known with world class chef –Oge Jaja – best

> known Rasta Chef coming from Ritz Carlton Hotel. So this is true community ownership. We can't be airy fairy with what we are doing", (AIR Executive).
>
> "We get tourist buses to come in. We have to look at the opportunity to add value to raw food. We have a MOU with Boys Town. We create the space at Boys Town with Trench Town named cuisine. Oge Jaja helped us to create 'Trench Town dokonu', - you know dokonu, right? Real Jamaican food we talking now. We had Trench Town this and Trench Town that. We did a pilot test run with 60 tourists coming in. We sold the food at US$30 and the tourists bought it and they said they had never had anything like this. So it's a world class place with a world class chef. People are coming down to see us and we are making sure they feel comfortable coming into Trench Town. We have to change how people see us. So when tour buses are coming in we can now put meals on the itinerary and that's food security. So, cooperating with Boys Town is a part of building food security – a part of the process in building food security. Food security is not just what you eat yourself but what you can earn to make you economically secure and resilient. So our aim is not just to prevent starvation. So cooperate with Boys' Town to do food processing as they have the basic infrastructure. This is food security. This is how we build resilience in the community through relationships and activities (AIR Executive).

Trench Town is the birthplace and cradle of reggae music influenced by the rich cultural heritage of musical icons Joe Higgs, Jimmy Tucker and Cynthia Schloss; Grammy nominees Peter Tosh, Toots and the Maytals and Bunny Wailer of the Wailer band, and other internationally renowned local songwriters/ singers Alton Ellis, Delroy Wilson, Hortense Ellis, the Mighty Diamonds, Ken Boothe and saxophonist, Dean Fraser. These artistes honed and sharpened their musical careers in Trench Town (Chat Bout Blog, 2015). With the development, importation and appropriation of reggae music on the international scene, especially in states like Japan and Ireland (O'Reilly, 2005), Jamaica's status as the "Reggae Capital" of the world is being threatened. This has expedited actions for the development of the Culture Yard. There are wide ranges of emotions connected to the experience of losing one's place of attachment or identity – fear, pain, anxiety, tension, uncertainty, alarm (Ruiz & Hernandez, 2014) which can be a

strong motivator for community self- help programmes and resilience building mechanisms.

Through the Community Development Committee (CDC) working alongside NGOs and CBOs like the Agency for Inner-city Renewal (AIR) a bold attempt at the social reconstruction of Trench Town through a process of "re-discovering", "re-branding", and "re-imagining" began privileging concepts of place attachment and identity at the nucleus of the conversations and activities. Places, Tuan (1977, p. 198) observes are "centers of meaning to individuals and to groups," and as such places can be socially constructed. Given the interconnectedness of place and identity, the social constructions of a place may change people's attachment to the place because, place is "not simply an inert container for biophysical attributes; place is constructed—and continuously reconstructed—through social and political processes that assign meaning" (Cheng, Kruger, & Daniels, 2003, p. 90 as cited in Petrzelka, 2004, pp. 387-88). There are therefore deliberate social processes involved in the construction and re-construction of place identity and this has consequences for community health and pre-disaster preparations for resilience building.

Figure 26. Trench Town's Culture Yard. (Image courtesy of: http://www.migrationsituation.com/uploads/5/6/6/8/56684317/5514654_orig.jpg 27/06/2016)

Deliberate activities geared at meaning-making and place attachment were organized at the community level, many of them conceptualized within the Culture Yard. Citizens gladly got involved as they were concerned about the economic and environmental threats and multiple sources of insecurities. Citizens within the community were being asked to share with others, who were not necessarily living in the community but who were committed to the ideals of Trench Town, the uncertainties of their common future through farming and music. This would have the desired outcome of not only building food system security but healing the community by moving it away from practices of the past through the telling of new stories to shape the future. The Culture Yard became an experiment to advance the bid of this community to build collective pride and to mobilize collective participatory knowledge and action to combat threats and risks faced by the community.

While a few community members were trained as tour guides in keeping with the new vision of Culture Yard becoming a tourist destination, majority of the community members participated in workshops on entrepreneurship and community pride based on the philosophies of Marcus Garvey founder of the Universal Negro Improvement Association (UNIA) which promoted self and racial pride; respect for each other, and the idea of black economy and entrepreneurship. The process however was not without challenge and doubt as some respondents voiced reticence during the initial stages of the process. They questioned the viability of their efforts and whether people would visit the community given the stigma attached to it, which some feared would overshadow any positive images.

> "No, I didn't think people would want to come to my community. You didn't hear the things they said about us. Even me would afraid to come. So even though I came to the meetings at the back of my head I was saying this nah guh work" (young female respondent)
>
> I was sold on the ideas from the first time I heard Doc talk. Deep down in my heart this is what I always wanted not just for me but my children and those who will come after me. Yes, I knew people would come. Let me tell you why I say people will come. It has to do with all the promotion. It is a safe environment now. In the past we had a lot of crime and violence but things are changing. The environment is evolving. People are becoming more civilized and stable in their thinking and in how they behave. We who live in the community see the change and can say to the people outside that you can come in here. It is safe. We can guarantee that people will be safe because of how much change has taken place. We are the ones who want people here so what do you think it would do to us to tell me to come when we know they would not be safe. That would look bad on us if we ask people to come knowing they are not safe. We are actually seeing people coming in now to other events keeping in this community. I see people coming from as far as Red Hills to come down here (Middle aged male respondent)
>
> I don't think people will always be safe in all cases and that the word safe will be applicable in all situations. It may be applicable in some cases. Let me explain. You have to know persons because there is a stigma attached to this community and others like it. When I met Marlon at university and he said he was from Trench Town, I had to ask him if he is a gun man and if his family member is a gun man because that's the first thing on my mind and all I know is that everybody from Trench Town is a gunman. It took three years before I was brave

> enough to come down here. When I came in and saw a group of boys I had to ask – are those gun men? And everywhere I walked I was nervous and looking around and holding on to him because I know there was going to be a gunshot. I thought everybody was walking around with their guns. There is this mental block But it was not so. The people looked normal and were laughing. I didn't have it in my mind that Trench Town people could smile. Every time you hear Trench Town you hear crime and horrible violence (Young female respondent)
>
> "The perception of the people inside the community is starkly different from the perception of the people living outside of the community because they have different experiences. The perception is starkly different. Even if the tolerance level in the community has dropped it hasn't dropped outside of the community. It is gonna take a generation to change the perception and mind set and lots of effort. This that we now experiencing is just the beginning. Not that things will not change but it will take time. The little pocket crimes that still happens is not making it any better. These pocket crimes keep the stigma going so we are still in the early stages of change". (Middle aged female respondent)
>
> With the mobilization of AIR and Dr. Morgan it will happen quicker than a generation because I am seeing influential people who I never thought would come here have been coming here so things have really changed. I have lived to see things change to this point and more change will come. (Young male respondent)

According to Ellis and West (2000, p. 22) understanding local history and the dynamics of their social relations is important because it can be a lamp lighting the pathways people choose to perceive and how they respond to changes and threats like natural hazards. This observation is also true with respect to how people respond to meaning-making activities. The social processes involved must be collectively thought through, discussed and administered. These types of horizontal conversations and strategizing missions embarked upon by the community based organization, AIR, allowed for each person to bring his/her contribution equally to whatever projects were discussed and contemplated, thus deepening the shared knowledge and adding value to the process. This meaning-making process became the precursor needed to create an atmosphere where pre-disaster recovery plans could be devised to ensure food system resilience.

The Church. In communities like Prospect it has not proven easy to find places that are neutral in the struggles between the contending political parties and upon which more resilient food systems might be crafted. A few respondents indicated that most of the farmers in Prospect belonged to cooperatives and they believed the cooperatives could play an effective role in forging needed social connections among residents. This suggestion ran into trouble because the two most recognized cooperatives - the Jamaica Agricultural Society (JAS) and the Production Marketing Organization (PMO) - have strong political connections. The PMO, is organized under the Jamaica Labour Party's (JLP) government. Farmers who are supporters of the opposition People's National Party (PNP) are not willing to participate in the meetings even though they would benefit. The underlying rift in the community created an opportunity for one of the larger churches to be used as neutral space. It is ironic that the farmers who are supporters of opposing political parties and also members of the same church were either unwilling or unable to cooperate outside of the sanctity of the church. Taking account of such curious relationships is an essential first step to developing healthy pre-disaster community identities and a sense of belonging and ideological rootedness to place.

Facilities of the church have been used to host meetings with the understanding that politically aligned farming and disaster experts would not be invited to participate. Famers were known to withhold their financial contributions or refuse to participate if they perceived that caveat to be flouted. Because water, seedlings and fertilizers have become political pawns it was proposed, in the interests of achieving equity, that one of the churches be used to distribute government benefits. A leading church indicated that through their international denominational affiliates they were responding to some of the

community's concerns. However, they did not want to be the distribution point for governmental benefits because the accompanying political tension could undermine the objectives of the church. They suggested instead a multi-agency approach as a way of countering partisan political influence.

For those who would undertake community development in Jamaica it is essential to understand the traditional role of the church. "The church and the society are mixed up in an unusual way" the executive director of the Agency for Inner-city Renewal (AIR) noted. The church has not only shaped moral values but also provided a number of social services especially in health and education. The church has gained legitimacy and trust and has endeavoured to create mutually respected safe spaces around which community interests coalesce and community bonding blooms. The church's non-discriminatory posture provides opportunities for community dialogue. Regardless of socio-economic class and political persuasion the church offers membership on an equal basis to community members and the opportunity to network and volunteer on behalf of the community for the upliftment of the community. During times of need (whether motivated by climate change challenges or not) the church acts as a social safety net for its members by means of which better off members assist the needy. Members are therefore encouraged to be actively engaged and visible within the church. This type of engagement breeds rootedness and attachment.

The urban community of Trench Town was also aware of the church's role in creating legitimacy for the programmes of community based organizations

> "AIR started its community activities in the church then spread out to the rest of the community. We walked the streets handing out invitation cards for domino tournaments etc so we got the community involved in the church and vice versa… We go to paint the police station. The police stations were locked up

> when night come etc but the church was opened. The church became the police station. Once church was open people were there but once the church was closed the place was a ghost town" (AIR executive).

The church therefore acts as a place within the place to which persons have legitimate attachment and opportunity to engage in meaning making activities.

Discussion

The uneven process of globalization has been driving many communities to seek alternative paths of socio-economic development that make use of their biophysical landscapes (Krannich & Petrzelka, 2003; Petrzelka, 2004). As more communities grapple with the decline in their traditional economic bases, the informal assets of those landscapes are being transformed into commodities (Engler 1993, p. 8; Petrzelka, 2004, p. 401). This social construction of a "commodity community" is now a deliberate activity with the potential to build resilience in the food system.

Socially constructing place. Place-based aspects of identity are socially constructed through everyday discourses and practices (Greider & Garkovich 1994; Petrzelka, 2004, p. 387). When these forms of identity are threatened place tends to be more highly valued (Williams, 2000). Globalization tends 'to destabilize and thin out the meaning of places' making 'all histories, boundaries, and categories …negotiable…(therefore) what we thought was inherent and enduring was really socially constructed all along' (Williams, 2000, p. 81). The meanings attached to places are therefore continuously being created and recreated. The work of the Agency for Inner-city Renewal (AIR) and the Jeffrey Town Farmers' Association sought to create and negotiate meanings to place through two main processes: (a) transforming zone of

exclusion into zone of opportunity; and (b) growing and grazing. Through both processes, policies are being implemented to achieve food system security.

Transforming zones of exclusion into zones of opportunities. "Instead of being zones of investment and opportunity, Trench Town, the birthplace of Reggae, and many of the communities from which our celebrated athletes hail, remain man-made zones of exclusion; places avoided by outsiders and where residents are held captive by poverty, crime and neglect. It's time to reverse the curse; to transform zones of exclusion to zones of investment and opportunity" (Morgan, 2012).

It can be argued that Trench Town has been socially constructed through discourses and everyday practices established in publications and in the Jamaican media. Expert social scientists helped to perpetuate the image of urban violence and decay (Eyre, 1984; Figueroa & Sives, 2003; Rhiney & Cruse, 2012). In consequence, for decades "politicians saw and seized the opportunity to convert the space into a garrison with a homogenous visiting pattern enforced by dons. Interestingly, the garrisoning process included decanting of citizens, leaving vast open spaces like No Man's Land" (Dr. H. Morgan personal communication, 2016). Although a garrison shares some of the features of a shanty town is not a ghetto like Soweto or the favelas of Brazil.

Some people think it is a ghetto; a place where poor people live in squalor with attendant poor government services. It is true that the garrison possesses these features, but it is a mistake to lump it with Soweto in South Africa, Watts in Chicago or the Favela in Brazil.

For a true understanding of the garrison one has to go to the Report of the National Committee on Political Tribalism, 23 July 1997. Under Garrison Communities,

the report states: "The most vulgar and dysfunctional manifestation of the process of political tribalism has been the development of the garrison within constituencies. At one level a garrison community can be described as one in which anyone who seeks to oppose, raise opposition to or organise against the dominant party would definitely be in danger of suffering serious damage to their possessions or person, thus making continued residence in the area extremely difficult if not impossible. A garrison, as the name suggests, is a political stronghold, a veritable fortress completely controlled by a party" (Email Correspondence with Dr. Morgan, 2016).

This socially constructed discourse about Trench Town blinded city planners to the opportunity for urban agricultural development juxtaposed with the Coronation Market through which an estimated 60-70 percent of Jamaica's agricultural produce passes (Dr. H. Morgan personal communication, 2016). Some community actors who identified with the negative images of Trench Town felt shame and emotional disengagement from the community. Brown and Perkins (1992) argue that place attachments are integral to self-definitions with disruptions in place attachments threatening communal and individual self-definitions. The stronger the attachments experienced, the more devastating the disruptions. There was therefore a clear geographical division present within the capital city. At its root is a social division based on politics and class; that makes identity dysfunctional. Understanding place identity is essential to any attempts at pursing collective activities, planning and envisioning for community resilience.

AIR subscribes to the philosophy of The Learning Community (i.e. communities like humans have the capacity to learn from past mistakes and the experiences of others).

Given the challenges of Trench Town, AIR sought to use business and economic approaches to solve social problems without which, food system insecurity and other deprivations are magnified. AIR therefore labels itself as a social enterprise with the mission of transforming zones of social and economic exclusion into zones of opportunities, investment and wealth.

AIR has sought to change the narratives and discursive practices within Trench Town. These shifted from portraying it as a socially liable community that needs to be "policed or sustained with handouts" (Morgan, 2012), to one that was resilient and viable for investments. This was a deliberate process of negotiations with a wide cross-section of stakeholders at the community table. Through careful planning and analysis of the issues germane to the future of the community, urban agriculture emerged as a critical tool to boost development and food system resilience. A nuanced and important factor that was overlooked by urban planners related to how Trench Town and other depressed communities along both sides of Spanish Town Road were formed starting in the 1940s.

The rural poor residents who created these shanty towns were mainly farmers. One generation later, the farming tradition, and skills, still reside in many of them and have become the seeds for ensuring food system resilience building in an urban space. The residents participated in "weeks of training that included greenhouse agronomics and construction, governance, entrepreneurship, quality management and financial literacy. The idea is to use the greenhouse as a learning tool, almost like a center of excellence. People doing open field farming and retailing can learn from this best practice." The goal is to equip them with skills that can be employed in a variety of occupations because urban farming can ultimately employ only a few. "The community also does the

construction of the greenhouses and are involved in the planting, reaping and selling," (Dr. H. Morgan personal communication, 2016).

> Life is hopeful for us now. Tour groups bring dignity to the area. I still can't believe it that others would pay to come and see where I live. But the more I chew on it the more I have to ask why should I be ashamed. Tour buses not going up into the Beverly Hills and Cherry Gardens even though that's where the rich and famous live. They are coming to us and they are eating our food and studying what we are doing (laughing). Now being able to say in some quarters that you are from Trench Town makes your value go up. We have value right here in this place. (Middle age male respondent in Trench Town)

9.3.1.i.a. Landscape Inscription. AIR continues to seek opportunities to create meanings to place and to negotiate how food system security is viewed and understood in that place. Landscape inscription, is used as a spatial strategy to re-route the dominant narratives within the community. The inscriptions manifest as graffiti, murals, story boards and signages. Rhiney and Cruse (2012) noted that these are texts which are "encoded with meanings…which can be 'read' or interpreted as signs about the particular values, identity, beliefs, and practices evocative of the place and its associated past" (p. 5). Walking through the community, Trench Town's political affiliation can be seen in huge graffiti on the walls and zinc fences. Murals of iconic reggae artistes Bob Marley, Peter Tosh and Bunny Wailer are visible on entrance to the community. The inscriptions also indicate the community's alignment with both Rastafarian and African cultures; there are images of Africa, Hailie Selassie and the red, green, gold Ethiopian flag. Within the wider Trench Town community there are smaller community groups self-labelled with names coming out of the Pan African Movement – Arnett Gardens, Zimbabwe, Pegasus – which have become cultural in the community's thinking of how they see themselves.

> "We have to find ways to educate our community. So we are looking at our graffiti walls and we want to change what is being discussed on the wall. Instead of negative graffiti we are changing how people see graffiti. We realize that people will read the graffiti – so we are going to paint fruits on the walls and give the nutritional value so people can see". (Young male participant)
>
> "What we plan to do is look at the natural food we have here in Jamaica. We want them to know you don't have to import and eat imported things. We have noni fruit and we are just re-learning about this fruit. We have had it for years and we used to call it duppy guinep and we would throw it away. But we are now hearing where other people are using this fruit while we playing a ball game with it. It is as if the value was never passed down through the generation. Through our graffiti and art we will promote the use of our fruits and teach that our fruits can be used in many different ways" (Young male participant)
>
> We have received funding from the EU, US, UNDP, Bank of Novia Scotia and the Chase Fund plus my personal funds to get this revolution started. It is a revolution to take back – the music industry, take back the food. Jamming Tours will revitalize the village. Through the TEF (Tourism Enhancement Fund) we will change the face of Trench Town in terms of new signage and story boards telling the story and the history, (AIR executive).

Participants' narratives highlighted the conscious effort being made to re-image the Trench Town landscape through the employment of food-related graffiti and story boards. Utilizing inscriptions to re-present and communicate the value of local foods is an important discursive practice that will over time shape spatial identity.

> There was a time when there were many separate communities along here with Trench Town being just one. There was Rose Town, etc and these were defining communities but as a result of the garrisoning process and the political gerrymandering and the voting process as well as para-military actions all of these areas were re-defined. The new borders were now drawn based on where you couldn't go within the area. This was more constricted. So in the psychology of people, if not on the map, they know – where they are from – I am from Pegasus that is where I was born but I also know I can't cross these lines etc -even if it is not demarcated on the map. So people had distinctiveness. Distinctiveness is good but it is around party and around the distribution of political spoils so it is not good – so have to pull down those mental maps if we are going to transform the community and help people to better cope and be resilient (AIR executive).

> "It is hoped that these stories we write on our walls will give hope to others and have communities realize they are not alone in whatever they are struggling with" (Female participant).

Growing and grazing. This study goes beyond conventional ways of employing the concept of place attachment to explore a component called the potential to graze and grow. Here the emphasis is on possibilities that a place can prompt an entire community to identify with it even if the final outcome is not realized in the life time of the current community members. It's a legacy and a form of security that is crucial for continuity of the community. The rural community of Jeffrey Town best exemplifies the graze and grow concept. They have embraced the concept of sustainability, identified traditional starches grown within the community (for example, breadfruit) and have begun the process of adding value by drying and milling those starches to create porridge mixes and other commodities for sale. These products have become linked to the identity and the reputation of the community. Based on their agro-processing business a breakfast programme was started within the community schools to ensure that children are fed a nutritious meal. The farmers have a ready market for their starches, which are available through-out the year, and residents are endeared to their community.

The concept of grazing and growing is therefore an agricultural one; it relies on productive activities that emerge from the land. Land here represents place. If left idle, the potential economic value of the land may not be realized. Agricultural activities increase the intrinsic value of the land when crops grow and animals graze healthily thereon. The material output (crops and animals for the market) can be profitable and this tangible output can increase the net worth and value of the land and by extension the net worth of the ownership of the land.

The same concept can be transferred to other places. Trench Town, uses its Culture Yard and musical heritage to promote culinary concepts and publicize their brand

of agro-tourism to the urban community. Their potential to grow and graze is manifested in the product possibilities that emerge in community plans for community spaces or on verandas. The opportunities that these products afford the community are seen in the ability to bounce back quickly and continue forward after a disturbance. The ideas around the potential and possibilities inherent in these products are used to deliberately create attachment to a place and to (re)present symbols of security, optimism and resilience for the community.

Furthermore, local food products become symbols of what is great about the place and becomes of means of community identification and pride. The product when branded and identified as a bona fide community commodity may even be awarded "geographical indication-esque" status. The World Intellectual Property Organization (WIPO) defines a geographical indication (GI) as a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin, (http://www.wipo.int/geo_indications/en/). By extension therefore, a geographical indication-esque product, is one has the potential to be designated as a GI product because it meets most - if not all - the specifications, even if it is now not recognized as such. A resilient community would therefore deliberately shape and construct these potential GI-esque products that are intrinsically linked to place attachment. The community is no longer interpreting itself as simply a bordered space but as what Zautra (2010, p. 8) identifies as a 'defensible space', a space worth protecting from disturbances through resilience building; a space where food security is an integral component of community security and survival.

Double exposure and place attachment. The push for food system security and resilience building is a product of the crisis produced by globalization and global environmental change to which Small Island Developing States are doubly exposed. Globalization is a dynamic process in which geographic, economic, and cultural barriers are of decreasing significance for the cross-border movement of goods, capital and services, ideas, values, and diseases (Munroe, 2002; Shetty, 2003). Double exposure is a conceptual tool, identified by Leichenko and O'Brien (2008) that shows how the two processes are continually interacting to transform the context in which communities experience and respond to change.

Since the 1980s economic liberalization, one facet of globalization, has changed the face of the agricultural sector and - by extension - the rural economies of Jamaica, mostly through food aid and the Caribbean Basin Initiative programmes. These resulted in a growing dependence on food imports to support domestic markets and the persistent undermining of local agricultural industries (Watkins & von Braun, 2003).

Globalization is not a new phenomenon in the Caribbean because Caribbean people have been moving across geographical distances and connecting with different groups for many centuries (Munroe, 2002). Globalization rather is a renewed moment in the history of Caribbean people. The early phase of globalization resulted in the mass movement of forced labour from Africa and capital from Europe into the region over 500 years ago. Advances in transportation have now increased the possibilities of mobility. Today, the Region is experiencing renewed mobility. This can easily erode the social relations of a place (Fouberg et al., 2012; Gustafson, 2013; McClay & McAllister, 2014; Rosen, 2014; Toth, 2014). People are therefore at risk of losing sight of the importance of

place and place attachment especially in small island economies which are not fully integrated in the global market. (Baker, 2012; Leichenko & O'Brien, 2008; Thomas, 2012). The converse is also possible as the twin processes may provide opportunities for gaining knowledge and skills needed to lead a community process towards attachment and sustainable practices.

> "Not sure why my father didn't allow me to attend church in Trench Town, even though he had a church in Trench Town. We went to a church uptown. So there was no natural affinity to Trench Town for me. After high school I went to the USA for college and to work and spent 25 years there before coming back to Jamaica. Father was dead by then. I was on campus in the USA during the critical period of the black power movement so there was a re-socialization. So on coming back I decided to resurrect the link with Trench Town. The community embraced me and not so much me embracing them. I clearly needed a home where I felt comfortable. In this way I began to think about development and social and economic issues. I was really searching to see how I could anchor that in the reality of what people think and feel and what I call the 'real economy' but economist think otherwise." (AIR Executive)
>
> I went to foreign to live nearly 40 years ago when there was no water and the same bloody thing I come back to see – no water! . We run 3 miles worth of pipe water voluntarily. We started another project -the dairy to get milk. I bought milking cow and took it to the community and started this project to put money in the people's pocket in the 90s. Then we got more help from people who were returning residents - the Gordons, they come to help. We are now looking to pass on to the younger generation. It was a long rugged road… Ultimate goal is sustainability – it is about working ourself out of a job where things happen naturally like having a bath. Sustainability is most important to us (Jeffrey Town Executive).

The leadership of the community groupings in both Trench Town and Jeffrey Town are returning residents, that is, Jamaicans who have lived outside of Jamaica for decades and have returned to re-settle, some, within their original communities. Appadurai (2006, p. 4) noted that when people move to different places they tend to unsettle the new places. In Jamaica the process of re-settling tends to "unsettle" the existing communities by bringing in new ideas and attitudes towards what is possible and necessary for a sustainable future. Mobility facilitated by globalization has enabled the

development of a new Caribbean citizen who is more exposed through travel, more informed, more aware, and less deferential (Munroe, 2002. 124).

> "Let me tell you the real truth about feeding ourselves in Jamaica. Let me take you back a few years before you were born. Most parents like mine worked the land at a far bush place. My generation that should take over and continue the tradition we emigrated from Jamaica to England, Canada, and 'merica and all over the world so there was now a gap. My generation got old and come back some worked until they are old and die out and we are realizing there is nobody to carry on. We return and realize that everything die off, there is now bush in the flowers garden and the new generation have planted no food. They have done nutten! Nutten! Everything die off oranges, mangoes breadfruit etc so we start to import. There is no body to carry on. My generation who went abroad sent the money back to the younger generation so you see they didn't have to farm…they didn't preserve our home" (Jeffrey Town Executive)
>
> "Living abroad and seeing how we treat with all types of disasters and tragedies there… I can tell you in this community we don't have coordination – our communities spread out as some times we get cut off as the road is blocked. So we have to put our minds to do something and help our community. It is our community" (Jeffrey Town Executive)
>
> "The leadership has much to do with our community success. Every community must have some passion. Our leadership is very passionate about the community. Community people must have a passion for the community as this is where we live. You must want to see development. This is where we live and even if you go overseas and come back you will see that this is where you come back to. People come back to their roots" (Jeffrey Town community member).

We now see that the concept of double exposure can be applied to an individual's spatial and temporal experiences, their sense of belonging and place attachment. This is an under–explored idea and an unconventional way of applying the concept. As observed by McClay and McAllister (2014) place matters. On the one hand, globalization has facilitated placelessness, rootlessness and borderlessness. On the other hand, globalization, coupled with accelerating global environmental change, is forcing island states communities in the developing world to think more deliberately and meaningfully about place and preserving place to meet current and generational needs.

Narratives from Jeffrey Town foreground the necessity of doing "something to help our community" and accepting some responsibility for being caught in the tentacles of globalization by "(sending) the money back to the younger generation" (i.e. via remittances) which have the unintended consequence of disrupting relationships between the younger generation and the land so that they come to see "they didn't have to farm".

This kind of disruption and the reactions to it could be at the heart of the food system resilience. There is a sense of loss and regret being voiced in the solemn words "they didn't preserve our home" which speaks to (a) a school of thought that accepts humans as stewards of place; and to (b) the basic human need to belong, to have a place called home, a place to which one can always return for solace and from which one cannot be deported and lose one's citizenship. Remitting cash and kind to family and friends in one's home country was never designed to negate the generational responsibility of engaging in the farming processes, "everything die off, there is now bush in the flowers garden and the new generation have planted no food". The remittance process enables the easy and quick transfer of money between places and was never envisioned as a process to shift and nullify the cultural practices developed on the farm; practices of community self-help and social connection.

> "Returning to live in Jamaica show us many things. We are recognising that when it is time to work together and achieve together that's where the break down is taking place. It never used to be like this the culture has changed over time. I don't know what has happened is as if we take on other people's culture. When I was growing up we had day fi day… man go a man bush and chop one acre then next day you do the same for somebody else and fork up man yard and that used to be a culture. It seemed the culture migrated abroad as when we go abroad we help each other and stick together. When we come back now we have to bring that back and teach our young people. That's how we will give those of us with a few years left some security that's how we'll be safer in our community. So, if we teach the young to be their brother's keeper they won't come kill you later" <ref>P31: Jeffrey Town transcript.docx - 31:51 [(86:86)].

Home is a place within which humans have established meaningful relationships that allow them to be secure and rooted and to be involved in the local thus presenting that motivating itch for communities to invest in their social capital and encourage civic engagements and participation.

> "Global warming is going to have an impact upon us. We have to open our eyes and ears as a people. We have to change how we farm and that is connected to how we live and how we treat our environment. We have to recycle and collect our plastic bottles, we have to have storage capacity of water – we can't waste our rough water – there is an area we decide is a no building area so no more house will be built up there, we build gutters for our roof to get water…. Every component of our survival to build resilience is important ... No one will do it for us. We have to do it for ourself…that is what my years of travel have taught me" (JTFA Executive member)

So rootedness is crucial to understanding how double exposure impacts on SIDS: "People come back to their roots". People are not coming back to lie in inertia, people are making calculated, conscious decisions to take their experiences from "years of travel" and use them to "unsettle" their communities and to be engaged in resilience building activities that will allow people to "do" and, while doing, to "become."

The role of the passionate leader cannot be overlooked. It seems to be a common factor in Trench Town and in Jeffrey Town's success and its lack may account for Prospect's failures. It is however, a special type of leadership that is being described. One that has internalized the lessons gained from being 'citizen of the world' through their transitory cultural experiences and has applied them to the scale of the local to which they have chosen to commit. Having the ability to pull from both existential scales has allowed expatriates the sophistication and experience to lead their communities as well as the trust that comes from being identified with the community. The process of developing that delicate balance between the global and the local may make it counter-productive for

these same leaders to be transplanted to different places. The leadership should emerge from the place to be influenced.

> Many of our young men know they would be stopped by a bullet either by the state gunmen, that is the police as well as gang men, so this thing 'bout hungry a go kill we was really not on the agenda. (laughing). Now, when we talking 'bout hurricane and food that was really very low on what we thinking 'bout as tomorrow we wouldn't necessarily be alive to eat. But you see, because of AIR and Dr. Morgan and what he is doing in this community we can finally begin to look beyond tonight. We can talk about a future. We can talk about putting plans in place. We have hope. Things are changing, yes things are changing. See, we have a greenhouse outside and we have training meetings to look at how we can be food secure. If things were not changing we couldn't do this. We wouldn't be doing this. It wouldn't even enter mi mind that we can do this. We would be depending on the don or the government but no, now we now more self -reliant. We depend on ourselves and on the plans we putting in place to help ourselves. <ref>P306: TGroup transcript.docx - 306:68 [(154:154)]

Deliberately engaging in community activities that help people to appreciate their place and their role in preserving place builds an attachment to place and fosters a healthy sense of identity with that place. Citizens in Trench Town could better embrace concepts of resilience as they could see beyond the short term. As one informant revealed "we can talk about a future. We can talk about putting plans in place". The constant threat of being killed by gang violence had erased the long range hopes of many citizens in the community. On the other hand, the threats associated with global changes have in an indirect and unexpected way opened up a new frontier of possibilities linked to place attachment. Persons are engaged in community plans as they adapt to the varying threats associated with being doubly exposed to globalization and global environmental change. This process is essential to mobilizing for resilience.

Concluding Thought

This chapter has sought to appeal to geographers to contribute towards a renewed understanding of food system resilience and place attachment by suggesting an emphasis

on the spatial and cultural dimensions of the food system within communities and examining the multitudinous scale of operations. Failure to do this may produce a narrow-minded view of the challenges and magical possibilities that lie ahead. This is critical in translating the food security approach to disaster risk reduction into a more comprehensive and, perhaps, more manageable and digestible format. Such an approach should not only foreground the national scale and learn from international or regional case studies but should also look at local communities' initiatives. Situational realities and understandings at the community scale shape and reshape community attempts at creating food system security. Trench Town and Jeffrey Town have realized material and ideological benefits by deliberate construction of meaning-making activities tied to place.

The new agro-based commodities and cuisine that were created coupled with the number of tourists and researchers who were now visiting these communities give both positive visibility and receptivity at the international scale as well as within the local business community. The multiplier effect was seen in material benefits, an improved brand in the market place, and increased income for many community members as well as their ability to access nutritional food. At the community level these successes motivated greater social cohesion and set the foundation for community-wide plans to increase resilience within the food system in the face of risks associated with climate change and natural disasters.

Chapter 10

Concluding Thoughts: Building Food System Security Resilience in Small Island States, Converging Issues and the Way Forward

Introduction

In the preceding chapters it has been shown that food security in Jamaica is a deeply contextualized problem with multiple meanings and physical expressions that vary from place to place. Indeed, attachment to place is an important factor that has sometimes been deliberately manipulated by humans to leverage greater food system resiliency in the face of changes associated with natural hazards and other risks. Now it is appropriate to consider how these changes are remaking food security and with what implications for the future both in Jamaica and in other Small Island Developing States. This summary analysis will provide a basis for a final set of recommendations for research and policy. A useful point of entry to this discussion is to consider just how far Jamaica's food security has already been recast compared with the situation at the end of the colonial period.

What has Changed in 60 Years?

One of the earliest studies of decision-making by Jamaican farmers in the face of natural hazards was carried out by the geographer James Blaut (Blaut et al., 1959). Although he studied erosion-susceptible farming in the Blue Mountains, whereas the present study examines food systems exposed to hurricanes and droughts, it is instructive to revisit his findings. Blaut, who was working in the period just prior to Jamaican independence from Britain, sought to explain why local farmers did not make use of government promoted soil conservation measures. He concluded that a large number of

social, economic and political factors were involved, among them the following. None of the community leaders who might act as role models or bring credibility to public policies were farmers; capital was scarce and farmers did not want to invest more than necessary on leased lands; and few farmers were willing to jeopardize their land titles by exposing them to external scrutiny in order to obtain government assistance, when such documents were often hazy or disputed and there was widespread distrust of the government. But the chief reason was lack of awareness that erosion exists or that there was anything that might be done about it.

Fast forward almost 60 years to contemporary Jamaica. Now, as the present study shows, the main natural hazards are widely known and many people have some ideas of what to do about them. In addition, at least in some places, local farmer's organizations and community influentials work with a national government that treats food security as a serious public issue. But some of the problems picked out more than half a century ago persist: underinvestment in leased lands; insecure land titles; and mistrust of government, and, perhaps more importantly, the entire food system has been buffeted by major social, economic and political changes often impelled by external forces of globalization. It now also faces additional new risks brought about by shifts in climate regimes. Let us review these challenges.

Challenges to Food System Security

One local physical challenge that has grown worse in recent decades is water scarcity. Most small scale agriculture in Jamaica and many other SIDS is rain fed on sloped land. Given the changes in precipitation as a result of climate variability and climate change, more farmers are struggling with increased and prolonged drought.

When coupled with a predicted increase in the number and intensity of hurricanes and tropical storms, the fragility of the food system that lacks affordable crop or livelihood insurance stands exposed. The system of land tenure is a continuing problem. Typically, small family plots (usually < 5 acres) *without formal titles* are bequeathed to several children and grandchildren thereby fragmenting land into sizes that are no longer economically viable. Without formal land titles attracting investment for the farms is almost impossible. Praedial larceny adds to the burden of risks. Produce that is stolen just at the point of harvest does not benefit farmers. Lack of private and public sector investment in agriculture, especially in Research and Development of tools for managing diseases and pests, is a perennial constraint. Weak farmers' organization, weak agricultural policies inclusive of exploitative trade liberalization policies have negatively impact on SIDS, aggravated by increases in food importation, limited information available to farmers on the changing tastes of the local market, and a general distrust for government and government recommendations.

Responses to these problems are varied and have a mixed record of success. Some communities have resorted to eating less food or relying on emergency food aid. Others have found ways to diversify and supplement their food baskets. Lacking a formal government-backed solution to praedial larceny some citizens have resorted to vigilante justice; death and severe beatings are not unheard of. Others have implemented their own system for tracing foods from planting to market, making it difficult for thieves to appropriate other people's crops. Yet other communities have mobilized their social capital to create community–wide organizations that are informed by principles of self-reliance and motivated by bonds of mutual belonging to valued places.

What's Missing from the Discourse on Food Systems Resilience in SIDS?

In Jamaica and other SIDS voices from within the global mainstream communities of food system and hazards management experts are being heard but local voices and opinions are rarely encountered and represented in public discourse or public policy. Peeling back the layers of contrasting views that frame the policy context, and which are not all reflected in the official narrative on food security, is particularly necessary. A singular understanding of what it means to be food secure is not appropriate nor is a one size-fits-all solution. An analysis of the threats to building resilience should therefore emphasize elements that may not inform the government's approach to food security. Understanding the continuum of threats should also help to inform stakeholders' funding and intervention especially during a disaster or hazards event.

The examples of Trench Town and Jeffrey Town are particularly instructive of the kinds of locally-centered approaches to resilience that should be more visible in public policy. Trench Town is well on the way to constructing an urban food system for Jamaica that is resilient to natural stressors like hurricanes and droughts. It is built around recognition that political gang violence and entrenched poverty fuel social inequities that stifle cooperative efforts to address food system problems. Healthy community based organizations – with assistance from external institutions - are proving to be effective counterweights to these constraints. They negotiate and reconceive community functions for emergency shelters, foster commitment to unearthing and applying traditional knowledge about food security, and broker a public strategy embracing research and development that goes beyond scientific and technical innovations to address the needs of farmers, traders and consumers at the grass roots.

More than a process or a goal, resilience in Trench Town is a point of departure for action, an orientation that informs a spectrum of public policies, not just those that focus specifically on food system inadequacies.

Building an orientation to resilience in the food system is the story of building place attachment through social capital and connectedness. It is the story of local groupings who are achieving for themselves by carving alternative channels to foster home grown initiatives inclusive of those introduced by returning expatriates or even privileged local experts. There is a tendency in some cultures to reject or overlook local, un-lettered voices and even home grown expertise. While the community specific nature of social capital's role in food system security makes it difficult to generalize, findings from this study indicate that social capital may be a useful lens through which to illuminate the power dynamics that shape food insecurity and the outcomes of interventions to address it.

Some Jamaican communities (for example, Jeffrey Town) have been able to effectively build self-reliant food system resilience through social networking and successful partnerships that nurture, utilize and maintain their social capital; others cannot without external support. (for example, Prospect) The development of resilience in such places, depends on the communities' ability to nurture and share consensus within their citizenry as well as to maintain a critical set of community led social connections over a sustained period of time. Disasters may initially disrupt these positive social connections but eventually enhance them by revealing the communal interdependence of survivors and the importance of a sense of place.

Jeffrey Town is motivated by ideologies of self–reliance and volunteerism organized around issues of community economic development, sustainability and the expertise of local heroes (i.e. returning residents). These expatriates are re-settling and un-settling the communities' way of thinking, expecting, responding and planning. By being doubly exposed to experiences of globalization and environmental change expatriates have been prepared to lead a community movement that takes responsibility for their survival and shared future. Importantly, this is a movement that privileges communal enterprises alongside individual gains. The global discourse on food security coupled with a retrospective view of the human response to hazards does not feature these shades of realities, nor does the discourse sufficiently engage the debate on the role of human agency over structural hurdles. Former prime minister of Jamaica, Michael Manley (1975) asserted that "people need a heroic image of themselves if they are to be capable of heroic response" (p. 51). Building resilience at times is dependent on heroic responses of people.

For practical reasons therefore the food security of Small Island Developing States should be approached from a resilience perspective rather than a vulnerability perspective. Resilience offers a psychologically healthy starting point for action whereas vulnerability seems, for many, to imply the inevitability of loss. A resilience perspective shifts the emphasis from the outcomes of being stressed to recognition that communities at risk have unique histories and diverse characteristics that stimulate the cross-fertilization of experiences and perceptions, and – in the process - change future outcomes. Positioning small island states as sites of resilience rather than sites of vulnerability is a necessary way station on the road to food security.

Contribution of Study

This thesis has revealed that there are a number of gaps converging at theory and praxis in our understanding of how communities in small island developing states build resilience to climate change, natural disasters and other threats to the food system. The dissertation has addressed these threats through its contribution to knowledge, information and action.

There is a gap between the formal definitions of food security used by the Government of Jamaica and its development partners versus the informal understandings and interpretations of the concept by the communities and civil society groupings. The results revealed that a more useful understanding of the concept must sought through the use of the resilience approach to food security which emphasizes elements that may not be considered by the government in its approach to food security. The gap in interpretation helps to account for a differentiation of response by communities to policies designed by the government to bolster the food system. Understanding the continuum of threats should help to inform stakeholders' funding and intervention especially during a disaster or hazards event.

In assessing the food security coping mechanisms used as disaster risk reduction strategies by the communities to build resilience, it became clear that resilience should include the re-discovery of old mechanisms, pathways and practices and their extended uses in new ways thus ensuring recovery or discovery of past mechanisms associated with risk reduction. There has been the loss of traditional agricultural knowledge in both urban and rural communities. Some of these may have also dogged the colonial administration and others may be much newer.

The rural poor residents who created the urban shanty towns were mainly farmers. One generation later, the farming tradition, and skills, still reside in many of them and have become the seeds for ensuring food system resilience building in an urban space. Communities however, have perceived that practices that rendered former generations to be able to plan for their food in-take especially during crises are being lost. These indigenous practices though rudimentary had proven to be effective means of ensuring persons were not hungry. For example, the art of recognizing and reaping wild tubers during the period of drought for food and medicinal purposes may be lost to the new generation of farmers. Cultural practices supportive of food security were not being transferred generationally. A deliberate effort had to be made to ensure that the older generation's knowledge about these practices did not die out. In essence, that Jamaica would lose ways of life and practices that are now proving to be coping strategies suitable for tackling emerging perturbations associated with climate change.

Some of the knowledge problems this dissertation asserts could be addressed by improvements to Information (i.e. written and oral advice, maps, demonstration technologies and so on) that is provided by experts, government and others to affected populations and perhaps also by institutionalizing a (bottom-up) information stream from the local individuals and communities to the agencies and organizations. For example, metrics of people who are at risk and vulnerable to different hazards could be developed and the relevant data published. Peer to peer learning exchanges need to be approached in a deliberate and structured way. Given that Jeffrey Town Farmers Association (JTFA) in St. Mary is recognised internationally for its community approach to building resilience,

its executive members are engaged in knowledge building and peer-to-peer learning exchanges with other farmers groups and community. Though the Association regularly makes presentations at workshops and conferences locally, regionally and internationally sharing their successes and challenges, many respondents from other communities (e.g. Prospect) had never heard of Jeffrey Town. Social learning activities that should be used to foster adaptive capacity among community groups cannot be left to chance (Tidball & Krasny, 2007). Effective mechanisms for communicating and integrating communities that are less aware need to be deliberately implemented.

Creating county-wide food hubs and farmers markets operated by food policy councils may allow for a more useful and effective local governance channel to achieve food security. In Jamaica, the administrative division of the island into three counties – Cornwall, Middlesex and Surrey (see Chapter 4) serves no purpose at the moment. Deliberately planning the food system on the island with the aim of using the counties to establish regional food hubs, and successful communities like Jeffrey Town to engage in peer to peer learning within this structural arrangement may be a first step in addressing some of the long term connectivity issues being faced by the farmers and consumers, and between the national and community scales. Some communities are unable to function effectively on their own. Through the already organised quasi-governmental structure of the Social Development Commission (SDC) or the Rural Agricultural Development Agency (RADA), consistent leadership and structure maybe given to oversee the governance of the county-level food hub.

Actions might be subdivided into those that involve process and those that affect structure. In other words, who does what and how, as well as within which kind of

organizational structure (e.g. bureaucracy, public-private partnership, social capital organization and so on). The urban community of Trench Town has for example created a deliberate space of encounter, in the development of its Culture Yard. It is a deliberate space for constructing identity, healing and meaning-making activities which are forerunners to creating a culture of resilience. The Jeffrey Town community created community plans, farms and commodities on which to build a foundation and culture to counteract vulnerabilities and threats to their food system.

Another aspect of food security capacity building on the island is seen in the "guns for agricultural goods" exchange between Jamaica and Haiti especially in the eastern parishes, wherein Jamaicans are illegally exporting food to Haiti in exchange for guns. The eastern parishes' respondents described their parishes as the "headquarters for hurricane in Jamaica". Their geographic position is as such that they are always the first to be hit by hurricanes. Even if Jamaica escapes being directly hit by a hurricane, eastern parishes tend to suffer from residual impacts. These parishes tend therefore to suffer more severely from food shortages during a disaster. Without attaching value judgments to the situation, the monetary value attached to a gun brings premium dollars compared to the value attached to food commodities. Persons are therefore better able to secure an income to build food security capacities. The "guns for agricultural goods" trade might serve as an illustration of the broader international (globalization) context that attends the Jamaican food system.

Finally, though urban farmers are not counted in the national agricultural census of Jamaica and they do not benefit from the formal government-sponsored cooperative arrangements that are usually available to rural farmers (Graham, 2012), the provision

made by some developers to ensure fruit trees on urban house lots have proven to be an important mechanism for building resilience. Immediate action is needed however, to rethink the structural restrictions in the definition of who qualifies to be a farmer and to re-classify urban spaces based on size allotments as agricultural is long overdue. Urban spaces are developing as agricultural spaces and their contribution to food security can no longer be ignored.

Recommendations

The following recommendations are divided into two sets. The first set is aimed at academic and professional researchers who study food security and natural hazards. The second focuses on possible changes to public policy instruments and governance.

Research strategy and methods. Much remains to be done to provide an integrated understanding of food system security that connects international, national and local understandings and perceptions. Hazards researchers should place a greater emphasis on ethnographic methods to better capture the socio-spatial relations that mediate the institutional arrangements through which society–environment relations are governed and responses elicited.

Specific research topics that require additional attention would include, the evolving nature of urban agriculture and its contribution to the food system in the Caribbean, especially in relation to the mitigation of hunger during hazards events and disasters. At present there is no data to indicate the number of households and individuals who are hungry, especially during hurricanes and drought. Research is therefore paramount in identifying such data and the implications for policy. Within the parish of Manchester and other bauxite parishes, methods of post-mining nutrient replacement for

bauxite mined land to encourage post bauxite agricultural activities needs to be investigated. Importantly, the extent to which hazards events damage attachment to places in ways that have long term repercussions for food security and hazard management needs to be further understood.

Public policy. The concept of a food basket is mentioned or implied in many public policies. The food basket needs to reflect more of the food that is grown/raised in Jamaica. Items which are more affordable and in alignment with the cuisine of the working class needs to be explored and studies commissioned on a more appropriately constituted food basket. An indigenous food basket that privileges notions associated with food access during the periods of hazard events and natural disasters would be appropriate. Furthermore, food security needs to be written into the urban and rural plans of communities and towns. Urban planners and long range planners need to ensure that food planning is added to the standards needed to receive state approval for development. The converse is also applicable; food system managers and advocates need to consider the long term implications of their short term interventions. A re-think of how to ensure sustainability of the food system that interrogates and incorporates the coping and adaptation practices of communities is needed to disrupt the charity dependency pathology. Food system resilience needs to be governed from an inter-scalar, inter-agency, inter- perspective focus as social capital is mobilized differently by different actors for different interests in relation to acute natural hazards than in relation to long term chronic food system challenges. In essence, food security resilience cannot be viewed from a singular scale – the community, the individual, the nation, the region or the global community.

Finally, food security challenges should be seen as an opportunity to attempt innovative solutions to contend with the new reality of uncertainties and insecurities.

Appendix A

Interview Guide for Semi-Structured Interviews

How do we measure social capital at community level - (Putnam, Robert – Bowling Alone)

The Social Capital Community Benchmark Survey was used to influence the questions I asked on the interview sheet to understand social capital and how it operates within communities. "Social Capital Community Benchmark Survey short form, July 2002 version, Saguaro Seminar: Civic Engagement in America project, John F. Kennedy School of Government, Harvard University."

How do we measure place attachment? Understanding of place attachment was derived from Shamai, Shmuel (1991). Sense of place: an empirical measurement. *Geoforum,* 22(3), 347-58.

The interview schedule

Introduction

Hello, I'm Charlene Sharpe and I am a Jamaican student studying at Rutgers University in New Jersey. I am interested in understanding **the importance of place attachment and social capital in building food security resilience during periods of natural hazards in your community**. I will therefore be asking your thoughts and opinions on 1) your understanding of the terms food security; 2) the special characteristics of attachment and meaning you have given to your community; 3) the kinds of natural hazards that affect your community and how you cope or adapt to ensure that you are food secure during the cycle of these hazards 4) The social capital in your community (i.e. the level of connectedness) and how this has helped to or prevented your community from building

resilience to these hazards to ensure food secure. There is no right or wrong answer and you may choose not to answer any of the questions or to withdraw from this process at any time.

(Section A-G for communities only; Section H for all participants)

Section A - Demographics

1. What is the name of the community you live in and is it different from the community you feel attached to? If yes, which community do you feel a sense of attachment to?
2. What is the highest grade of school or year of college you have completed
3. I would like to know if you are working now, temporarily laid off, or if you are unemployed, retired, permanently disabled, a homemaker, a student, or any other category you may think of?
4. Do you own the place you live in or rent?
5. Number of persons in your household? How many are children who are age 17 or under?
6. Are you currently married, separated, divorced, widowed, or have you never married? Other?

Section B- Hazards in the Community PAR#3 – severity of hazards/

7. What major natural hazards are experienced by your community (for example hurricanes, droughts, earthquakes, landslides etc)?
8. Thinking of any of the hazards you can remember (hurricane, droughts, etc) Please take me through your experience. I want you to start from the day you realized you were going to be impacted or you were being impacted by the hazard until the hazard event ended if whether a hurricane or even a drought – what was your experience like?

9. Please describe what effect these hazards (choose any hazard) have on your community in general – the physical impact, the social impact?
10. Please describe any differences you have seen in these hazards in terms of their timing, their duration, their frequency, their intensity
11. What is your understanding of the term “food security”?
12. Describe how any of these hazards would have affected your:-

a. Food availability – that is amount of food you had to ensure you and your family were healthy? What food resources are located within or near to your neighbourhood – is food available during the hazard event cycle? Are the available foods affordable? What regular food items are not available?
b. Food access – i.e. being able to get the food you want to stay healthy- Is public or private transportation available to get to the food/resources? What barriers would prevent you from using community food resources? shops in the area
c. Food utilization – i.e. keeping your food safe, preparing your meals, distributing the food in the household
d. Food stability – i.e. ensuring the long term availability of food for family - Does the community have the necessary infrastructure to deliver emergency food assistance benefits effectively and for how long?

Section C- Coping/adaptation mechanisms in place – PAR on causal dynamics

Now, I am interested in your coping/adapting mechanism as it relates to food security i.e. food access, food availability, food utilization during the cycle of a hazard.

13. Please describe the process of ensuring your food security from the time you were aware that you will be impacted by a hazard event until the end of that event
14. Please explain the main coping mechanisms you use to ensure that your household is food secure**
15. Please describe the mechanisms that exist at the community level to help the community to cope during any of these disasters and to ensure food security during the cycle of the disasters**
16. What are the best practices you have seen or have heard of that you are implementing in your community or are thinking of implementing in your community to ensure food security during the disaster cycle
17. What are the main threats that you face as a community in helping you to cope or to adapt to these hazard events and to build food security during the hurricane cycle or a drought

**using the hazards assessment PAR technique and the Cartesian graph to display

Section D- Sense of Place, Belonging, and Meaning ascribed to your community

18. Please describe your general feelings towards this community, i.e. your feelings of belonging, attachment, or commitment to this community, and explain how you came about developing this attachment
19. Please explain how your community's location and the general physical landscape have helped you to develop an attachment to this place

20. What special meaning does this place have to you and how as a community do you ensure that this meaning is shared and embraced by the community?
21. How long have you lived in this community or have been associated with this community? What about this community that is motivating you to want to be resilience especially to food insecurity
22. Describe any community food production or community food related activity – for example community garden? Community Supported Agriculture? that the community sees as meaningful
23. What customs, activities, symbols, do you share/have in common as a community that help to make your community unique or special?
24. Please describe the migration patterns within the community – do you for example have many persons moving into or leaving the community to live elsewhere regularly?
25. Please describe your thoughts on the following statement: "a person who truly loves his community is willing to give up, sacrifice his personal interests for the sake of the community's interest"
26. When hazard events impact on your community and you see the results, please describe how this make you feel in general?

a. What do you think your community can do to keep the community food secure during the hazard period, for example, the hurricane season

Section E - Support and Volunteerism, social connectedness and social network

27. (How many times in the past twelve months have you) attended any public meeting in which there was discussion of community affairs?

28. Please describe the ways you have volunteered in the past 12 months in your community; tell me about the positions you hold or the committees you serve on including church organizations
29. How often have you attended the farmers' association or the community disaster meeting or any other club or organization's (for example, neighbourhood watch) meetings? Describe your experience
30. Describe all the community activities that you know of that deliberately build connectedness and trust and which you are proud of
31. Please describe all the types of networks that have been formed within the community and outside of the community that are related to disaster risk reduction and food security resilience for your community
32. What are the main types of support that you receive as a community during a disaster? The support can be material/tangible or intangible – for example emotional support, informational, and do on

Section F- Trust and reciprocity

33. I'd like to ask you some questions about how you view other people, groups and institutions. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?
34. Next, I'd like to know how much you trust different groups of people. First, think about (GROUP*). Generally speaking, explain why you would trust or not trust this group to do the right thing [Network Dynamics Appraisal]

a. *People in your neighbourhood? Shopkeeper, strangers
b. ***The Police**? Partners - donors

c. *NGOs – Red Cross, Food for the Poor (do these operate in your community?)

d. *Local Government – Parish Development Committee (PDC), Office of Disaster Preparedness and Emergency Management (ODPEM),

e. *National Government

Section G – Building Community Health - Sense of Place, Social Capital, Disaster Risk Reduction/Climate Change and Food Security

I have two last questions trying to bring all the things we have discussed so far together. We have looked at "attachment to community", "social capital", "food security", hazards you have faced and so on. I now want to find out how all of these can be used to design a pre-disaster recovery plan for communities thus building community health.

35. Describe the importance you give to these factors in the pre-disaster recovery planning process?

36. Explain as best as you can your thoughts on how all these factors come together or do NOT come together to help motivate your community to be secure, i.e. build community health:-

a. a) your attachment to your community

b. b) the social capital within your community

c. c) the threat of climate change and the need to reduce disaster risk and,

d. d) the need to enhance food security

37. Which factor do you think is the greatest challenge your community faces in its attempt to be food secure during the cycle of a hazard event?

Section H – Perception on Food Security (for non-community participants ALSO)

We are going to talk about your understanding of what it means for someone, a community or a country to be food secure

38. What is your understanding of the term 'food security'?
39. Tell me about the role the economic (or government) sector can play to make the nation of Jamaica more food secure?
40. Describe the ways in which the economic (government) sector is doing what you proposed in Q8 above?
41. Tell me which groups or sectors in society have the responsibility for ensuring food security for the nation and why?

a. Individuals, what are their role
b. Private sector
c. Civil society
d. Government
e. Others?

42. The country currently does not have a food bank, but if the country should, describe for me what you think a food bank should look like

a. What would you like to see a food bank do? Should it be an emergency only facility to be used only during periods of disasters? Should it be in operation all year around?
b. Who should operate the food bank?
c. Where would the food bank be located?
d. What role could the various stake holders (civil society, economic, government) play in this food bank?

Appendix B

Code Book

Code List – Level 1 coding

OODDEF_LIVELIHOOD

FOODDEF_FAOINFLUENCED

FOODDEF_PROCESSED

FOODDEF_SOVEREIGNTY

Food security definition: Government

Food security definition: Economic Sector

Food security definition: Civil Society Group

Food security definition: Communities

Disaster Type: hurricane

Disaster TYpe: Flood

Disaster Type: Landslide

Disaster Type: Drought

Disaster Impact on Food: access

Disaster Impact on Food: availability and stability

Disaster impact on Food: utilization

Disaster Impact on Food: Processes

Positive Coping strategies: Farming

Positive Coping strategies: Food Utilization

Negative Coping Strategies:

Adaptation Strategies: community led

Adaptation Strategies: not community led

Social Construction: Place and identity

Social Construction: food and identity

Site of Resilience:

Double Exposure: modernity positive

Site of Vulnerability

Double Exposure: modernity negative

Positive social capital: binding

Positive social capital: bonding

Positive social capital: linking

Negative social capital: garrison

Negative social capital: praedial larceny

Negative social capital: community group culture

Sense of Place:

Building resilience:

Appendix C

List of All Codes Used

TOTAL Codes Used -Filter: All

HU: charlene project4

File: [C:\Users\Pryce\Desktop\so\Charlene's Atlas\charlene project4.hpr7]

#COMMUNITY: JT

#COMMUNITY: LH

#COMMUNITY: TT

#COMMUNITY: MANCHIONEAL

#ECON SECTOR

#GENDER: FEMALE

#GENDER: MALE

#GOVT CONSULTANT

#GOVT: MOFA

#GOVT: MOFA DIRECTORS

#NGO ACDI

#NGO HA

#NGO RED CROSS

#NGO UNDP

#REGIONAL GOVT PARTNER

ADAPTATION STRATEGIES POSITIVE

Adaptation Strategies POSITIVE educating the community thru graffiti and old time things

Adaptation Strategies POSITIVE JT different crops

Adaptation Strategies POSITIVE JT doing food security project

Adaptation Strategies POSITIVE JT food security project

Adaptation Strategies POSITIVE JT looking at seed bank

Adaptation Strategies POSITIVE JT new farming practice

Adaptation Strategies POSITIVE JT porridge mix

Adaptation Strategies POSITIVE L_H forming group

Adaptation Strategies POSITIVE pooling resources insurance

Adaptation Strategies POSITIVE St Thomas plant n stages

Adaptation Strategies POSITIVE: ACDI focus more on adaptation

Adaptation Strategies POSITIVE: ACDI_ training farmers group

Adaptation Strategies POSITIVE: CARDI to focus on varieties and IPM

Adaptation Strategies POSITIVE: CARDI_does_training

Adaptation Strategies POSITIVE: D_C_diaster planning to focus on rural livelihoods for food security

Adaptation Strategies POSITIVE: D_C_farmers adaptation after hurricane

Adaptation Strategies POSITIVE: D_C_farmers modified farming practices

Adaptation Strategies POSITIVE: D_C_farmers protected their houses

first_adaptation

Adaptation Strategies POSITIVE: H-A training not aligned to party

Adaptation Strategies POSITIVE: H-A_informal insurance scheme

Adaptation Strategies POSITIVE: H_A does disaster preparation not response

Adaptation Strategies POSITIVE: H_A_farmers train each other like ACDI

Adaptation Strategies POSITIVE: H_A_helping farmers adapt

Adaptation Strategies POSITIVE: H_A_structuring and training farmers group

Adaptation Strategies POSITIVE: Manchioneal switched to fishing

Adaptation Strategies POSITIVE: Mr Wedderburn insurance and others

Adaptation Strategies POSITIVE: ngo_ACDI_food_security_strategies

Adaptation Strategies POSITIVE: r_b_m_m_a_food_security_adaptation

Adaptation Strategies POSITIVE: s_g_o_m_m_a_food_security_storage

Adaptation Strategies POSITIVE: St Thomas farmers protected their houses

first_adaptation

Adaptation Strategies POSITIVE: UNDP helping farmers with resistant crops etc

Adaptation Strategies POSITIVE: UNDP helping with mitigation too

Adaptation Strategies POSITIVE: water_storage_

BUILDING RESILIENCE:

Building resilience: ACDI_Climate change focus

Building resilience: ACDI_Farmer field schools

Building resilience: backyard gardens boosting self reliance and resilience URBAN

Building resilience: backyard gardens to counter rising food cost

Building resilience: CARIBBEAN and Brazil partnership

Building resilience: CARIBBEAN and CIDA and thrid state partners

Building resilience: CARIBBEAN and EU partnership

Building resilience: CARIBBEAN and Japan partnership

Building resilience: CARIBBEAN catatrophic risk insurance facility

Building resilience: CARIBBEAN FAO setting up umbrella group for tecnical cooperation

Building resilience: CARIBBEAN partnering with Italy =FNS policy

Building resilience: CARIBBEAN partnering with Spain

Building resilience: CARIBBEAN partners for fns policy

Building resilience: CARIBBEAN using early warning system

Building resilience: FAO saying communities need self reliance

Building resilience: FAO to assist SIDS to be food secure

Building resilience: forming into sustainable group

Building resilience: going to training sessions

Building resilience: GRACE thru importation

Building resilience: greenhouse in TT

Building resilience: Irrigation system used

Building resilience: JT elements to build resilience

Building resilience: JT farmers join cooperatives

Building resilience: JT sustainability

Building resilience: JT using their experience to make plans

Building resilience: long term plans for the community

Building resilience: MAnchioneal use govt housing check to buy food

Building resilience: Marketing through partnership with supermarkets

Building resilience: MOAF marketing to build resilience

Building resilience: Mr wedderburn plant along contours

Building resilience: Mr Wedderburn multiple cropping

Building resilience: Mr. Wedderburn govt proposed insurance

Building resilience: payment arrangements with corporate bodies

Building resilience: PIOJ's views

Building resilience: Red Cross teaching communities to help self

Building resilience: Roger found reason our crops were rejected by US

Building resilience: Roger JLP boosting local irish production

Building resilience: Roger on plans for banana after hurricnae destruction

Building resilience: Roger seeds and irrigation to build resilience

Building resilience: Roger to get investors to do onions and import substitution

Building resilience: Social protection program like school meal - PORRIDGE

Building resilience: St Thomas farmer use much cassava

Building resilience: St. Thomas farmers saying dont food discriminate

Building resilience: training in TT

Building resilience: UNDP through training and partnership

Building resilience:JT change how we think

Building resilience:Manchioneal house stand tall

Building resilience:Manchioneal resilience in the mind

CBO: AIR

CLIMATE CHANGE:

Climate change: affects food price and supply

Climate change: Doman thinking of moving farmers from hills

Climate change: Doman why Jamaica focuses on adaptation not mitigation

Climate change: drought is first thing that comes to mind

Climate change: Government's perspective

Climate change: it affects the economy and the unknown factor

Climate change: Jamaica key challenges related to CC vulnerability

Climate change: JT climate change means new staple to plant

Climate change: JT drought is a recent problem

Climate change: Long bay can't read the sea and sun anymore

Climate change: lose banana TT

Climate change: lost of job for imports as things not growing

Climate change: Manchioneal

Climate change: Manchioneal getting colder and US dust

Climate change: Manchioneal lion fish

Climate change: Mr Wedderburn Need for Index based Insurance

Climate change: Mr Wedderburn carbon markets not filtered to us

Climate change: PIOJ Jamaicas efforts are adaptation

Climate change: Red Cross has project on Climate change

Climate change: S R govt responding with CC ministry and projects

Climate change: SANTOS Caribbean most vulnerable to natural disasters

Climate change: seas can reclaim

Climate change: ST Thomas famers dig hole in river bed to get water

CONCEPT

Concept: coping and adaptation:

Concept: coping and adaptation: D_C_coping vs adaptation strategies

Concept: of stress and shock:

Concept: of stress and shock: D_C_ stress vs shocks

COPING STRATEGIES POSITIVE:

Coping strategies POSITIVE: bury the food in sawdust

Coping strategies POSITIVE: buy things from corner shop TT

Coping strategies POSITIVE: change diet to bread and bulla

Coping strategies POSITIVE: com_farmer_coping_strategy

Coping strategies POSITIVE: cook the food dry

Coping strategies POSITIVE: cook up food and corn food

Coping strategies POSITIVE: coping strategies against praedial larceny

Coping strategies POSITIVE: corner store people buy more food for storage

Coping strategies POSITIVE: corner store people trusst food

Coping strategies POSITIVE: corner store what people eat

Coping strategies POSITIVE: D_C_farmers look to family and govt COPING

Coping strategies POSITIVE: eat touched food

Coping strategies POSITIVE: farm out the children to other TT

Coping strategies POSITIVE: farmer moves from meat to plant diet

Coping strategies POSITIVE: food partnership

Coping strategies POSITIVE: H A comes in medium term to help with food

Coping strategies POSITIVE: juice the fruits food utilization

Coping strategies POSITIVE: L_H remove from the area

Coping strategies POSITIVE: L_H share with neighbors

Coping strategies POSITIVE: Long bay fisherfolk do farming

Coping strategies POSITIVE: Long bay fisherfolk do odd jobs

Coping strategies POSITIVE: MAnchioneal change diet

Coping strategies POSITIVE: Manchioneal go to coronation

Coping strategies POSITIVE: Manchioneal lean on God

Coping strategies POSITIVE: Manchioneal lean on God and Red Cross

Coping strategies POSITIVE: MAnchioneal trust from corner shop

Coping strategies POSITIVE: Manchioneal use govt house mony buy food

Coping strategies POSITIVE: network

Coping strategies POSITIVE: PYLES et al carried food to the shelter

Coping strategies POSITIVE: PYLES et al cook up food ahead of time

Coping strategies POSITIVE: PYLES et al coping strategies in general lit

Coping strategies POSITIVE: PYLES et al coping strategy pawn things

Coping strategies POSITIVE: PYLES et al families use formal and informal strategies

Coping strategies POSITIVE: PYLES et al family reliable food strategies fail during

disasters

Coping strategies POSITIVE: PYLES et al first few days after storm POOLING RESOURCES

Coping strategies POSITIVE: PYLES et al food would spoil so cook all

Coping strategies POSITIVE: PYLES et al hussle plus formal work coping strategy

Coping strategies POSITIVE: PYLES et al hussle to make ends meet

Coping strategies POSITIVE: PYLES et al kinship network as coping strategy

Coping strategies POSITIVE: PYLES et al pre storm prep canned food

Coping strategies POSITIVE: PYLES et al ritual of pre storm cooking

Coping strategies POSITIVE: PYLES et al shared and bartered - POOLING RESOURCES

Coping strategies POSITIVE: reap whats around yard

Coping strategies POSITIVE: Red Cross dont keep much food at warehouse

Coping strategies POSITIVE: Red Cross process

Coping strategies POSITIVE: Red Cross uses fair standard packages

Coping strategies POSITIVE: Red Cross virtual food bank

Coping strategies POSITIVE: rice the yam and so and eat without meat

Coping strategies POSITIVE: Role of shelters

Coping strategies POSITIVE: rub in ash old time preservation and make jams

Coping strategies POSITIVE: see hurricane as an equaliser to freedom

Coping strategies POSITIVE: smoke the meat old time preservation

Coping strategies POSITIVE: St Thomas cook up food

Coping strategies POSITIVE: St thomas put seedlings under the bed

Coping strategies POSITIVE: storage and generator

Coping strategies POSITIVE: style of cooking change

Coping strategies POSITIVE: take the savings

Coping strategies POSITIVE: temporary migration when hurricane comes

Coping strategies POSITIVE: WINSYNCO working thru Food for the Poor

Coping strategies POSITIVE: WISYNCO and food for the poor

Coping strategies POSITIVE: WISYNCO distribute WATA to hospital free

Coping strategies POSITIVE:JT high capacity to cope

Coping strategies POSITIVE:L_H_depend on others

Coping strategies POSITIVE:MAnchioneal cooking up food

Coping Strategies:NEGATIVE:

Coping Strategies:NEGATIVE: D_C_problems with coping strategies

Coping Strategies:NEGATIVE: eat less

Coping Strategies:NEGATIVE: MAnchioneal traceability efforts by citizens

Coping Strategies:NEGATIVE: take the savings out the bank

Coping Strategies:NEGATIVE: traceability efforts by citizens

Coping Strategies:NEGATIVE: use credit card

DISASTER IMPACT ON FOOD:

Disaster Impact on Food: access

Disaster Impact on Food: access JT have food not afraid of hurricane

Disaster Impact on Food: availability and stability

Disaster Impact on Food: availability and stability JT immediate

Disaster Impact on Food: availability and stability L_H no banana

Disaster Impact on Food: availability and stability Manchioneal first 2 days

Disaster Impact on Food: availability and stability MAnchioneal fishermen cant go out

Disaster Impact on Food: availability and stability Manchioneal no ground provision

Disaster Impact on Food: availability and stability Manchioneal switched to fishing

Disaster Impact on Food: availability and stability Manchionel no ground provision

Disaster Impact on Food: availability and stability TT

Disaster impact on food: compare red cross basket to GRACE relative vs absolute help

Disaster Impact on Food: Processes

Disaster impact on Food: utilization

Disaster impact on Food: utilization Manchioneal

DISASTER TYPE

Disaster Type: Drought

Disaster Type: Drought i prefer

Disaster Type: Drought JT

Disaster Type: Drought L_H drought

Disaster Type: Drought L_H drought worse

Disaster Type: Drought L_H which worse drought or hurricane

Disaster TYpe: Flood

Disaster TYpe: Flood JT

Disaster Type: hurricane

Disaster Type: hurricane i prefer

Disaster Type: hurricane JT

Disaster Type: hurricane JT prefer hurricane to drought

Disaster Type: hurricane Manchioneal with surges and erosion

Disaster Type: hurricane: JT which hurricane is worst

Disaster Type: hurricane: L_H which hurricane is worst

Disaster Type: hurricane: L_H_m a m which hurricane is worst

Disaster Type: hurricane: MAnchioneal 1944 hurricane worst

Disaster Type: hurricane: Manchioneal prefer drought to hurricane

Disaster Type: Landslide

Disaster Type: Landslide JT

DOUBLE EXPOSURE:

Double Exposure: globalization impact on diary industry impact food security

Double Exposure: JT leader migrated

Double Exposure: preferential trade ending globalization increase

Double Exposure: TT_m_o_leader_Migrated to the US

Double Exposure: TUFTON liberalization effect on the agri sector

EFFORTS NOT RESILIENT:

Efforts not resilient: access credit for edication not farm improvement

Efforts not resilient: access credit for education not farm improvement

Efforts not resilient: Agricultural lands for housing

Efforts not resilient: CARDI's_training_not_very_successful

Efforts not resilient: CARDI no work done on breadfruit with UWI

Efforts not resilient: D_C_relief efforts lack resilience in Jamaican agriculture

Efforts not resilient: Doman climate scientist invited but dont turn up

Efforts not resilient: going to training is catch 22

Efforts not resilient: Government laws not congruent with food security desires

Efforts not resilient: government not serious about food security

Efforts not resilient: government processes weak to ensure food security

Efforts not resilient: J_O agro park mess comment insider view park not going as planned

Efforts not resilient: J_O agro park mess comment need machines not machete

Efforts not resilient: J_O agro park mess comment too much politics

Efforts not resilient: J_O agro park mess expert ignored the indigenous knowledge

Efforts not resilient: J_O agro park mess famers lament their loss as Credit Union benefits

Efforts not resilient: J_O agro park mess farmers didnt want to impact IMF

Efforts not resilient: J_O agro park mess farmers now owe not benefitting

Efforts not resilient: J_O agro park mess project managers bad decisions

Efforts not resilient: J_O Agro park mess St Thomas losses

Efforts not resilient: Long Bay poor communication for fisherfolk

Efforts not resilient: MAnchioneal big man got the land not farmers

Efforts not resilient: MAnchioneal no vlounteering

Efforts not resilient: Manchioneal poor communication for fisherfolk

Efforts not resilient: MAnchioneal trained but not using info

Efforts not resilient: MP after hurricane Dean Govt response poor

Efforts not resilient: Mr Wedderburn proposed farmers partner not sustainable

Efforts not resilient: Mr Weddernburn train farmers in record keeping but

Efforts not resilient: no system to collect agri data in urban area

Efforts not resilient: poor communication for fisherfolk

Efforts not resilient: Roger govt dont continue other's programme

Efforts not resilient: small scale farmers dont invest in technology

Efforts not resilient: St thomas not going back to banana

Efforts not resilient: TUFTON expensive to farm FERTILIZER prices up

Efforts not resilient: TUFTON extension officers were cut

Efforts not resilient: UDC to develop agricultural lands

Efforts not resilient: UNDP donors ticking off a check list

Efforts not resilient:H_A training but no child care

FAO on the Caribbean

Fatta: What taking over Jamaic..

FOOD DONORS FOR SANDY

FOOD IMPORTS CONCERNS:

Food imports CONCERNS: 61% of what we eat is imported in Jamaica

Food imports CONCERNS: CARIBBEAN food importation threatens fns

Food imports CONCERNS: CARIBBEAN high debt to ratio should motivate less imports

Food imports CONCERNS: Caribbean import bill high though have fertile land

Food imports CONCERNS: CARIBBEAN imports pervasive Antigua largest importer per head

Food imports CONCERNS: CARIBBEAN jamaica is largest importer outside the region

Food imports CONCERNS: CARIBBEAN LaRocque needs safety for intra region trade in agri

Food imports CONCERNS: CARIBBEAN LaRocque on how to reduce import bill

Food imports CONCERNS: CARIBBEAN LaRocque says to reduce NCDs is to reduce imports

Food imports CONCERNS: CARIBBEAN NCD linked to imports

Food imports CONCERNS: CARIBBEAN price takers and net importers

Food imports CONCERNS: CARIBBEAN undernutrition linked to food imports

Food imports CONCERNS: CARIBBEAN wasnt so dependent on imports once

Food imports CONCERNS: Climate change impacting on food growth so need to import

Food imports CONCERNS: D_C_weak govt responses after hurricane

Food imports CONCERNS: drought in US will make import PEAS prices higher so local prices cheaper

Food imports CONCERNS: Eat Jamaica campaign to highlight local options

Food imports CONCERNS: Govt says 40% of bill could be substituted

Food imports CONCERNS: imported fod cheaper than locally produced

Food imports CONCERNS: J_O_import bill greater than food export

Food imports CONCERNS: JAMAICA only see decline in import bill if restructure the sector

Food imports CONCERNS: MAnchioneal food expensive after strom

Food imports CONCERNS: nations to gain food security by buying local

Food imports CONCERNS: Roger Agro parks to take care of food import concerns

Food imports CONCERNS: Roger importing potato that we can grow

Food imports CONCERNS: roger noted hotel only 30% and thus import high

Food imports CONCERNS: Roger we import 100% red peas this to stop

Food imports CONCERNS: TUFTON blaimg other govt for import

Food imports CONCERNS: TUFTON food import worrying

Food imports CONCERNS: Tufton Jamaican farmer solution to imports

Food imports CONCERNS: TUFTON liberalization and increased food import

Food imports CONCERNS: TUFTON our major staples are imported

Food imports CONCERNS: why Jamaicans have foreign taste

Food imports CONCERNS: WISYNCO import leads to lack of afordability after hurricane

Food imports CONCERNS: WISYNCO why we will have more imports

FOOD SECURITY CONCERNS:

Food security CONCERNS: 2004 livestock and fish enforceable by law

Food security CONCERNS: 5 years for stealing crops

Food security CONCERNS: 7 years for stealing cattle

Food security CONCERNS: ACDI cant get older farmers see farming as BUSINESS

Food security CONCERNS: ACDI data capacity interpretation

Food security CONCERNS: ACDI govt funding insufficient

Food security CONCERNS: ACDI govt partners lack some capacity

Food security CONCERNS: ACDI nature of projects cant see adaptation

Food security CONCERNS: ACDI not in urban space

Food security CONCERNS: ACDI R&D weak

Food security CONCERNS: ACDI_ needs more collaboration in R&D

Food security CONCERNS: ACDI_constraints in collaboration

Food security CONCERNS: ACDI_constraints in working together

Food security CONCERNS: ADIS ABBA meeting SIDS focus on Africa not Caribbean

Food security CONCERNS: after hazard food prices hike

Food security CONCERNS: after hurricanes some foods not available

Food security CONCERNS: Agricultural Produce ACT vs Praedial Larceny ACT

Food security CONCERNS: cant fight praedial larceny cause its food

Food security CONCERNS: cant get older farmers see farming as BUSINESS

Food security CONCERNS: CARIBBEAN - jagdeo on Caribbean FNS plan

Food security CONCERNS: CARIBBEAN - Jagdeo on Jagdeo initiative critical

Food security CONCERNS: CARIBBEAN - Tufton on Haiti riots

Food security CONCERNS: CARIBBEAN cost attached to praedial larceny

Food security CONCERNS: CARIBBEAN farming seen as slavery

Food security CONCERNS: CARIBBEAN focus on availability and access

Food security CONCERNS: CARIBBEAN food insecurity widespread in 5 countries

Food security CONCERNS: CARIBBEAN Jagdeo Iniative recognizes risk management

Food security CONCERNS: CARIBBEAN LaRocque post harvest losses 40-50%

Food security CONCERNS: CARIBBEAN only time speak to food security is when there is a disaster

Food security CONCERNS: CARIBBEAN praedial larceny

Food security CONCERNS: CARIBBEAN praedial larceny definition

Food security CONCERNS: CARIBBEAN praedial larceny single impt threat

Food security CONCERNS: CARIBBEAN problems with getting loans for agri

Food security CONCERNS: CARIBBEAN rainfall dependence

Food security CONCERNS: CARICOMs goal to transform agri stymied

Food security CONCERNS: Cartoon image of food prices increasing 1970s

Food security CONCERNS: cattle definition and protection under law

Food security CONCERNS: Charity increases poverty

Food security CONCERNS: CLIP app to help with praedial larceny

Food security CONCERNS: D_C_disaster planning focuses on mitigating loss of lives NOT food security

Food security CONCERNS: D_C_farmers not happy with RADA

Food security CONCERNS: D_C_farmers not happy with RADA or govt

Food security CONCERNS: data capacity interpretation

Food security CONCERNS: s-g_o_ needs more coordination

Food security CONCERNS: dont know who to believe as still hungry

Food security CONCERNS: drastic rise in price

Food security CONCERNS: FAO evaluation of greenhouse performance

Food security CONCERNS: farm loans mainly from commercial banks and expensive

Food security CONCERNS: farmers don't cooperate even for praedial larceny

Food security CONCERNS: farmers dont do meat nor tin so need vegetable

Food security CONCERNS: farmers wont write receipt is political

Food security CONCERNS: focus on availability without nutrition misplaced ACADEMICIAN

Food security CONCERNS: food security efforts is a sham

Food security CONCERNS: gender small farm households JT females not usually identified

Food security CONCERNS: Govt agencies tend not to work for the good of the people

Food security CONCERNS: Govt cannot subsidize food

Food security CONCERNS: govt funding insufficient

Food security CONCERNS: Govt making laws to deal with praedial larceny

Food security CONCERNS: Govt not serious about FNS 1:500 RADA extension officers

Food security CONCERNS: Govt not serious about FNS agri edu weak

Food security CONCERNS: Govt not serious about FNS milk and egg not in school program

Food security CONCERNS: Govt not serious about FNS when not investing in cassava

Food security CONCERNS: Govt not serious about FNS when youth not engaged

Food security CONCERNS: Govt to look into planting corn

Food security CONCERNS: H A grenada solution

Food security CONCERNS: H A praedial larceny is cultural problem

Food security CONCERNS: H_A_farmers had no disaster fund

Food security CONCERNS: H_A_lack of data

Food security CONCERNS: H_A_not consulted on food security plan

Food security CONCERNS: historically crops to meet domestic needs alien to Jamaica

Food security CONCERNS: housing development as greatest threat to FNS in Jamaica

Food security CONCERNS: how to scale up projects

food security concerns: hurricane and severe weather affect food security

Food security CONCERNS: hurricane diet without the hurricane

Food security CONCERNS: hurricane prices TT

Food security CONCERNS: hurricane Sandy's impact on banana

Food security CONCERNS: IICA food security as nutrition security

Food security CONCERNS: IICA we have access but not nutritious

Food security CONCERNS: Incompatible timeframe for Project n R&D

Food security CONCERNS: increase in number of small farms in Jamaica

Food security CONCERNS: J_O_food security more important than medals govt advisor

Food security CONCERNS: J_O_food security not govt priority govt advisor

Food security CONCERNS: J_O_govt needs to subsidise farmers so we can eat what we grow

Food security CONCERNS: J_O_lack of R&D to feed self

Food security CONCERNS: J_O_lament on lack of R&D to feed self

Food security CONCERNS: Jagdeo on edu for rural children TT is URBAN

Food security CONCERNS: Jagdeo on need political will to deal with food security

Food security CONCERNS: JAMAICA drought in 2013 impact food imports

Food security CONCERNS: Jamaica FAO greenhouse study

Food security CONCERNS: JT backyard gardening not food security

Food security CONCERNS: JT farmers not doing organic farming

Food security CONCERNS: JT govt funding insufficient

Food security CONCERNS: JT greenhouse too expensive

Food security CONCERNS: JT praedial larceny

Food security CONCERNS: killing our roots through imports

Food security CONCERNS: L_H lack of govt support and RADA

Food security CONCERNS: L_H lack of jobs even with education

Food security CONCERNS: L_H lack of land security

Food security CONCERNS: L_H_farmers not happy with RADA

Food security CONCERNS: lack of donor coordination

Food security CONCERNS: local food not cheap thus not readily accessible

Food security CONCERNS: Long bay have no land so do fishing

Food security CONCERNS: long bay no land and water for food security

Food security CONCERNS: Manchionale depend on corner shop

Food security CONCERNS: Manchioneal at the shelter

Food security CONCERNS: Manchioneal dont know term food security

Food security CONCERNS: MAnchioneal food assistance never enough

Food security CONCERNS: Manchioneal no land

Food security CONCERNS: Minister doesnt think larceny is in his portfolio

Food security CONCERNS: MOAF approach to praedial larceny 1

Food security CONCERNS: MOAF approach to praedial larceny 2

Food security CONCERNS: MOAF approach to praedial larceny 3 social capital

Food security CONCERNS: MOAF approach to praedial larceny 4

Food security CONCERNS: MOAF approach to praedial larceny 5

Food security CONCERNS: MOAF approach to praedial larceny 6 receipt book

Food security CONCERNS: MOAF approach to praedial larceny 7

Food security CONCERNS: MP saying Lack of Extension officers over the years

Food security CONCERNS: Mr Wd farm size not viable

Food security CONCERNS: Mr Wd farmers cant get loans at PC bank

Food security CONCERNS: Mr Wd farmers cant read to make record

Food security CONCERNS: Mr Wd laws needed to accommodate insurance

Food security CONCERNS: Mr Wd need a regulator to collect insurance money

Food security CONCERNS: Mr Wd one man unit

Food security CONCERNS: Mr Wd farmers not keeping data to help insurance

Food security CONCERNS: Mr W farmers cant supply Grace after hurricane

Food security concerns: Mr. W Recovery is agriculture and not good at recovery in ODPEM

Food security CONCERNS: Mrs B communities not a part of agro park so no help

Food security CONCERNS: need for R&D to help food security

Food security CONCERNS: need training and seeds simultaneously

Food security CONCERNS: ngo_ACDI_food_security_concerns

Food security CONCERNS: no agricultural economy program at universities

Food security CONCERNS: no clear identifiable market

Food security CONCERNS: no space for backyard doing bucket farming

Food security CONCERNS: not just availability but quality of food needed

Food security CONCERNS: nutrition and diet change needed to be food secure

Food security CONCERNS: ODPEMs view on natural disaster will threaten food security

Food security CONCERNS: one in every 4 Caribbean person lack nutrtition

Food security CONCERNS: payment arrnagements for small farmers

Food security CONCERNS: people dont mind you stealing some crops

Food security CONCERNS: PIOJ didnt get support from Health

Food security CONCERNS: praedial larceny's early definition in JAM

Food security CONCERNS: praedial larceny in TT

Food security CONCERNS: Praedial larceny is a business

Food security CONCERNS: praedial larceny unit set up in 2015

Food security CONCERNS: praedial laws strengthened but people say it's harsh

Food security CONCERNS: problem connecting the technology and help to the people

Food security CONCERNS: problem with the cattle law

Food security CONCERNS: Prospect MP 2008 getting farm road in 18 years

Food security CONCERNS: PYLES et al lack of dignity in food supply

Food security CONCERNS: PYLES et al relief food felt degrading

Food security CONCERNS: r_b_m_m_a_government_policies_favor_western_Jamaica

Food security CONCERNS: r_b_m_m_a_lack_of_data_to_drive_decisions

Food security CONCERNS: r_b_m_o_food_security_concerns_PROJECT_CYCLE

Food security CONCERNS: Red Cross do not give to shelters

Food security CONCERNS: Red Cross take money instead of food donation

Food security CONCERNS: Red Cross works with established groups

Food security CONCERNS: Relief agencies dont have food before hurricane season starts

Food security CONCERNS: response to set up of praedial larceny unit

Food security CONCERNS: S R tight fiscal space

Food security CONCERNS: s_g_o_food_security_concerns

Food security CONCERNS: scallion famers and Army beet

Food security CONCERNS: scarcity of food and migration

Food security CONCERNS: shipment contained dead rodents had to be confiscated

Food security CONCERNS: small farm households JT easily impacted by shifts

Food security CONCERNS: small farm households JT men 41 to 54 age

Food security CONCERNS: small farm households JT women 30% of farming

Food security CONCERNS: small farms cannot get loans and insurance

Food security CONCERNS: solution is to mainstream CC into agriculture

Food security CONCERNS: ST Thomas farmers asking for resistant crop and GMO

Food security CONCERNS: St thomas govt funding insufficient

Food security CONCERNS: St Thomas we are not on priority list for food

Food security CONCERNS: ST_Thomas_w_y_community_group_not_seeing_extension

Food security CONCERNS: technicians view on cassava and Tufton

Food security CONCERNS: the needs assessment form is inadequate

Food security CONCERNS: Tufton 20 years of inactivity

Food security CONCERNS: TUFTON cant blame weather alone for agri decline

Food security CONCERNS: TUFTON cassava as substitute for rice and wheat

Food security CONCERNS: TUFTON countries worldwide taking food security measures

Food security CONCERNS: TUFTON farmer registration not for taxation but planning

Food security CONCERNS: Tufton former govt failed to prepare farmers

Food security CONCERNS: Tufton GRAPH

Food security CONCERNS: Tufton graph of hurricane's impact on GDP

Food security CONCERNS: TUFTON greenhouses uncoordinated effort

Food security CONCERNS: TUFTON impact of hurricane on agriculture

Food security CONCERNS: Tufton list hurricane among others

Food security CONCERNS: Tufton profile of typical farmer

Food security CONCERNS: undermining other cultural ways of eating

Food security CONCERNS: waste to set up praedial larceny unit says citizen

Food security CONCERNS: We dont have resources to import or increase production in short run

Food security CONCERNS: We have no food reserves so after hurricane we are in trouble

Food security CONCERNS: We store bananas on trees - no food storage facility

Food security CONCERNS: weakness in law to implement and enforce

Food security CONCERNS: why Jamaicans have foreign taste

Food security CONCERNS: WISYNCO affordability and nutrient is food security concern

Food security CONCERNS: WISYNCO children nutrition sodas

Food security CONCERNS: WISYNCO food security is leadership security

Food security CONCERNS: wont join the PMO for political reasons

Food security CONCERNS:JT farming too expensive

Food security CONCERNS:Long bay fisherfolk fish pots destroyed

Food security CONCERNS:Long bay ppl go hungry

Food security CONCERNS:Manchioneal praedial larceny

FOOD SECURITY DEFINITION

Food security definition FAO: adequate supply at household level TT

Food security definition FAO: affordable food TT

Food security definition FAO: CARIBBEAN noting stabilization is key for disaster and FS

Food security definition FAO: CARIBBEAN using FAO definition like stacy rose said

Food security definition FAO: food safety in the market

Food security definition FAO: food security is yam not rice

Food security definition FAO: GRACE to feed country

Food security definition FAO: IICA uses FAO definition plus nutrition

Food security definition FAO: J_O_local production=food security MoAF

Food security definition FAO: Govt FNS policy to define food security

Food security definition FAO: JT eat what we grow

Food security definition FAO: MoAF using FAO plus 5th pillar

Food security definition FAO: nutritious food TT

Food security definition FAO: proper food preparation

Food security definition FAO: PYLES et al food security is having adequate food

Food security definition FAO: S R Jamaica uses FAO definition

Food security definition FAO: TUFTON JLP wants food access not just cheap food

Food security definition FAO: WISYNCO food security and nutrition

Food security definition LIVELIHOOD: ACDI_economic stability

Food security definition LIVELIHOOD: animals get best care so they provide good meat

Food security definition LIVELIHOOD: Mr. W

Food security definition LIVELIHOOD: PIOJ

Food security definition LIVELIHOOD: surplus and quality

Food security definition LIVELIHOOD: technology driven agri

Food security definition LIVELIHOOD: TT_cbo_Food security is economic security

Food security definition LIVELIHOOD: TT_cbo_food_ security_value_added

Food security definition LIVELIHOOD: UNDP livelihood security

Food security definition PROCESSES: farming practices

Food security definition PROCESSES: food security is food planning

Food security definition PROCESSES: food security is holistic

Food security definition PROCESSES: getting the market so i can buy

Food security definition PROCESSES: H A food security is distribution

Food security definition PROCESSES: H_A_definition of food security

Food security definition PROCESSES: legislation to ensure food

Food security definition PROCESSES: local nutritious food should be protected and that's FNS

Food security definition PROCESSES: s-g_o_m_m_a_food_security_is_land_security

Food security definition PROCESSES: seeds

Food security definition PROCESSES: social contract

Food security definition PROCESSES: soil preservation

Food security definition PROCESSES: theft management

Food security definition PROCESSES: transportation

Food security definition PROCESSES: water suply and access

Food security definition PROCESSES: water supply

Food security definition PROCESSES: WISYNCO food security is leadership security

Food security definition PROCESSES:ACDI_leadership

Food security definition PROCESSES:food storage

Food security definition SOVEREIGNTY:

r_b_m_m_a_food_security_wasn't_original_focus

Food security definition SOVEREIGNTY: food sovereignty

Food security definition SOVEREIGNTY: good physical environment

Food security definition SOVEREIGNTY: healthy environment TT

Food security definition SOVEREIGNTY: JT sustainability planning

Food security definition SOVEREIGNTY: JT sustainable food security

Food security definition SOVEREIGNTY: r_b_m_m_a_food_soverignty

Food security definition SOVEREIGNTY: TT_com_food_security=racial pride

Food security definition SOVEREIGNTY: TT_com_social_enterprise_food_security

Food security definition SOVEREIGNTY::

s_g_o_m_m_a_food_security_cultural_good

Food security Process:

Food security Process: Agricultural education is most important step

Food security Process: Food security is more than producing food STANDBERRY

Food security Process: Govt not serious about FNS Agricultural education is most

important step

Food security Process: Jagdeo on complexity of food security

Food security Process: r_b_m_m_a_food_security_process

Food security Process: s_g_o_m_m_a_food_security_process

Food security Process: TT_cbo_food_security_PROCESS

Food security Process: TT_com_self_reliance

Food security Process:ACDI_training_of trainers

FOOD SECURITY VIEWS GENERAL:

FOOD SECURITY VIEWS GENERAL: food is priority in a storm

FOOD SECURITY VIEWS GENERAL: backyard garden as solution

FOOD SECURITY VIEWS GENERAL: CARIBBEAN cannot take ad hoc approach given CC

FOOD SECURITY VIEWS GENERAL: CARIBBEAN context for regional fns plan

FOOD SECURITY VIEWS GENERAL: CARIBBEAN Guyana 'grow more food" 1

FOOD SECURITY VIEWS GENERAL: CARIBBEAN LaRocque food security needs R&D

FOOD SECURITY VIEWS GENERAL: CARIBBEAN should invest in cassava

FOOD SECURITY VIEWS GENERAL: CARIBBEAN small farmers dont invest in technology

FOOD SECURITY VIEWS GENERAL: CARIBBEAN value of agri to the region

FOOD SECURITY VIEWS GENERAL: differences in food prices across island

FOOD SECURITY VIEWS GENERAL: Doman many interests to cater to is

problematic

FOOD SECURITY VIEWS GENERAL: food is priority in a storm

FOOD SECURITY VIEWS GENERAL: GMO

FOOD SECURITY VIEWS GENERAL: government is always inadequate

FOOD SECURITY VIEWS GENERAL: Govt to enact food security law

FOOD SECURITY VIEWS GENERAL: GRACE dried conveninet food for disaster

FOOD SECURITY VIEWS GENERAL: GRAPH willing to pay for insurance than loans

FOOD SECURITY VIEWS GENERAL: H_A_choose community less likely to fail

FOOD SECURITY VIEWS GENERAL: H_A_farmers didnt want to rely on govt

FOOD SECURITY VIEWS GENERAL: H_A_farmers do not get govt assistance directly

FOOD SECURITY VIEWS GENERAL: IICA's collaboration model and food security

FOOD SECURITY VIEWS GENERAL: IICA obesity concerns in children

FOOD SECURITY VIEWS GENERAL: J_O agro park mess comment experts can learn from locals

FOOD SECURITY VIEWS GENERAL: J_O agro park mess comment of farm being colonization

FOOD SECURITY VIEWS GENERAL: J_O agro park mess comment on why park not working

FOOD SECURITY VIEWS GENERAL: J_O agro park mess comment technical langauge

FOOD SECURITY VIEWS GENERAL: J_O_farmers need subsidy like US farmers

FOOD SECURITY VIEWS GENERAL: JT food is priority in a storm

FOOD SECURITY VIEWS GENERAL: JT water then food is priority in a storm

FOOD SECURITY VIEWS GENERAL: Kingston not zoned for agri

FOOD SECURITY VIEWS GENERAL: Kingston propoer doesnt do much agriculture

FOOD SECURITY VIEWS GENERAL: L_H house is priority

FOOD SECURITY VIEWS GENERAL: L_Hfood is priority in a storm

FOOD SECURITY VIEWS GENERAL: LaRocque need to move from machete to technology

FOOD SECURITY VIEWS GENERAL: local agriculture is the solution

FOOD SECURITY VIEWS GENERAL: Manchioneal food is priority in a storm

FOOD SECURITY VIEWS GENERAL: MAnchioneal house is priority in a storm

FOOD SECURITY VIEWS GENERAL: MoAF dont know about food bank

FOOD SECURITY VIEWS GENERAL: MoAF national organic farming

FOOD SECURITY VIEWS GENERAL: MoAF view on GMO

FOOD SECURITY VIEWS GENERAL: Mrs B what the policy is about

FOOD SECURITY VIEWS GENERAL: need self- reliance at community level

FOOD SECURITY VIEWS GENERAL: paradox thinking there's cooperation spirit in Caribbean

FOOD SECURITY VIEWS GENERAL: PIOJ food security linked to livelihood

FOOD SECURITY VIEWS GENERAL: possibilities for urban ag

FOOD SECURITY VIEWS GENERAL: profile of small farm JT

FOOD SECURITY VIEWS GENERAL: PYLES et al access to food =low income

FOOD SECURITY VIEWS GENERAL: PYLES et al cars and money of little help when no food

FOOD SECURITY VIEWS GENERAL: r_b_m_o_Jamaican_leadership_in_region's_food_security

FOOD SECURITY VIEWS GENERAL: rather than credit farmers want insurance

FOOD SECURITY VIEWS GENERAL: Reason_Jamaica_leads_food_security_

FOOD SECURITY VIEWS GENERAL: regional_govts_not_serious_about_food_security

FOOD SECURITY VIEWS GENERAL: Roger growth of agri compared to economy overall

FOOD SECURITY VIEWS GENERAL: Roger low sskilled workers

FOOD SECURITY VIEWS GENERAL: Roger nearly 30,000 fisherfolk

FOOD SECURITY VIEWS GENERAL: Roger on the FNP

FOOD SECURITY VIEWS GENERAL: Roger when bauxite collapsed agri grew

FOOD SECURITY VIEWS GENERAL: s-g_o_m_m a role of technician

FOOD SECURITY VIEWS GENERAL: s-g_o_m_m role of technician

FOOD SECURITY VIEWS GENERAL: s-g_o_m_m_a_role_of-technician

FOOD SECURITY VIEWS GENERAL: S R economic crisis pushed the policy

FOOD SECURITY VIEWS GENERAL: S R govt's definition vs householders

FOOD SECURITY VIEWS GENERAL: S R people buying into food security

FOOD SECURITY VIEWS GENERAL: S R think of market first not disaster

resilience for crop types

FOOD SECURITY VIEWS GENERAL: s_g-o_m_m_a_food_security_value_added

FOOD SECURITY VIEWS GENERAL: s_g_o_m_M_a cassava

FOOD SECURITY VIEWS GENERAL: s_g_o_m_M_a_cassava

FOOD SECURITY VIEWS GENERAL:

s_g_o_m_m_a_food_security_needs_mindset_change_education

FOOD SECURITY VIEWS GENERAL:

s_g_o_m_m_a_govt_not_serious_about_food_security

FOOD SECURITY VIEWS GENERAL: small farmers tend to want to access credit to pay for school not farm improvement

FOOD SECURITY VIEWS GENERAL: St thomas WOMAN needs training to deal with breeze on farm

FOOD SECURITY VIEWS GENERAL: technician views not valued

FOOD SECURITY VIEWS GENERAL: Tufton AGRO parks gloabl view vs Jamaican context

FOOD SECURITY VIEWS GENERAL: Tufton AGRO Parks was a part of IMF deal

FOOD SECURITY VIEWS GENERAL: TUFTON hot peppers have competitive advantage

FOOD SECURITY VIEWS GENERAL: Vision2030 captured it

FOOD SECURITY VIEWS GENERAL: vision2030 mainstreaming food security

FOOD SECURITY VIEWS GENERAL: water then food is priority in a storm

FOOD SECURITY VIEWS GENERAL: WISYNCO leaders only interested in

getting stuff

FOOD SECURITY VIEWS GENERAL: WISYNCO We are committed to Jamaica

FOOD SECURITY VIEWS GENERAL: WORLD cassava good for climate change

FOOD SECURITY VIEWS GENERAL: youth not interested in agri

Gleaner articles

J_O_church best mobiliser to grow food

Jam Media

Journal article: Caribbean

journal article: general

Journal article: Jamaica

JT leadership in community

JT trauma from hurricane

JT will sacrifice for the community

INDIVIDUAL QUOTES:

IQMaas Roy: Let me tell you the ..

IQMr W many agencies going into communities on their own

IQMr. T wind breaker to protect crops

IQMr. W - only 30 pages on recovery of a 480 pages plan

IQMr. W National Reconstruction vs Disaster Coordinator

IQMr. W nothing in the plan on food security

IQMr. W ODPEM doesn't do much with disaster response

IQMr. W some didn't see Sandy as big because got back water quickly

NEGATIVE SOCIAL CAPITAL:

Negative social capital: ACDI leadership capacity low

Negative social capital: ACDI literacy level low

Negative social capital: ACDI_a_lack_of_trust_scientist

Negative social capital: ADRA only helps their members

Negative social capital: can't trust some outside people TT

Negative social capital: CARIBBEAN youth risk life to eat food

Negative social capital: community group culture

Negative social capital: corner store stealing and tradition of not working

Negative social capital: D_C_social capital NOT associated with improvement in SOL

Negative social capital: dons role to provide food

Negative social capital: H_A_community lack of accounting structure

Negative social capital: H_A_community_group_weak

Negative social capital: H_A_coordination_concerns

Negative social capital: J_O agro park mess comment leadership capacity low

Negative social capital: Jr minister AZAN calls for severing of hand of praedial larcenist

Negative social capital: JT culture not passed on

Negative social capital: JT lack of trust

Negative social capital: JT lack of understanding

Negative social capital: JT training needed accountability

Negative social capital: JT youth leave for better life

Negative social capital: L_H praedial larceny

Negative social capital: lack of group strengthening activities

Negative social capital: Long bay weak comm

Negative social capital: Long bay weak comm for fisherfolk

Negative social capital: Manchioneal ADRA only helps their members

Negative social capital: MAnchioneal need expert

Negative social capital: Manchioneal people can't help self

Negative social capital: Manchioneal people selfish

Negative social capital: Manchioneal praedial larceny

Negative social capital: Manchioneal weak community disaster group

Negative social capital: Manchioneal weak community for fisherfolk

Negative social capital: Portland_com_w_m_a_water_storage_concerns_

Negative social capital: Portland_w_m_a_has_social_capital_but_not_using_it

Negative social capital: praedial larceny

Negative social capital: praedial larceny in TT

Negative social capital: r_b_m_m_a_farmers_work_independently

Negative social capital: s_g_o_m-m_a_cooperatives-fail

Negative social capital: s_g_o_m_m_a_garrison_

Negative social capital: s_g_o_m_m_a_lack_of_trust_

Negative social capital: s_g_o_m_m_a_self_reliance

Negative social capital: s_g_o_m_m_a_thoughts_on_GRACE_1

Negative social capital: St Thomas coordinator people dont work together

Negative social capital: St thomas male why barter wont work

Negative social capital: St thomas people backward in financing

Negative social capital: St. Thomas weak community group

Negative social capital: St. Thomas group seeing coordinator first time

Negative social capital: St_Thomas_w_m_a_Red_Cross_helps_not_RADA

Negative social capital: stigma attached to TT

Negative social capital: TT_com_distrust

Negative social capital: TT_com_negative-social_capital_building

Negative social capital: TT_com_violence

Negative social capital: TT_garrison

Negative social capital: UNDP govt partner NWC would not cooperate

Negative social capital: UNDP weak structure in communities

Negative social capital:ACDI discontinuation of project culture

Negative social capital:ACDI lack of structure

Negative social capital:ACDI management capacity low

Negative social capital:JT cooperatives fail

Negative social capital:JT lack of trust

Negative social capital:JT lazy people

NEWS- NEWSPAPER

Newspaper - The Jamaica Observer

newspaper: The Gleaner

NGO: ACDI

NGO: CARDI

NGO: HA

ngo_ACDI_food_security_indices

ORDINARY PEOPLE ARE PLANNERS TOO

LACK OF PLANNING THUS SPRAWL

PORTLAND_COM_W_M_A_GROUP_NEEDS_LEADER

POSITIVE social capital : JT community attachment

Positive social capital:

Positive social capital: D_C_extent of social capital building

Positive social capital: H_A_building social capital

Positive social capital: H_A_farmers need the structure to get help

Positive social capital: IICA partnership with FAO

Positive social capital: IICA working with communities and NGO and govt

Positive social capital: JT develop skills

Positive social capital: JT diaspora funding

Positive Social capital: JT find a different way to present issue

Positive social capital: JT love for place

Positive social capital: JT love to help each other

Positive social capital: JT partnership bridging social capital

Positive social capital: JT training citizens in disaster mgt

Positive social capital: JT training of youth

Positive social capital: JT volunteerism

Positive social capital: JT why I write projects

Positive social capital: L_H community group to help each other

Positive social capital: PYLES et all insight into social capital building during disasters

Positive social capital: r_b_m_m_a_role_of_leadership_community_and_projects

Positive social capital: TT_cbo_bridging_s_c_

Positive social capital: TT_church_society_relationship_bridging_s_c

Positive social capital: TT_com_black_entrepreneur

Positive social capital:ACDI building social capital in communities

Positive social capital:H_A building social capital in long bay

Positive social capital:JT social bonding when leave Jamaica

PROPOSED STRATEGIES 4FS:

PROPOSED STRATEGIES 4FS: J_O Agro 21 and Agro 48

PROPOSED STRATEGIES 4FS: J_O agro farm mess comment on way forward

PROPOSED STRATEGIES 4FS: J_O_cant live without imports like rice GOVT

PROPOSED STRATEGIES 4FS: St Thomas woman say to barter

PYLES et al what food resulted in thirst etc

r_b_m_m_a_community_focus_needed_for_food_security

RECOMMENDING THOUGHTS:

Recommending thoughts: Join up coordination

Recommending thoughts: Backyard garden's contribution to food security study needed

Recommending thoughts: concluding thoughts

Recommending thoughts: D_C_recommendations

Recommending thoughts: develop livestock in small farming

Recommending thoughts: legislation to support retail banking loans

Recommending thoughts: need insight into the Jamaican taste bud

Recommending thoughts: r_b_recommendation 3

Recommending thoughts: small farm transitioning

Recommending thoughts: study to be done on crime and natural disasters and food security

Recommending thoughts: way forward social partnership for food security

Recommending thoughts:Success of JAREECH program

REGIONAL PERSPECTIVE

ROLE OF GOVT & INSTNS:

ROLE OF GOVT & INSTNS: ACDI and value chain

ROLE OF GOVT & INSTNS: ACDI core mechanism for food security

ROLE OF GOVT & INSTNS: ACDI training of RADA

ROLE OF GOVT & INSTNS: ACDI_adaptation and agriculture

ROLE OF GOVT & INSTNS: ACDI_farmer knowledge diffusion and food security

ROLE OF GOVT & INSTNS: ACDI_FSS_addressing value chain problems

ROLE OF GOVT & INSTNS: ACDI_FSS_model

ROLE OF GOVT & INSTNS: ACDI_USAID role shifted to CC

ROLE OF GOVT & INSTNS: AIR's mandate

ROLE OF GOVT & INSTNS: CARDI's mandate

ROLE OF GOVT & INSTNS: D_C_IPCC speaks to govt importance

ROLE OF GOVT & INSTNS: Doman goverment sees marketing as resilience

ROLE OF GOVT & INSTNS: Doman governemnt's role to set environment

ROLE OF GOVT & INSTNS: Doman some who started agro parks project cant finish

ROLE OF GOVT & INSTNS: Doman USAID changed to climate focus so project changed

ROLE OF GOVT & INSTNS: IICA supports OAS govts agriculture

ROLE OF GOVT & INSTNS: J_O_FAO $8m food security project in Jamaica

ROLE OF GOVT & INSTNS: JT ngos and leadership

ROLE OF GOVT & INSTNS: MAnchioneal ADRA gives zinc

ROLE OF GOVT & INSTNS: MoAF role in food security says Minister

ROLE OF GOVT & INSTNS: Mr Wedderburn govt looking into insurance

ROLE OF GOVT & INSTNS: ngo_ACDI_mission

ROLE OF GOVT & INSTNS: ODPEM takes a while to help

ROLE OF GOVT & INSTNS: PIOJ

ROLE OF GOVT & INSTNS: Red Cross

ROLE OF GOVT & INSTNS: Red cross goes by need NOT loss and consequences

ROLE OF GOVT & INSTNS: Red Cross goes by vulnerability not worst hit

ROLE OF GOVT & INSTNS: S R food security policy comprehensive

ROLE OF GOVT & INSTNS: S R why the policy doesnt speak to resilience much

ROLE OF GOVT & INSTNS: Tufton crucial role of Jamaican farmers - CURRY

ROLE OF GOVT & INSTNS: TUFTON IICA and greenhouse technology training

ROLE OF GOVT & INSTNS: TUFTON IICA and veterniary services improved

ROLE OF GOVT & INSTNS: TUFTON RADA to train in fertilizer use

ROLE OF GOVT & INSTNS: TUFTON role of R&D Spanish govt gave money

ROLE OF GOVT & INSTNS: UNDP GEF small grants

ROLE OF GOVT & INSTNS: UNDP working with communities closely

ROLE OF GOVT & INSTNS: USAID

ROLE OF GOVT & INSTNS: USAID impact on policy making

ROLE OF GOVT & INSTNS: USAID role

ROLE OF GOVT & INSTNS: USAID role shifted to CC

ROLE OF GOVT & INSTNS:H_A mandate

s_g_o_m_m a rejecting cassava

s_g_o_m_m_a_rejecting_cassava

SIDS 52 STATES

SIMILAR TO AIR'S WORK

SITE OF RESILIENCE:

Site of Resilience: 1970s contribution to agriculture of GDP more than today

Site of Resilience: 1970s program to boost agriculture

Site of Resilience: 30 years ago Jamaica used to grow rice

Site of Resilience: cassava was used by indigenous Jamaicans

Site of Resilience: D_C_site of resilience

Site of Resilience: D_C_small_farmers_sites of resilience

Site of Resilience: going back to learn from older people

Site of Resilience: J_O_site of resilience

Site of Resilience: JT call upon our roots

Site of Resilience: JT farming was happening then

Site of Resilience: JT used to farm together

Site of Resilience: Manchioneal used to barter

Site of Resilience: Manchioneal used to export

Site of Resilience: r_b_m_m_a_sites_of_resilience

Site of Resilience: s_g-o_m_m_a_site_of_resilience

Site of Resilience: s_g_m_m_m_a_role_of_R&D_in_agriculture

Site of Resilience: St thomas call upon our roots

SITE OF VULNERABILITY:

Site of Vulnerability: abbatoir system to be looked into

Site of Vulnerability: ACDI_used to produce onions now importing

Site of Vulnerability: bashing the group for the individual

Site of Vulnerability: CARIBBEAN wasn't do dependent on food imports

Site of Vulnerability: children used to have to eat what you gave them

Site of Vulnerability: Had CFNI but no more

Site of Vulnerability: J_O_site of vulnerability

Site of Vulnerability: J_O_we import what we can produce

Site of Vulnerability: JT culture has changed dont want to work together

Site of Vulnerability: JT generation got lazy

Site of Vulnerability: JT lack of trust more individuality

Site of Vulnerability: JT no longer prepared for storms

Site of Vulnerability: JT planting culture not passed on

Site of Vulnerability: lawn culture not planting food

Site of Vulnerability: Livestock dwindle over the years

Site of Vulnerability: Manchioneal can't barter

Site of Vulnerability: Manchioneal go to fishing

Site of Vulnerability: Manchioneal parents gone abroad

Site of Vulnerability: neglect agri to get cheap imports

Site of Vulnerability: r_b_m_m_a_sites_of_vulnerability

Site of Vulnerability: s_g_o_m_m_a_site_of_vulnerability

Site of Vulnerability: s_g_o_m_m_a_views_on_UWI_Institution

Site of Vulnerability: sgm taste buds changing to demand foreign goods

Site of Vulnerability: St thomas dont remember how to survive didnt pass it on

Site of Vulnerability: stop smoking meat

Site of Vulnerability: TUFTON dairy industry suffered

Site of Vulnerability: TUFTON liberalization and food import decision by govt

Site of Vulnerability: undermining our cultural food

Site of Vulnerability: use to have creng creng

Site of Vulnerability: used to do pone instead of fast food

Site of Vulnerability: used to make drink not buy soda

Site of Vulnerability:JT farmers using chemicals not organic

Site of Vulnerability:JT people not farming and sharing

social capital POSITIVE: culture in TT changing and people will come

social capital POSITIVE: JT bridging social capital with local govt

social capital POSITIVE: JT community annual general meeting

social capital POSITIVE: JT community attachment

social capital POSITIVE: people coming to TT as culture changes

social capital: need a person like doc TT

SOCIAL CONNECTIONS:

Social connections: JT is who you know

Social connections: ST Thomas farmers is who you know

Social connections: ACDI_working with RADA and PMOs

Social connections: church and others help self first PRE IMPACT CONDITION REMAINS

Social connections: Coordination needs enabling environment for food security

Social connections: crime destroys social capital

Social connections: differential knowledge helps some community know more than

others

Social connections: distrust hinders social capital

Social connections: Doman soft skills needed

Social connections: FAO_project_scaling_up

Social connections: farmers saying WILDERNESS experience

Social connections: farmers were skeptical at first of fss

Social connections: forming crop production group to deal with food security

Social connections: government trust is betrayed if inefficient

Social connections: government trust linked to social trust

Social connections: Govt, Colombia and academia on cassava

Social connections: greater network equals better assistance

Social connections: H_A in Long Bay strengthening comm

Social connections: H_A Long Bay elderly diabetic in shelter food need

Social connections: H_A_consulted with other agencies

Social connections: H_A_farmers and PC Bank

Social connections: H_A_listening to farmers and intervening

Social connections: hurricane is a peace tool

Social connections: Hurricane Katrina and govt trust

Social connections: hurricane katrina levels of trust influence expectations

Social connections: Hurricane Katrina peoples experience lower trust in govt

Social connections: Hurricane Katrina, the media and portray negative govt

Social connections: JT diaspora funding for breadfruit mix

Social connections: JT mixing up Red Cross and Salvation Army

Social connections: JT no real help from govt

Social connections: JT no real help from the church

Social connections: JT not much Food for the poor help

Social connections: JT not much Red Cross help

Social connections: L_H network with family and friends

Social connections: Lack of trust = lack of support for govt policies

Social connections: loss of social cohesion = alienation not building social capital

Social connections: Manchioneal Food for the poor weak

Social connections: Manchioneal govt response weak

Social connections: need to work together

Social connections: One's economic situation impacts trust levels

Social connections: Public trust in Jamaica especially of police is weak

Social connections: Red Cross with HA but shy away generally

Social connections: Red Cross with other agencies

Social connections: s_g_o_m_m_a_lack_of_bonding_s_c_in_Ministry

Social connections: soft skill versus hard science

Social connections: St Thomas farmers need a rep to talk to govt

Social connections: St thomas MALE no help from Red Cross

Social connections: trust is linked to who to blame so not only govt

Social connections: TT_com_MBA

Social connections: TT_com_social_capital-building

Social connections: TT_com_trust

Social connections: TT_INSTITUTION_church_trust

Social connections: TT_m_leader_ofrole_of_church

Social connections: TT_role_church_positive

Social connections: UNDP works with church and other groups

Social connections: UNDP works with community groups directly

Social connections: UNDP works with RADA and SDC

Social connections: use up the social network TT

Social connections: UWI and RADA collaborating

Social connections: violence reduce trust

Social connections: want the batter system

Social connections: WISYNCO showing workof church and food security

Social connections:ACDI informal connection with RADA

Social connections:ACDI informal NETWORK with RADA

Social connections:ACDI social capital building

Social connections:ACDI_building community capacity_army_worm

Social connections:ACDI_farmer to farmer diffuse knowledge Army Worm

SOCIAL CONSTRUCT:

Social Construct: J_O agro park mess comment farmers need self reliance

Social Construct: JT buidling community breadfruit festival

Social construct: JT call upon our roots

Social Construct: JT deliberately building community

Social Construct: JT elements of community success

Social Construct: JT need to build self reliance

Social Construct: JT No natural affinity to place

Social Construct: JT sustainability is community's mantra

Social Construct: JTplace importance

Social Construct: Positive social capital: TT_com_black_power

Social Construct: seeing community and life differenty

Social Construct: Sense of Place:

Social Construct: St Thomas need to build self reliance

Social Construct: ST_Thomas_w_y_community_group_needed

Social Construct: through the side market people will be lured into TT

Social Construct: Transforming how TT is seen

Social Construct: TT_cbo_food_security_was_not_on_agenda

Social Construct: TT_cbo_holistic community renewal

Social Construct: TT_cbo_m_o_Transformation from economic perspective

Social Construct: TT_cbo_place_importance

Social Construct: TT_cbo_social_construct

Social Construct: TT_com_identity

Social Construct: TT_com_not_sustainability_but_wealth_creation_model

Social Construct: TT_com_S_C

Social Construct: TT_com_transformation

Social Construct: TT_com_UNIA_changing_mindset

Social Construct: TT_m_leader_o_developing_place_attachment

Social Construct: TT_m_o_leader_Black_Power

Social Construct: TT_m_o_No natural affinity to place

Social Construct: TT_place_=_BRAND

Social Construct: TT_process_of_place_branding

Social Construct: TT_S_C_place_defined_people

Social Construct: TT_S_C_place_identity

updating the national recovery plan

WHO CaFAN farmers association in the Caribbean

Other codes for the Code Book

Symbol	meaning
Y	Young
m_a	Middle aged
e	Elderly; old
m	male
f	female
far	farmer
fisher	fisherfolk
n_far	Non-farmer
mg	manager
ngo	Non- Government Organizations
cbo	Community Based Organization
e_o	Economic organization

d	Donor agency
com	community
Man	Manchioneal
L_H	Leith Hall
L_B	Long Bay
TT	Trench Town
JT	Jeffrey Town
Pr	Prospect
c_s	civil servant
S_g_	Senior government official
r_b	Regional body

Appendix D

Background to Research Tools Proposed to be Employed in this Study

Introduction

Participatory approaches presuppose a firm commitment to the processes that help to ensure participation of community members in the research process. There is a belief that community members are the experts of their challenges as who experiences a challenge has the deepest knowledge and therefore become an integral component to the solutions needed. This one day workshop being proposed was designed to foreground community expertise and knowledge in the creation of the survey instruments and in every aspect of the research process. The process and the instruments designed were to reflect the everyday experiences of the community and not a generic, generalizable instrument agreed on by persons who were not sharing the experience of the communities. Differently positioned people tended to bring new knowledge and nuanced experience to enrich the understanding of the data gathered. Finally, the aim was to engage the community in the process of making sense of the data as a collective, therefore being more expansive in our understanding of the lived experiences as we begin to think collectively, work collectively and hopefully achieve stated goals collectively.

JOINT ELABORATION ONE DAY WORKSHOP

Source:- Introducing Participatory Approaches Methods and Tools

http://www.fao.org/docrep/006/AD424E/ad424e03.htm **accessed March 28, 2013**

A joint one day participatory workshop is a complex event, which needs careful planning in order to reach its objectives.

I will encourage participants to think of necessary steps in planning a workshop. I will ensure that the main steps are mentioned, and will add to them if necessary (see below):

- formulation of objectives
- identification of key-issues/key-questions
- explaining checklists
- decision on working step
- elaboration of a tentative workshop program.

I will then choose an example from the work of the community participants and let them assist in the plan for a workshop. I will support them in the process - especially in the formulation of objectives (purposes and outcomes).

Steps of Planning a Participatory Workshop

a. Forming a PRA/PLA team

- I need to identify a link person, community person to act as liaison between me and the community
- I will train my team in the PLA techniques to be utilized

b. Constructing a program for a workshop planning session

- This will mean regular visits to recruit participants who will assist in the planning session

* I am including a possible workshop program guide

c. Preparatory visit to the local people and their traditional representatives

- This is to sensitize them to my dissertation project

d. Listing the objectives of the workshop

- This will be the joint objectives arrived at with the participants

e. Forming key-questions and checklists

- Key questions for me would include:
- I do not yet know key questions that the community participants would have constructed

f. **Producing a detailed program for the workshop**

- This will be a collaborative effort with the communities

g. Distributing roles and responsibilities during the workshop

- Team leader, facilitator, note taker, link persons, visualizer, time-keeper

i. Preparing the logistics of the workshop

- Location, lunch and breaks, equipment needed, times to begin and end, name tags, how room will be organized, where PLA team will be scattered in the room, rapporteurs, where flip charts will be located in the room, etc

Possible Workshop Program Guide

I. Introduction to Workshop and to Objectives of the Dissertation Project

II. Problem Identification (plenary session)

small group work – *looking specifically at perceptions of food insecurity during active periods of drought and storms.* **Use Concept Mapping Technique**

*Critical (need to decide collaboratively on how to divide the participants for example by gender as food insecurity views may be gender-related. However, I will wait to hear the participants' views on how the small groups should be subdivided)

III. Discussion of Results (plenary session)

relating findings to project objectives

IV. In-depth analysis (S.W.O.T.)

small group work – *looking at specifically at coping strategies to disasters in general and to food insecurity as a result of climate risk – drought and storms* **Use Chrice Matrix Technique**

looking at the role of grassroots organizations and activities and on what hinders or promotes their effectiveness

V. Consensus Building and Closure (plenary session)

identifying which problems to work towards solving ensuring that the community and the project cooperate as partners.

identifying local institutions that may need to be involved

agreeing on working groups to link up with the project in order to address these problems

Equipment needed: markers, flip charts, index cards, thumb tacks, tape, digital recorder

Possible PLA tools to utilize, however, final decision will not be made until the collaborative workshop is finalized

Example for a newly created tool: Chrice Matrix (Source: Berg et al.)

This is not one of the classical PRA/PLA tools. It is a tool that has been created by the facilitators of a field team for supporting an analysis with a women's group. They combined the initial letters of their names (Cecilia Chimbala and Christiane Beck) to name the tool. **This example of a simple tool created when other tools were not suitable to the requirements shows that there is no need to fear walking onto new ground and making a tool on your own.**

Description The Chrice Matrix is an analytical tool for looking at previous efforts of problem-solving and drawing conclusions for future activities. It deepens awareness of

possible constraints for a project idea. The lessons learned from it should influence the planning of new projects, tackling the same problem. In addition, it provides a historical overview of the village/community.

Objectives · to get an overview of former efforts to solve a certain problem, thus, to get an overview of previous coping mechanisms and resilience strategies used by the communities to combat natural hazards

· to find out the reasons for the failure or success of previous efforts

-to see if these methods can be used to ensure food security during periods of active climate events

Facilitation 1. draw a matrix with three columns, preferably on a sheet of paper

2. in a dialogue, ask for previous efforts in tackling the problem to be discussed, those are then inserted in the left column of the matrix

3. then ask effort by effort (row by row) why they failed -do not be satisfied with simple explanations. Dig deep. These reasons are entered in the middle column

4. ask for the conclusions that are to be drawn from the reasons for failure (ask for each reason in turn "what would you do better next time?")

5. REPEAT the above 4 stages and look at why they succeeded and could these be success strategies be transferred to food security related hazards management

5. finally, these conclusions should be related to possible solutions/projects to be developed in a workshop - they can also help everyone involved to think of alternative solutions

SWOT Analysis

Description SWOT (Strengths, Weaknesses, Opportunities, Threats) is an effective tool for self-evaluation and assessing future potentials. In the context of complex situations, it helps to identify and extract those issues that have the strongest impact.

Objectives
· to provide an overview on strengths and weaknesses, which have shown up in the past to ensure food security during a period of active event
· to elaborate an assessment of future potentials to ensure food security during a period of active event – storms and drought
· to provide a basis for further analysis and planning

Key Questions
- what has been done well in the past to ensure food security during a storm and drought event
- where were the available competence, skills and knowledge (folk or scientific) successfully applied? In production? Access? The field? Preparation?
- what went wrong in the past when you were not food secure during a storm or drought
- which competence has been lacking or could not be applied successfully during the last event storm and drought?
- what can be learned for the future about your adaptation capabilities?
- which are good chances/opportunities in the future to ensure food security in an event of drought or storm?
- which obstacles will be faced in the future?

Facilitation

1. introduce SWOT and its' objectives, explaining that the name is an acronym with its' letters standing for **S**trengths, **W**eaknesses, **O**pportunities, **T**hreats
2. present the SWOT matrix and mention, that the left column refers to experiences and observations of the past, while the right one refers to the future - the upper part of the matrix represents positive and the lower one negative issues
3. come to a common understanding on the four terms
4. then start jointly to fill in the matrix - begin with the aspects revealed in the past (left column) - support participants by asking guiding questions
5. have a look at the strengths and ask: What are your advantages, what are your abilities, knowledge, expertise, experience, what do you do well, in what are you better than others...
6. then turn over to the weaknesses by asking: what have we done wrong/badly in the past, what could we improve, what should be avoided
7. ask for opportunities: what could be helpful, what are chances ahead, where could we jump in, which ongoing changes could be to our advantage
8. finalise the filling in with the threats: which dangers do you see, which obstacles do you face, what could happen to our disadvantage
9. once you have gone through all four parts of the matrix, give participants some time to go through it on their own and come up with additional ideas

Concept Mapping technique

Want to gain an understanding of people's knowledge about a topic by graphically representing and relating concepts as they relate to the topic.

- This is used also to identify gaps in the knowledge and information needs in various contexts
- questions relating to perception and definition of food security as well as food insecurity during a drought/storm will use this method as well as map the relationship between these weather events and food insecurity.

- write each definition identified on a separate card; then arrange the cards on a large sheet of paper to show the relationship between each weather event experienced and levels of food insecurity experienced during each event. Food security and climate change would be at the center of the sheet. Arrows will be drawn to show the relationships that exist. Furthermore, want to give these relationships some weighting to see what participants feel were the most important events to threaten their food security.
- if illiterate they can represent the concept graphically
- Do a composite map of the various stakeholders' views and this can help to identify gaps as well as to make comparisons

Examples of studies in food security using this method:-

Cameron, J., Gibson, K. and Hill, A., 2012. Cultivating post-capitalist community food economies via hybrid research collectives in and between Australia and the Philippines, Unpublished Manuscript.

Hill, A., 2011. A helping hand and many green thumbs: local government, citizens and the growth of a community-based food economy, Local Environment, 16:6, 539-553

Concluding Thought

As seen in Chapter Three: On Research Questions and Methodology, this elaborate plan did not materialize and participatory action research techniques require time to build trust and a sense of community. To effectively utilize these tools, a commitment to a full-time engagement of the communities is needed. This also requires

resources to execute the agenda purposes. Importantly too, the researcher has to be aware of the positionality and reflexivity brought to the process and who this impacts on how the researcher is being viewed and received. It is noteworthy that while the researcher leveraged her Jamaican nationality to gain access to the communities, the communities had differentiated expectations and views of the researcher and the role of the researcher in their struggles and everyday life. Jeffrey Town, for example, given their international success and their positionality as international conference presenters, award winning community, successful grant writers and poster child for funding excellence, they viewed the researcher as a colleague with whim they had the opportunity to share their stories and at the same time gain new perspectives to strengthen their vision. Trench Town, the urban community being assisted by a community based organization (CBO) had a different view of the researcher. The leadership of the CBO's positionality is shaped by his prominent participation in civil society and a public opinion shaper on the island. The leadership boasts success as an entrepreneur and community leader with an earned PhD from a prominent university in the United States. The researcher was therefore viewed as a student, a PhD student to be taught the rigors and philosophies undergirding the important work being performed in that community. The community of Prospect had still yet another perspective on the researcher. Prospect presented itself as a community in need of external support to be able to visualize and achieve its goals. The researcher was therefore seen as the expert with the power and authority to help this community connect with the external resources needed to build and execute a community plan. Negotiating all these roles and trying to get to the point where all participants including the researcher

would be accepted as an equal partner in the research process takes time which was beyond the scope of this research.

As explained in Chapter Three, alternate PAR techniques had to be utilized which altered the degree of participation required from the communities, nevertheless, tried to integrate as many voices as possible and to value each perspective shared.

Appendix E

Hazards Assessment Tool

Purpose To assess and address existing or perceived hazards using three criteria: their severity, their probability and people's current capacity to respond to them.

Step 1 Define the situation and make a list of the hazards that are part of the situation. Write each hazard on its own card. Organize these hazards into phases, if useful. For instance, in a disaster cycle, the phases are prevention, preparedness, emergency response and recovery.

Step 2 Assess each hazard using three criteria: its severity, its probability and people's capacity to respond to it. Use a scale of 0 to 10 to represent the severity or magnitude of the harm potentially caused by the hazard. Represent the probability that the harm will occur on a scale from 0 to 10. Rate peoples' current capacity to respond to the hazard on a scale of low (L), moderate (M) and high (H).

Step 3 Create a diagram by drawing a vertical line that crosses a horizontal line of equal length. Use the vertical line to represent the severity or magnitude and the horizontal line to represent probability. In each corner of the diagram, describe the scenario obtained when the two considerations (severity and probability) are combined.

Step 4 Locate each hazard in the diagram; use a dot to mark where the values from the two lines meet. Adjust the colour of each dot to indicate people's current capacity to respond to the hazard (for example, red for low, yellow for moderate and green for high current capacity to respond).

Step 5 Discuss how hazards are distributed. Pay special attention to hazards that are more severe and more likely to occur and those where the current capacity to respond can be improved.

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