

The Adverse Effects of Climate Change on Coastal Communities' Capabilities:
The Case Study of Tujereng, The Gambia

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Abstract

The Republic of the Gambia, located on the western coast of the African continent is a low-lying country with its coastal communities becoming increasingly vulnerable to the adverse effects of climate change. This paper examines the case study of the Gambian coastal community, Tujereng, which is experiencing a number of fluctuations including: increasingly hotter, drier seasons; erratic and decreasing rainfall patterns; sea level rise; salt water intrusion; and degrading forests and ecosystems due to the adverse effects of climate change. These changes occurring in Tujereng, are negatively impacting residents' quality of life. By using the *Capabilities Approach*, this thesis will frame the current situation in Tujereng, revealing the way in which the Government of The Gambia's National Climate Change Policy and state-led interventions are neglecting the community - providing inadequate assistance for improving adaptive capacity at the local level.

Keywords. Climate Change, National Adaptation Programme of Action, The Gambia, West Africa, Sea Level Rise, Erratic Rainfall, Salt Water Intrusion, Environmental Degradation, Capabilities, Social Capital, Sand Mining, Local Governance, Community-Based Adaptation, Indigenous Knowledge, Environmental Democracy

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List of Abbreviations and Acronyms

CBA – Community-Based Adaptation
CIDA – Canadian International Development Agency
CO₂ – Carbon Dioxide
CPP – Coastal Protection Project
ERP – Economic Recovery Program
FAO – Food and Agricultural Organization
GDP – Gross Domestic Product
GHG – Green House Gas
GMD – Gambian Dalasi
IMF – International Monetary Fund
IPCC – Intergovernmental Panel on Climate Change
LDC – Least Developed Country
MDG – Millennium Development Goal
NAPA – National Adaptation Programme of Action
NEA – National Environment Agency
NSGA – Nova Scotia Gambia Association
PHE – Peer Health Educator
SAP – Structural Adjustment Program
SES – Social Ecological Systems
UN – United Nations
UNEP – United Nations Environment Programme
UNFF – United Nations Forum on Forests
USAID – United States Agency for International Development
USD – United States Dollars
VDC – Village Development Committee
WMO – World Meteorological Organization
WWF – World Wildlife Fund

Chapter 1

1.1 Introduction

The Intergovernmental Panel on Climate Change (2014) has attributed warming atmospheric and ocean temperatures, deglaciation and sea level rise to the increasing amounts of anthropogenic greenhouse gas (GHG) emissions occurring post-industrialization. These trends will not only continue in future years, but also increase the vulnerability of global populations, with changes in extreme weather patterns and climatic events (IPCC, UNEP, WMO, 2014). Least developed countries (LDCs), which have contributed the least to global GHG emissions, are the most vulnerable to climate change and have the fewest resources to respond and adapt (Dodman, 2009, p. 152). The IPCC (2014) states, “[a]nthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever” (IPCC, WMO, UNEP, 2014, p. 4). With the roots of climate change stemming from economic and population growth, it motivates the international community to search for another model for development.

The Gambia is a low-lying country, with its coastal communities becoming increasingly vulnerable to sea level rise and other impacts correlated with a changing climate. This thesis examines the case study of the Gambian coastal community, Tujereng, which is experiencing a number of environmental fluctuations, including: increasingly hotter, drier seasons; erratic and decreasing rainfall patterns; sea level rise; salt water intrusion; and degrading forests and ecosystems. These changes occurring in Tujereng are negatively impacting residents’ quality of life. With the impacts of climate change becoming increasingly prevalent across the globe, mitigation is no longer a

sufficient strategy without the appropriate development of adaptation strategies. By using the *Capabilities Approach*, this thesis will frame the current situation in Tujereng, revealing the way in which the Government of The Gambia's National Climate Change Policy and state-led interventions are neglecting the community—providing inadequate assistance for improving adaptive capacity at the local level.

1.1.1 Research Questions

1.1.1.1 Central Research Question

- Are the adverse effects of climate change causing capability deprivation in the community of Tujereng?

1.1.1.2 Research Sub-questions

- How is social capital being utilized to mobilize conservation efforts or enhance local adaptive capacity in the community of Tujereng?
- What is The Government of The Gambia doing to improve the community of Tujereng's adaptive capacity?
- How/Why were these responses prioritized?

1.1.2 Thesis Statement

The adverse effects of climate change in Tujereng, The Gambia, are negatively impacting residents' quality of life and exacerbating capability deprivation. By using the *Capabilities Approach*, I will frame the current situation in Tujereng, revealing the way in which the Government of The Gambia's National Climate Change Policy and state-led interventions are neglecting the community by providing inadequate assistance for

improving adaptive capacity at the local level. I will do so by determining to what extent a changing climate is affecting the ‘Central Capabilities’ defined by Martha Nussbaum in the community of Tujereng (Nussbaum, 2011, p. 33), in addition to examining what Central Capabilities the community is mobilizing to enhance local adaptive capacity. In spite of the governmental responses to climate change, or lack thereof, communities such as Tujereng are mobilizing to strengthen collective capabilities, which in turn enhance the capabilities of individual community members and bolsters local adaptive capacity. Ideally, national policy makers should protect the quality of life for their citizens and regulate the private sector with that objective in mind. However, solutions such as adaptation or conservation initiatives need to come from within, so that strategies are sustainable, relevant to local realities and supported by the communities. If local-level wants and needs are properly integrated into national climate change policy, environmental democratization or “choice” can be expanded, which is crucial for enhancing local populations’ capabilities.

1.2 Study Area: The Gambia

1.2.1 Geography

The Republic of the Gambia, commonly referred to as The Gambia, is a small country located on the Western coast of the African continent. It is the smallest country located on mainland Africa, having a total area of 11,300 km² (National Environment Agency, 2010). The landmass of The Gambia is divided by the meandering River Gambia and is surrounded by Senegal except for the a small portion of shoreline bordering the Atlantic Ocean to the west (Camara, 2012).



The Gambia

Figure 1.0: Map of The Gambia

Source: Will Flannigan 2014

1.2.2 Climate

As The Gambia is located within the Sahelian belt of Sub-Saharan Africa, the country's climate is Sudano-Sahelian, typically having a long dry season between October and early June and a short rainy season lasting from mid-June until early October (National Environment Agency, 2010). Throughout the dry season, the country often feels the Harmattan winds sweeping off the Sahara Desert (Camara, 2012). The average temperature throughout the dry season ranges from 18 - 33 degrees Celsius, with an average temperature range of 23 - 33 degrees Celsius throughout the rainy season (National Environment Agency, 2010). The average annual rainfall is 1000 mm, which varies depending on the ecological zone, fluctuating between 850 mm – 1597 mm

annually (Camara, 2012, p. 10). Prior to the 1968 drought, annual rainfall always exceeded 1000 mm, yet over the past 40 years there has been a decline in the annual amount of precipitation (National Environment Agency, 2010; Dia Ibrahima, 2012; Camara, 2012).

1.2.3 Economy

The Gambian national currency is the Dalasi (GMD) (United Nations, 2014). The Gambia is considered a low-income country with a Gross Domestic Product (GDP) of approximately 917 million United States Dollars (USD) (2012); the GDP per capita is 512.10 USD (2012) and the GDP growth rate is 6.3 percent per annum (2012) (United Nations, 2014). The gross national income (2007) was estimated to be 450 USD, which is significantly below the sub-Saharan African average of 952 USD (Government of The Gambia, 2012, p. 6). The economy is predominantly dependent on the agricultural sector, tourism sector and services for economic growth (Government of The Gambia: Ministry of Finance and Economic Affairs, 2011). The Agricultural sector accounts for 59 percent of GDP and employs approximately 44 percent of the population (Government of The Gambia, 2012, p. 6).

1.2.4 Political Structure and Governing Bodies

The Gambia employs a unique form of decentralization utilizing a combination of both traditional, colonial and newer structures for governing the country. Under the 1935 Provinces Act, the Gambia was divided into five provinces, each currently known as separate Administrative Regions, in addition to the Greater Banjul Area, with each area having a Divisional Commissioner appointed by the President Yahya Jammeh (Davis,

1994; National Environment Agency, 2010). The Secretaries of the State oversee sixteen Departments of State, each supervised by a Permanent Secretary and a senior civil servant. The Secretaries of the State are appointed by the President Jammeh, forming the Cabinet and Departments of State, organized into four areas of governance: Law and Order; Economic Departments of State; Social Service Departments of the State; and Other Departments (National Environment Agency, 2010).

Each Administrative Region is divided into districts that are governed by traditional chiefs (also referred to as *Seyfolus*), who are elected by compound heads, or appointed by the President, and hold the position for life (Davis, 1994). The chiefs have numerous responsibilities, which include allocating district land, arbitrating district courts and working with the Council of *Alkalos* (village headmen) as members of the District Tribunals (Davis, 1994; National Environment Agency, 2010). *Alkalos* are always male and determined through the lineage of the original founder of each village. They have similar responsibilities to that of the *Seyfolu* but operate at the village level rather than the district level (National Environment Agency, 2010). *Kabilos* are lineage units within each village and *Kabilo Heads* have similar responsibilities to that of the *Alkalo*, but at the lineage unit level within the village (National Environment Agency, 2010). Additionally, each village has a Village Development Committee (VDC), made up of 10-12 members, who are responsible for increasing the participation of rural communities in development processes (National Environment Agency, 2010). The traditional form of governance is important to socioeconomic and political activities in most villages.

1.2.5 Ethnicity and Religion

The Gambian population is comprised of numerous ethnic groups including: Mandinka (42%), Fula (18%), Wolof (16%), Jola (10%), Serahuli (9%) and other (4%). While English is the official language, each group has their own language, making The Gambia a multilingual country (Archer, 2006, p. 340). The majority of the Gambian population (85-90%) is Muslim, with the remainder of the population identifying as Christian (including Roman Catholic, Anglican and Wesleyan), Animist, or practitioners of traditional African religions (Darboe, 2004, p. 74). Previously, Gambian Muslims practiced a form of the Islamic religion that included a number of indigenous customs and beliefs. However, since the 1970s, Islamic Studies have been integrated into the national curriculum taught in most schools, encouraging a more conventional form of Islamic faith than the syncretic form traditionally practiced by Gambian Muslims (Darboe, 2004).

1.2.6 Population

According to The Gambia Population and Housing Census 2013 Provisional Report, the current population of The Gambia is 1,882,450 people (The Gambia Bureau of Statistics , 2013, p. 6). The current population growth rate for the 2003-2013 period is approximately 3.3 percent per annum. This is significantly higher than the 1993-2003 period, which saw a growth rate of 2.7 percent (see Figure 1.1) (The Gambia Bureau of Statistics , 2013, p. 7).

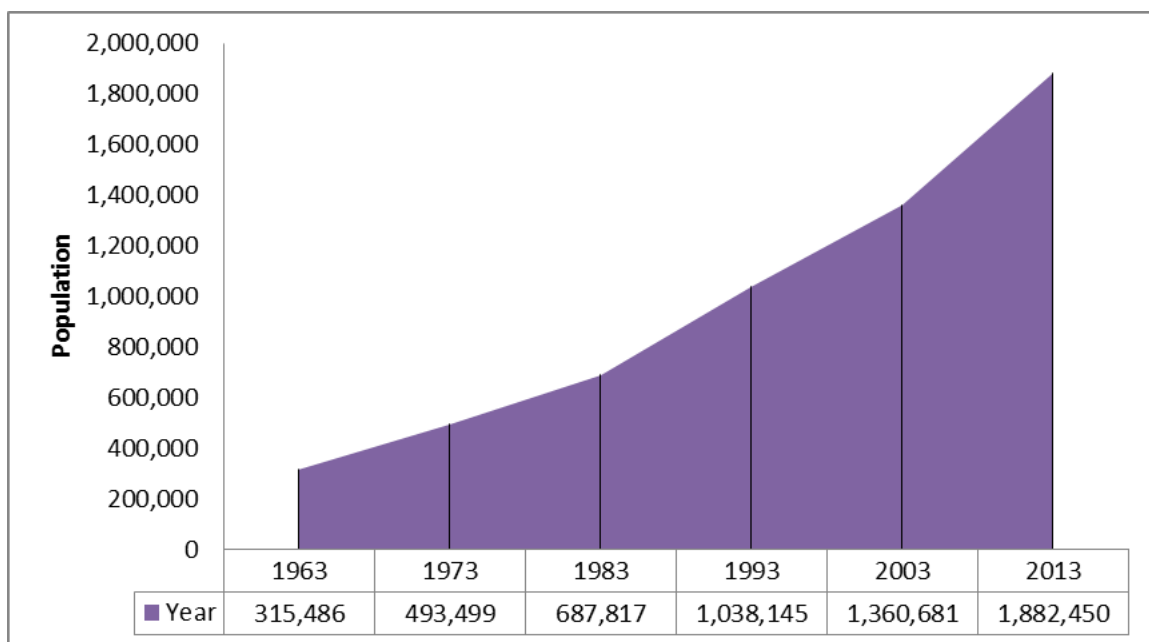


Figure 1.1: Population Size and Growth
 Source: 2013 Population Housing Census Provisional Report

The rate at which the population is growing in The Gambia is predicted to have serious implications for all sectors of society, especially health, education, housing and agriculture (The Gambia Bureau of Statistics , 2013). The growing population will not only increase the demand for land for both residential and agricultural usage, but also cause increasing environmental problems and development-related issues (The Gambia Bureau of Statistics , 2013). With the current rate of population growth, the population of The Gambia is expected to double within 21 years (The Gambia Bureau of Statistics, 2013, p. 6).

The Gambia is most densely populated along the coastal zone, with the capital city of Banjul, Kanifing and Brikama making up approximately 27 percent of the population

(Government of The Gambia, 2011, p. 6). Over 52 percent of The Gambian population lives within 20 kilometers of the Atlantic Ocean, in an area amounting to less than 10 percent of the total land mass of the country (Government of The Gambia, 2011, p. 6) (See Figure 1.2).

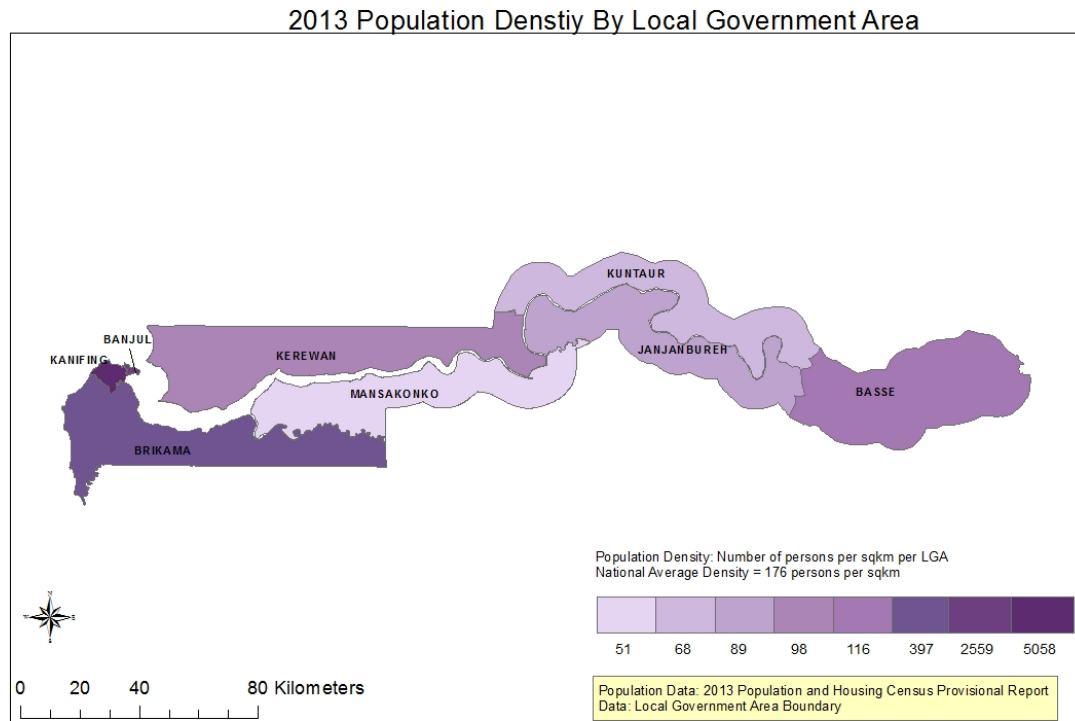


Figure 1.2: Population Density By Local Government Area
Source: 2013 Population Housing Census Provisional Report

1.2.7 Environmental Agreements and Issues

The Gambia belongs to several multilateral environmental agreements, including the United Nations Convention on Biodiversity, the United Nations Convention for Combatting Desertification, and the United Nations Convention on Climate Change (Government of The Gambia, 2007). However, The Gambia’s natural environment continues to deteriorate and the country’s vulnerability to the adverse effects of climate

change is on the rise (Government of The Gambia, 2007; Government of The Gambia, 2011; Camara, 2013). The degradation of the natural environment throughout the country threatens Gambians' socio-economic conditions as well as their security (Government of The Gambia, 2007; Camara, 2013).

1.2.8 Community of Field Research: Tujereng

The majority of the primary research utilized for this study was conducted in the community of Tujereng. The justification for examining this community is elaborated upon in Section 2.3: Methodology. Tujereng is located on the open coastal zone of the Gambia in the West Coast Region, in District Kombo South, situated adjacent to the Atlantic Ocean. According to the 2003 Population and Housing Census (as the 2013 Census has only released the preliminary findings), the population of Tujereng was approximately 4,689 persons. The population is predominantly made up of small-scale fishers and farmers, which makes it extremely dependent on the natural environment – and increasingly vulnerable to climatic fluctuations.



Image 1.3: Map of the West Coast of The Gambia

Source: Will Flannigan, 2014

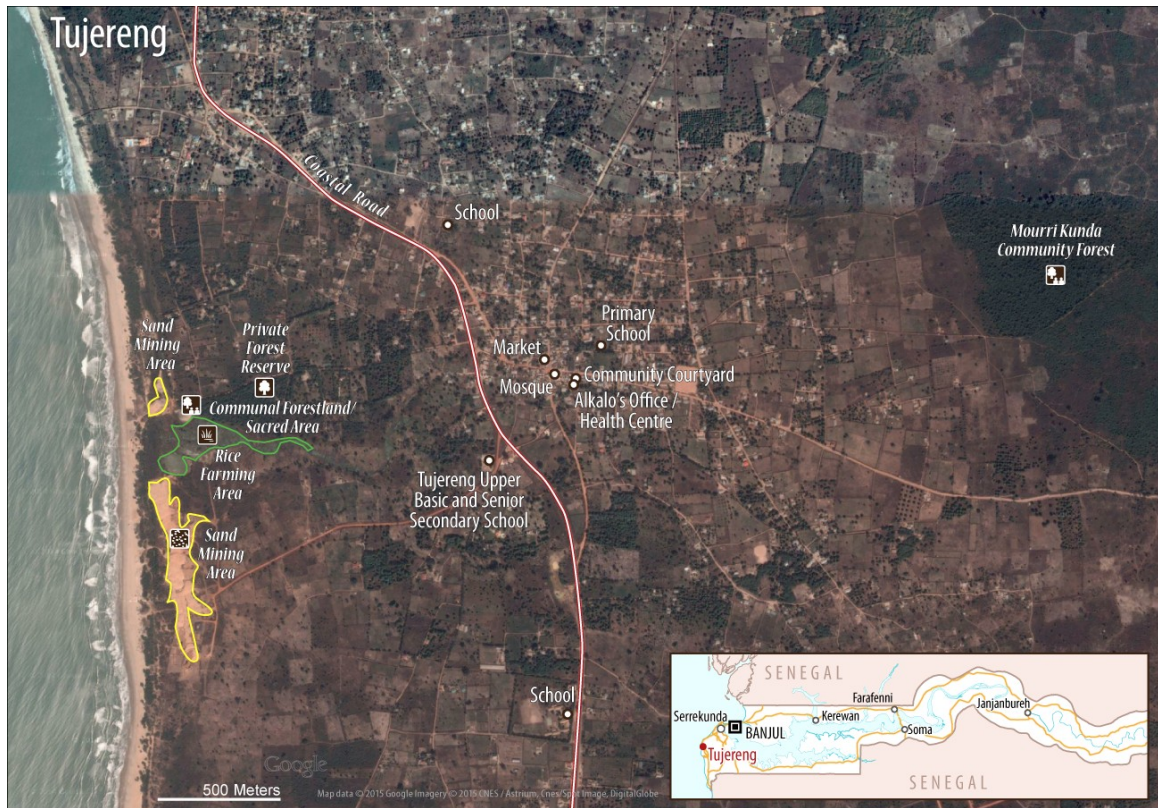


Image 1.4: Map of Tujereng, The Gambia

Source: Will Flannigan, 2014

1.3 Background Information

1.3.1 Developmental Eras and the Progression of Environmental Policy

1.3.1.1 Colonial Period (1816-1965)

The British colonial period was characterized by the thorough exploitation of Gambian land, resources and labour. The Gambia developed with an urban bias along the coast of the Atlantic Ocean, with coastal settlements being developed to expedite the export of resources from the country. This has led to inequitable development within the country, with notable urban-rural disparities, particularly with respect to poverty (Sallah, 1990). Traditionally, rural areas had predominantly been focused on subsistence agriculture, but as the potential for export increased during the colonial period, many

rural farmers changed their traditional cropping patterns and increased the cultivation of cash crops. The primary export crop became groundnuts, and rather than practicing the traditional diverse cropping patterns, many farmers shifted to mono-crop farming (Gailey, 1965). The transition to mono-crop farming techniques caused accelerated deforestation. In addition, the conversion of land and a reduction in fallow seasons led to soil degradation (Carney, 1993).

In order to increase the production of cash crops, the colonial government cleared the bush land and mangrove zones, transforming these areas for agricultural use (Gailey, 1965, p. 149). It is important to recognize that mangroves play an important role in providing habitats for fish populations, preventing against coastal erosion, salt water intrusion, and providing a buffer for sea level rise as well as wave and storm surges (Satyanarayana, 2012). The destruction of mangroves has been connected to various environmental issues in The Gambia today (Satyanarayana, 2012; Jallow, 1996).

As the transition to cash cropping increased, so did the vulnerability to famine. Due to the rising tension that coincided with famine, the colonial powers introduced rice in the North Bank area to reduce the risk of famines. It should be noted that, in terms of consumption, rice is the most important staple food and source of caloric intake in The Gambia today and important to Gambian culture and identity (Dibba, 2012).

The colonial administration spent very little revenue on agricultural education or development, and did little to improve the local economy or social conditions for the Gambian populations (Gailey, 1965). In the transition to independence after 1965, the new leaders maintained the economic structures used by the British and continued to rely on the taxation of cash crop farmers for revenue. Reliance on the groundnut sector

increased the intensification of agriculture as well as the country's vulnerability. The revenue was not enough to support the development needed in the public sector, while mono-cultivation continued to degrade the natural environment and threaten food security (Sallah, 1990).

1.3.1.2 Post Independence (1965-1980)

Post Independence (1965) was a time of economic prosperity in The Gambia. The economy was growing 4 % annually, there was minimal foreign debt, inflation was low and the Government of The Gambia's budget was balanced on a recurring basis (Sallah,1990; Dieke, 1994, p. 614). Within the next decade the economic environment began to deteriorate for a number of reasons. Oil prices began rising on the world market from 1973-1979; with The Gambia being an oil importing country, this was devastating to the national economy. In addition, the Sahelian drought - beginning in the late 1960s and carrying on throughout the early 1970s - reduced agricultural production. Due to The Gambia's heavy reliance on groundnut cultivation, this also drastically impacted the local economy (McPherson, 1995). Throughout the Sahelian drought, The Gambia had 25 percent less rainfall, resulting in declining rice production and causing food security issues (Schroeder, 1997, p. 488). This coincided with declining prices for farm commodities on the global market (including groundnuts). At the same time, costs for imported staple foods and manufactured goods were increasing. This overlapped with increased inflation within the country, which increased the cost of living for many Gambians (McPherson, 1995).

As a result, throughout the 1970s, The Gambia became reliant on Foreign Aid and

soft loans to finance the public sector (Schroeder, 1997; McPherson, 1995). In 1975, The Gambia created a five-year plan to expand government spending on development projects, subsidies for farming, electricity, and transport (which was indirectly funded through the donor community) (Schroeder, 1997; McPherson, 1995). The development projects during this period were mostly state-led or international donor funded and focused on the development of agriculture, social equity, gender equity, poverty alleviation and enhancing the rural population's basic needs (Palmer, 1977; Schroeder, 1997).

Due to the way in which The Gambia had developed during both the colonial period and post-independence period, many environmental issues were beginning to emerge. The first recognition of the need for environmental conservation was in the Banjul Declaration of 1977, with President Jawara stating the country's commitment to the conservation of The Gambia's natural environment:

"It is a sobering reflection that in a relatively short period of our history most of our larger wildlife species have disappeared together with much of the original forest cover. The survival of the wildlife still remaining with us and the setting aside of protected natural habitats for them is the concern of all of us. It would be tragic if this priceless natural heritage, the product of millions of years of evolution, should be further endangered or lost for want of proper concern. This concern is a duty we owe to ourselves, to our great African heritage and to the world. Thus I solemnly declare that my Government pledges its untiring efforts to conserve for now and posterity as wide a spectrum as possible of our remaining fauna and flora" - President of the Republic of The Gambia, Sir Dawda Jawara, Banjul Declaration (February 18, 1977).

However, due to the impending debt crisis, economic recovery became the Government of The Gambia's central priority and environmental concerns became neglected (Government of The Gambia, 1992).

1.3.1.3 Neoliberal Period (1980-1990)

During the 1980s, foreign aid decreased, as donor countries restructured their policies, corresponding with spiking interest rates, due to international monetary policies. During the period of 1975-1985, The Gambia's debt went from 13 million to 139 million USD (McPherson, 1995, p. 48). The Gambia was unable to pay its debts, giving rise to an economic crisis (McPherson, 1995). By 1985, foreign debt had risen by 250 percent (McPherson, 1995, p. 8), with foreign payment arrears of 114 million USD, which was approximately 60 percent of The Gambia's total GDP (Dieke, 1994, pp. 614-615). With the decreasing price for groundnuts on the global market, the agricultural sector began failing (McPherson, 1995, p.8) and The Gambia was unable to repay its debt with the International Monetary Fund (IMF) (Dieke, 1994).

Neoliberalism emerged in the 1980s as the dominant economic paradigm, evolving from the classical liberal principle of a self-regulating market. Milton Friedman, the leader of the Chicago School of Economics and 1976 Nobel prize winner, played a significant role in pushing neoliberalism into mainstream economics (Friedman, 1962; Steger, 2010). The rise of neoliberal principles have primarily been associated with United States President Ronald Reagan (1981-1988) and British Prime Minister Margaret Thatcher (1979-1990), who helped promote it as an ideology and mode of governance on the world stage. It had a policy package which emphasized the ideals of a self-regulating market, competitiveness, self interest and decentralization. The policy package included a DLP formula: [D]eregulation of the economy, [L]iberalization of trade and industry, and the [P]rivatization of state-owned enterprises. Neoliberalism resulted in tax cuts for the wealthy, reduction of social services and welfare, high interest rates to control inflation,

and concerted efforts to minimize the intervention and expenditure of governments (Steger, 2010). It has been argued that the transition to neoliberal economics has had inequitable benefits and burdens, with most negative impacts being felt by developing countries and their residents (Steger, 2010).

In response to The Gambia's debt crisis, the International Monetary Fund (IMF), the World Bank and international donor community deemed The Gambia to be an unreliable target for additional loans unless it were to undergo neoliberal economic reform. The World Bank and IMF imposed a Structural Adjustment Program on The Gambia, commonly referred to as the Economic Recovery Program (ERP), which attached conditions to all future loans (McPherson, 1995). The ERP included the restructuring of the economic system, with reforms made to the exchange rate and the resulting devaluation of the national currency, the Dalasi. The government was instructed to reduce expenditures and privatize as many public operations as possible. This resulted in increased expenses for basic services, which, thanks to the coinciding erosion of incomes, was detrimental to the livelihoods of many Gambians (McPherson, 1995).

Although the Government of The Gambia established the Ministry's Environmental Unit in 1982 to coordinate environmental matters and monitor various projects, by 1987 many environmental problems had become neglected (Government of The Gambia, 1992). Salinization of the river and ground water had accelerated. The loss of natural resources due to non-existent management schemes or regulatory functions had led to unsustainable practices (Government of The Gambia, 1992). Prior to the 1996 national prohibition of sand mining in the coastal zone, between 100,000 – 150,000 m³ of sand had been extracted from Gambian coastal zones (Bijl, 2011, p. 22). The breakdown

of urban infrastructure had led to poor environmental health. The destruction of ecosystems, deforestation and desertification had detrimental social, economic and health effects for local populations (Government of The Gambia, 1992). In response, the National Environmental Management Act was enacted in 1987, managed by the National Environmental Management Council. This was created to develop a legal framework for environmental planning, management, and decision-making (Government of The Gambia, 1992).

1.3.1.4 Human Development and Sustainable Development (1990-2000)

Due to the lack of Governmental intervention, unsustainable human practices, population growth, intensified agriculture and urbanization, the natural environment had deteriorated greatly in The Gambia (Government of The Gambia, 1992). By the 1990s, donors' goals shifted again towards mainstreaming environmental improvement projects. Due to donor concerns The Government of The Gambia launched the National Environmental Action Plan, endeavoring to improve the sustainability of economic growth through adequate natural resource management (Government of The Gambia, 1992, p. 4).

The Government of The Gambia created the Soil and Water Management Unit. The primary goal during this period was to reverse the effects of salt-water intrusion and erosion with the construction of freshwater retention dikes (Schroeder, 1997). These issues can not only be linked to the adverse effects of climate change, but also to the destruction of the mangroves in this area for rice farming during the colonial period (Gailey, 1965; Satyanarayana, 2012).

With the change of the millennium came a new set of policies and objectives for strategic planning. These policies and projects were meant to include those who had previously been marginalized from macro-economic improvements. The first global initiative was the development of the eight Millennium Development Goals (MDGs) at the International Millennium Summit (2000), with Goal Seven being to ensure environmental sustainability (Ministry of Economic Planning and Industrial Development, 2010).

1.3.1.5 The Current Era 2000-Present

Millennium Development Goal Seven has four targets and ten indicators utilized to measure the progress of attaining this goal. The four targets determined by the United Nations are:

1. *Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources,*
2. *Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss,*
3. *Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation; and,*
4. *By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers* Ministry of Economic Planning and Industrial Development, 2010, p. 36).

The table below outlines the 2010 Status Report report monitoring the progress made on MDG Seven, including the four targets and ten indicators utilized to measure success.

The MDG Status Report 2010 Summary Indicators of Environmental Sustainability in The Gambia

Targets	Indicators	Baseline 1990	2003	2005	2007	Current Status 2010	MDG Target 2015
7A: Integrate the Principles of Sustainable Development into Country Policies and Programmes and reverse the loss of environmental resources	Proportion of land area covered by forest	40.7%	41.5%	43%	45%	46%	50%
	CO ₂ emissions, total, per capita	0.215	0.196	0.187	0.187	0.187	NA
	Proportion of fish stock within safe biological limits.	88.8%	NA	NA	74.1%	75%	NA
7B: Reduce Biodiversity loss, Achieving, by 2010 a Significant Reduction in the Rate of loss	Proportion of Terrestrial and Marine Areas Protected.	3.7%	4.09%	NA	4.1%	4.1%	10%
	Proportion of species threatened with extinction.	NA	NA	NA	NA	25%	NA
7C: Halve by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	Proportion of Population Using an Improved Drinking Water Source	69%	NA	NA	85.1%	87%	85%
	Proportion of population using an improved sanitation facility	80%	NA	NA	84%	84%	92%
7D: By 2020, to have Achieved a Significant Improvement in the Lives of at least 100 million Slum dwellers.	Proportion of urban population living in slums	NA	NA	NA	59.2%	45.8%	NA

Figure 1.3: The MDG Status Report 2010 Summary Indicators of Environmental Sustainability
Source: Gambian Ministry of Economic Planning and Industrial Development , 2010, p. 37

In examining the MDG indicators for environmental sustainability (See Figure 1.3), although The Gambia has made significant improvements in water and sanitation, the country is still lagging behind on many indicators. 45.8 percent of the urban population is still living in slums, while 25 percent of species are threatened with extinction. Moreover, the country is not even half way to the target for protected areas (Ministry of Economic Planning and Industrial Development , 2010, p. 37). Target 7A is designed to integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources. This target has numerous challenges including the integration of environmental management into macroeconomic framework (Ministry of Economic Planning and Industrial Development , 2010). In order to improve the current environmental policy in The Gambia, we must first understand what implications inadequate policy and project planning can have on vulnerable communities and individuals.

1.3.2 The Detrimental Effects of Inadequate Policy Planning

Shroeder's (1997) research in the Gambia River's North Bank Region demonstrates the detrimental impacts various developmental eras and policies can have on communities. In response to the Sahelian drought, food crises and negative terms of trade for groundnuts, by the mid 1970s women began transforming low-lying, barely arable land, which had been degraded by mono-crop farming and affected by droughts, into hand-irrigated vegetable gardens. These initiatives were funded through Women in Development (WID) agencies and projects implemented by non-governmental organizations (NGO) in order to assist rural communities in meeting their basic needs.

These projects endeavored to improve food security while improving gender equity and the livelihoods of rural women (Schroeder, 1997).

By the late 1980s, however, new development projects shifted away from gender equity and focused on environmental rehabilitation efforts (Government of The Gambia, 1992; Schroeder, 1997). Along the North Bank of the Gambia River, in the same areas where the WID projects had helped women create vegetable gardens, men began planting orchards. These projects encouraged men to cultivate fruit and sell firewood to bolster local economies and combat deforestation. These projects capitalized on the environmental rehabilitation movement gaining momentum at the time, being funded through reforestation efforts by large-scale donors such as the United States Agency for International Development (USAID) (Schroeder, 1997).

Due to the ERP, wetlands that had previously been considered communal land became commodified (Carney, 1993). This created conflicts over land rights. The women gardeners had transformed the previously degraded land back into productive land, which the men in turn could then use to cultivate their orchards. Men began claiming old property rights, which were privileged in the neoliberal regime over women's recent claims (Schroeder, 1997). Women were then only granted access as labourers and men reaped the majority of the economic benefits as the owners of the land (Carney, 1993).

Through USAID funding in 1994, the Gambian Government began the construction of dikes on the North Bank as a mechanism for increasing the rice-growing season. Although the project was successful in increasing the rice season, it also increased the burden on women, who typically would grow vegetable gardens in between rice seasons (Schroeder, 1997). This project did not take into consideration the correlated

gender dynamic associated with agriculture (Dieke, 1994). Cash-cropping had become associated with male gender roles, whereas rice and vegetable farming were connected to female gender roles. The lengthened rice-growing season resulted in overlapping harvest seasons for both vegetables and rice, which were both considered women's responsibility (Schroeder, 1997). Due to the food security concerns within the community, the VDC held a meeting to discuss potential resolutions. However, due to the engendered association of rice harvesting, men were not willing to help the women harvest. As such, the women were left to carry both the responsibility for vegetable and rice harvesting in the community (Schroeder, 1997). The situation in the North Bank region illustrates how environmental management interventions can be detrimental to communities if adequate planning and community consultation is not accomplished. Although these projects helped to decrease environmental and food security issues, they simultaneously increased the burden for vulnerable women in the rural areas due to insufficient planning (Schroeder, 1997).

1.3.3 Learning from the Past to Develop Policy for the Future

The results of Shroeder's work helps us to understand the ways in which developmental and environmental policy can have detrimental effects on marginalized members, especially when they are not first consulted regarding the projects and policies affecting their communities. With the current deterioration of the natural environment and the escalating impacts of climate change, community-based mitigation and adaptation strategies need to be developed. The Government of The Gambia should ensure future projects are focused on improving local populations' adaptive capacities. Although national policy needs to integrate these ideas – as learned from previous state

interventions – communities being impacted, need to be consulted in order to ensure the efficacy and sustainability of the proposed policies and projects.

Chapter 2

2.1 Theoretical Framework: The Capabilities Approach

Development is a contentious concept that has previously been understood as the process of industrialization and transfer of technology - measured merely by the growth of a nation's GDP and rise in incomes. International development theorists have described this perception of development as the economic growth paradigm (Sen, 1999; Nussbaum, 2011). In contrast, Amartya Sen argues that development is the freedom or "capability to lead the kind of lives we have reason to value" (Sen, 1999, p. 285). He views poverty as more than merely economic deficiency, defining it instead as capability deprivation (Sen, 1999, p. 87). Sen explains that poverty consists of substantive "unfreedoms", with an impoverished person being denied political freedoms, economic facilities, social opportunities, or protective security (Sen, 1999, p. 10). Development, he contends, is about enhancing human freedom and capabilities through improving individual agency to enhance a person's own well-being – with freedom or "choice" being both the means and the end to development. He asserts that the role of the state and society is to provide the enabling environment for an individual to decide how to use his/her capabilities – thus creating the Capabilities Approach (Sen, 1999, p. 287). The Capabilities Approach could prove useful in determining to what extent the effects of climate change are affecting quality of life. By using this definition of development, researchers are able to take a more holistic approach, investigating the ways in which

capabilities are being affected by climate change, rather than reducing complex concepts such as development or poverty into quantifiable indicators. Furthermore, this approach creates a lens by which one can examine the global phenomenon of climate change at the individual or community level.

Sen contends that the economic growth paradigm is insufficient for assessing development, as it often ignores important elements, including the aforementioned freedoms (Sen, 1999, p. 3). However, he does not disregard market mechanisms and their potential contributions to development, arguing they can assist people in realizing other freedoms. He claims instead, that the capitalist system needs to become more equitable (Sen, 1999, pp. 142, 295). Sen argues:

Combining extensive use of markets with the development of social opportunities must be seen as a part of a still broader comprehensive approach that also emphasizes freedoms of other kinds (democratic rights, security guarantees, opportunities of cooperation and so on) (Sen, 1999, p. 127).

That being said, Sen recognizes that not all goods should be commodified, especially those that are public goods or those consumed together – using environmental conservation or public health care as examples. Sen sees the need for collaborative responsibility between the state, institutions, and wider society for aiding impoverished people in improving their capability to live a life they value, leaving the choice and responsibility in the individual's hands (Sen, 1999, pp. 10, 288). In regards to climate change, the role of the state and wider society would be to help those who are being deprived certain capabilities due to climatic variables. This could include providing wells, basic irrigation systems and the necessary training to assist farmers dependent on rain-fed

agriculture. Whether the farmers choose to use this capability-enhancing program becomes their own responsibility and decision.

Sen's approach is not without its detractors, however. Ben Selwyn critiques Sen's view of development due to its inherent connection to capitalist market mechanisms, asserting that this approach undermines his argument (Selwyn, 2011, pp. 68-69). He questions Sen's ability to discredit the economic growth paradigm, while commending the capitalist system, emphasizing that the capitalist system encourages the realization of economic freedoms by creating unfreedoms for other members of society (Selwyn, 2011, p. 71). Selwyn contends that opportunities created by market forces also lead to imperatives or market dependence, with competition causing distributors to reduce input costs (Selwyn, 2011, p. 71). With the pressure to reduce input costs, industries may decide to relocate to countries with laxer environmental regulations, giving rise to environmental burdens or unfreedoms for the citizens of said country. The approach Selwyn recommends instead is radical social and political change, toppling the dominant inequitable capitalist system, rather than working within it (Selwyn, 2011, p. 75).

Although Selwyn's argument has strength, he neglects to recognize that Sen notes the ability for the market to be inequitable – placing the responsibility on both the state and larger global institutions to remedy this. Moreover, Sen includes the growth paradigm as a small aspect (or one function) within the Capabilities Approach. In assessing one's quality of life, from Sen's perspective, an individual should have access to equitable markets. To what extent the individual engages with these market mechanisms is a choice to be determined by each individual. In assessing environmental degradation and its impact on quality of life, a huge element becomes the relationship between the current

inequitable capitalist system and environmental determinants, which can be analyzed by using the Capabilities Approach. Moreover, once the capabilities are improved, it becomes an individual or community's choice what action ought to be taken, rather than prescriptions given by academics for radical social or political change.

Nussbaum (1999) agrees with Sen's critique of the growth paradigm, stating that it reinforces inequality while ignoring important factors, including the distribution of wealth, employment opportunities or life expectancy (Nussbaum, 1999, p. 232). However, she would agree with Selwyn that improving the freedoms of some might result in inequality, or inhibiting the capabilities of others (Nussbaum, 2011, p. 73). As Nussbaum argues, "the freedom of industry to pollute the environment limits the freedom of citizens to enjoy an unpolluted environment" (Nussbaum, 2011, p. 71). She creates a list of "Central Human Functional Capabilities" to define entitlements for constitutional purposes and to be used in policy for assessing quality of life across the globe. She later refers to this list as the 'Central Capabilities' and prioritizes this list over market or capitalist freedoms, such as the freedom for industry to pollute (Nussbaum, 1999, p. 235; Nussbaum, 2011, p. 33, 71). She explains that this list is malleable and can be shaped and reconstructed using different indigenous knowledge or beliefs (Nussbaum, 1999, p. 236). Sen's approach provides a philosophical framework for understanding the role of the state and governmental policy in regards to development, including the correlated complexities. However, by using Nussbaum's framework, one could potentially influence policy by providing the evidence of capability deprivation at the community level. Nussbaum makes a valuable addition to Sen's approach, as the latter does not define actual capabilities, making it difficult to shape constitutions or inform policies needed to

improve the quality of life for marginalized individuals.

Yet, as Holland (2008) explains, Nussbaum's list of Central Capabilities is lacking an ecological component. She discusses how the distribution of wealth and power is related to environmental "benefits and burdens" (Holland, 2008, p. 319) and explains that environmental entitlements must be considered essential to the functioning of all capabilities in Nussbaum's list (Holland, 2008, p. 319-320). In regards to human justice, Holland argues that climate change needs to be considered within this framework to inform international policy (Holland, 2008, p. 328-330). She constructs a new meta-capability, "Sustainable Ecological Capacity," which she defines as "being able to live one's life in the context of ecological conditions that can provide environmental resources and services that enable the current generation's range of capabilities; to have these conditions now and in the future" (Holland, 2008, p. 324).

Although Nussbaum allows for flexibility in her list, Holland makes a valid point. Without considering the influence the natural environment has in either enhancing or inhibiting capabilities, one cannot fully inform political or policy reforms. The adverse effects of climate change or environmental degradation may diminish the control individuals or societies have in shaping their lives. Using the Central Capabilities defined by Nussbaum, while taking into consideration Holland's meta-capability, allows for a more comprehensive assessment of quality of life – especially for those lives that are directly affected by environmental burdens inhibiting their ability to be active agents within their own lives. As such, the Capabilities Approach could prove useful in determining to what extent the effects of climate change are affecting quality of life.

Deneulin (2008), further critiques the Capabilities Approach due to its focus on

the individual, arguing that development is more than simply promoting individual freedoms--it must also promote collective freedoms. She stresses that one cannot examine development without looking at the structures that exist through living together. She suggests that collective capabilities can in fact be utilized to promote individual capabilities (Deneulin, 2008). Ibrahim (2006) makes a similar argument in explaining the role of collective capabilities for self-help, arguing that, although Sen recognizes collective capabilities at the global level, he neglects to recognize their importance at the local level. He contends that Sen merely recognizes the instrumental value of social structures while missing the intrinsic value, which Ibrahim stresses should not be ignored. He explains how social capital fosters collective capabilities, such as collective agency and collective freedom (Ibrahim, 2006). In considering the ways in which climate change may be affecting a community, it would seem valuable to examine the problem using a lens that observes collective agency. In considering this critique, I will construct a framework that examines the ways in which social structures and collective capabilities foster collective agency to enhance individual capabilities using Nussbaum's Central Capability, *affiliation*, for analysis. In order to do so, I must first elaborate on the concept of social capital, as it will inform my framework for analyzing the ways in which collective agency and collective capabilities could be used to strengthen individual capabilities in communities facing a changing climate.

2.1.1 Social Capital: Collective Capabilities and Collective Agency

Social capital is a concept that provides an appropriate lens for understanding collective agency or collective capabilities. The definition, however, is unclear and disputed; in addition, its strategic use is also questioned, resulting in the meaning and

motivation of social capital a heavily controversial topic (Veltmeyer, 2005). Portes's (1998) article, "Social Capital: Its Origins and Applications in Modern Sociology", gives readers an understanding of the complexity and ambiguities associated with the term. He discusses the origins of social capital, tracing the concept back to Emile Durkheim's theory of social integration. Durkheim believed that societies were the product of numerous individual actions, which, over time, would generate a collective consciousness that, through social integration, would bind society together. He also saw sociability as the remedy to anomie (a state of normlessness caused by the erosion of common standards or values) (Durkheim, 1893/1984). Portes also discusses Karl Marx's contribution to the understanding of social capital in discussing class-in-itself and class-for-itself (Portes, 1998). Class-in-itself describes a group of people having a similar relation to the means of production. Class-for-itself is a group organized for collective action in active pursuit of their collective interest, with the aspiration to improve the group situation or reality (Borland, 2008). Class-for-itself could be useful in understanding local-level responses or collective action in response to a changing climate.

Pierre Bourdieu (1985) defines social capital as: "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu 1985, p. 248). His ideas informed the instrumental use of social capital. From this perspective, social capital was created through sociability and establishing relationships. Through social capital or social connections, individuals could then gain access to other forms of capital through these relationships. In considering Bourdieu's definition in relation to climate change, the network of relationships may enhance collective or individual

capabilities through exchanging various techniques for increasing soil fertility, resulting in larger harvests to be sold in the market.

Having reflected on a number of definitions noted above, Portes attempted his own definition of social capital, saying, “social capital stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures” (Portes, 1998, p. 6). He explains that social capital is about the positive results of sociability. By resituating these positive results within the lens of capital, nonmonetary aspects of life are instead examined according to the way in which they can influence power and be strengthened through relationships. This perspective merges two ways of understanding the world – the sociological and economic ways of thinking - which attracts policy makers to this perspective (Portes, 1998). Portes argues that, due to the complexity in defining the term, policy-makers are able to use it without determining which definition they are using. Moreover, policy-makers view social capital as a more cost-effective solution to social problems reducing the reliance on state intervention (Portes, 1998). This is an important critique to bear in mind when considering the appropriate policy measures needed in light of a changing climate. Not only could policy-makers utilize social capital or community-based adaptation strategies as more cost-effective solutions (reducing the reliance on expensive, centrally-designed strategies), but they may also transfer responsibility to the communities being affected rather than assuming responsibility for their citizens. This could be negative for communities affected by climate change transferring the responsibility of adaptation from the government to the community. However, social capital could be used to enhance local adaptive capacity if drawn upon through an integrated approach, which includes

government resources and capacity-building initiatives that value indigenous knowledge and strengthen pre-existing local adaptation strategies.

Putnam (1993) argues that a ‘prosperous community’ is created through social capital. He claims that it is constructed through strong civic participation, social solidarity, networks of reciprocity, collaboration, communication, and trust. He asserts that communities with these characteristics often also have an abundance of wealth and success (Portes, 1998). He contends that social capital is a crucial ingredient for economic development, becoming an important development strategy (Putnam, 1993). Although he alludes to the degradation of social capital in the United States in his earlier work, it was not until his article “Bowling Alone” in 1995, that he really discusses this topic in depth. He argues that, in reality, the countries most vocally advocating for strong social capital, civic society and democracy abroad (such as the United States), have declining social capital and a weakening civil society at home (Putnam, 1995). Although this argument may be true, analyzing social capital would provide as an important concept for gauging the level of community agency and action in response to climate change. Moreover, although communities in North America may have declining social capital, the community of Tujereng was selected due to its organized structure and ability to work together, making social capital an appropriate lens to integrate into my theoretical framework. As I will be using the Capabilities Approach, I will have to employ a different definition for prosperity other than that used by Putnam (1993). This is due to the fact that he articulated prosperity to be synonymous with economic development and wealth. Development, through the lens of the Capabilities Approach, would instead mean enhancing the capabilities of the community – which would define a prosperous

community as one most able to realize its full potential in all ten of Nussbaum's (2011) Central Capabilities.

Another scholar interested in social capital is Veltmeyer (2011) who defines social capital as:

the capacity of the poor for cooperation and social organization on the basis of norms of reciprocity and a culture of social solidarity. This capacity was conceived by several sociologists and economists as a 'productive force' an asset the poor was deemed to have abundance (Veltmeyer, 2011, p. 124).

Veltmeyer (2007) argues that the emergence of the term social capital created a paradigm shift away from the developmental state and towards a participatory approach to local development. Previously, capital was viewed merely in monetary terms but, with the emergence of this shift, social capital became widely recognized. Social capital encompassed the values of reciprocity, networking, and good governance by which communities could mobilize local development initiatives (Veltmeyer, 2005). By the 1990s the idea of social capital became a new agent for bringing about development. Nonetheless, Veltmeyer (2007) argues that, although this form of development may be effective, it does not change the real issues underlying the need for development in the first place. I have taken this critique into consideration when analyzing the level of collective agency and capabilities in realizing individual capabilities and the correlated implications for policy development. In contemplating this critique, which is similar to that of Portes (1998), I analyzed the ways in which the community members of Tujereng are using social capital as a mechanism for responding to climate change and why they are using this approach, be it lack of government intervention or due to cultural norms of communal behavior.

2.1.2 Environmental Democratization

A crucial component of the Capabilities Approach is the necessity for political participation, with Nussbaum (2011) defining one of the Central Capabilities as *control over one's political environment* (p.33). In introducing the idea of democracy, Crick (2002), explains the word democracy has roots in the Greek language with *demos* meaning 'the mob, the many' and *kratos* meaning 'rule'. Democracy can thus be comprehended in many different ways, such as: a principle for governance; institutional arrangements; constitutional devices; or a type of behavior. Many understand it as individualism or liberalism, with modern democracy being understood as "the power of the people and the idea of legally guaranteed individual rights" (Crick, 2002, p. 13). If individual freedoms and choice are crucial for enhancing an individual's capabilities, then one must also examine the level of environmental democracy in the community of Tujereng and the Gambia as a whole, to better understand the relationship between climate change and the Central Capabilities.

The United Nations Economic Commission for Europe created the "Convention on Access to Information Public Participation in Decision-making and Access to Justice in Environmental Matters" in 1998, establishing a new standard and understanding for environmental democracy. This convention involved three pillars: access for citizens to environmental information, public participation in environmental decision-making and access to justice (Wates, 2005). However, in examining the role collective capabilities and collective agency play in determining individual capabilities, I must define a different form of democracy other than modern liberal democracy, which places primary emphasis on the individual.

Claude Ake, in his 1996 book, *Democracy and Development in Africa*, suggests that the form of democracy needed for Africa is not necessarily liberal democracy. Instead he advocates for deep political change with a stronger emphasis on Africa's social pluralism, community solidarity and cooperation, leading to improved well-being and strong social welfare programs (Ake, 1996). He argues, "[t]o achieve these goals, it will have to be effectively participative and will have to draw on African traditions to adapt democracy to the cultural and historical experience of ordinary people" (Ake, 1996, p. 139). He argues that democracy in Africa would need to place more emphasis on collective rights, including the rights of a community, rather than focusing solely on the rights of individuals (Ake, 1996). This critique of liberal democracy is similar to those made by Deneulin (2008) and Ibrahim (2006) in assessing the Capabilities Approach. This model of democracy, which can perhaps be better understood as consensus building, provided a useful lens for examining the state of environmental democracy within the community of Tujereng and The Gambia at large. Although Ake (1996) is referring to political democracy, his version of democracy helped me to better frame the model of environmental democracy employed in the community of Tujereng. In doing so, it offered an appropriate framework for analyzing the lived experience of Tujereng community members and local responses to a changing climate. Ake's (1996) definition of democracy provided an appropriate framework for understanding environmental democracy in the community of Tujereng and the ways in which collective capabilities and agency are acting to enhance individual capabilities through local consensus-building activities.

2.2 Climate Change

According to the most recent Intergovernmental Panel on Climate Change (IPCC) report (2014), greenhouse gas emissions have increased by 40 percent since the pre-industrial period, causing atmospheric and ocean temperatures to rise, deglaciation to occur, and sea levels to rise. Scientists on the panel avow that these trends will not only continue in future years, but also increase the vulnerability of global populations with changes in extreme weather patterns and climatic events (IPCC, UNEP, WMO, 2013, p. 4). The 2013 IPCC states: “Cumulative emissions of CO₂ [carbon dioxide] largely determine global mean surface warming by the late 21st century and beyond... Most aspects of climate change will persist for many centuries even if emissions of CO₂ are stopped” (IPCC, UNEP, WMO, 2013, p. 25). Dodman et al. (2009), argue that the least developed countries (LDCs) are the most vulnerable to climate change and have contributed the least to harmful global GHG emissions (Dodman, 2009, p. 152). Moreover, the most vulnerable countries account for only 3.2 percent of global CO₂ emissions, with over half being African countries (Huq, 2007; Dodman, 2009, p. 152).

2.2.1 Community-Based Adaption

Even with the reduction of greenhouse gas emissions the adverse effects of climate change have become irreversible (IPCC, UNEP WMO, 2013; 2014) leaving mitigation no longer a viable option alone. Adaptation in the context of climate change is the process by which the impacts of climate change are reduced through various strategies or policy pronouncements (Ebi, 2008). Climate change mitigation strategies need to be implemented alongside adaptation strategies to ensure that the most vulnerable populations are protected (Ebi, 2008; Ayers 2009).

Community-based adaptation (CBA) involves intended changes in order to enhance adaptive capacity for vulnerable communities. CBA strategies are designed through a participatory process involving both local stakeholders and disaster-risk specialists, in order to strengthen the capacity of local people to adapt to the adverse effects of climate change (Ayers, 2009). CBA relies on social capital or community action to achieve adaptation goals, which are dependent on local context including cultural norms, geography or demography (Ebi, 2008).

Centralized adaptation strategies have been critiqued for not being cost-effective, mainstreamed into development policy, or including the voices of marginalized populations (Ebi, 2008; Ayers, 2009; Hardee, 2010; Rinne, 2011; Government of The Gambia, 2013). Ayer (2009) articulates the value in utilizing a community-based rather than centralized approach: “it addresses the locally and contextually specified nature of climate change vulnerability because it takes place at the local levels where people encounter impacts, build adaptive capacity, and respond” (Ayer, 2009, p. 26). CBA views adaptation as an integral element of development rather than a separate initiative entirely, making it crucial that adaptation be integrated and mainstreamed into all developmental policy and projects.

2.2.2 Climate Change in The Gambia

Scholars have argued that The Gambia, is becoming extremely vulnerable to the adverse effects of climate change as various effects of climate change are already underway, including: torrential and erratic rainfall patterns; extended periods of drought; increasing flooding and storm surges; extreme fire and pest outbreaks; as well as

increasing coastal erosion and sea level rise (Carney, 1993; Jallow, 1996; Shroeder, 1997; Jallow, 1999; Government of The Gambia, 2007; Bijl, 2011; Government of The Gambia, 2011; Drammeh, 2013; Government of The Gambia, 2013).

The Gambia's coastal zone extends 80 km along the open ocean, with another 200 km of sheltered coast along the River Gambia, which is comprised of mudflats and mangrove systems (Jallow, 1999). Anthropogenic activity dating back to the colonial period has degraded mangrove habitats (Gailey, 1965; Satyanarayana, 2012), with mangroves having been destroyed by the harvesting of firewood, overfishing, land conversion for agriculture, as well as urbanization, tourism and recreational developments (Satyanarayana, 2012). Mangroves in the coastal zone play an important role in protecting areas vulnerable to the adverse effects of climate change (Jallow, 1999). Heavy rains in the wet season cause flooding in the coastal areas, which are predicted to become more frequent and damaging, especially with the degradation of mangrove systems (Jallow, 1999). However, the adverse effects of climate change have also increased desertification and drought, which have similarly escalated the destruction of mangroves (Satyanarayana, 2012). Although scholars have discussed the importance of mangrove systems for minimizing the effects of climate change, Drammeh (2013) argues that The Gambia is still lacking the necessary wetland and mangrove policy needed to protect the coastal zone. He does not, however, illustrate in what ways this policy should be constructed to remedy this situation, leaving one to question whether communities which are being affected would be consulted. My research examined the ways in which current climate change and coastal zone management bodies and policies are involving coastal communities.

The Gambia is within the top ten countries in the world with a high percentage of its population living in the lower elevation coastal zone (McGranahan, 2007). Jallow (1999) discusses how predicted sea level rise will negatively affect Gambians. As Jallow notes, the capital city of Banjul is less than one metre above sea level (Jallow, 1999, p.129). With predicted sea level rise, the capital city of Banjul will be completely submerged in 50-70 years, displacing more than 42,000 people, and losing infrastructure valued at well over 217 million USD (Jallow, 1996, p. 165). There has also been a decrease in the aquifer recharge due to 20 years of drought and overexploitation. He explains how this coincides with a rising sea level and has resulted in the salinization of both the River Gambia and groundwater in Banjul (Jallow, 1996). He also contends that with predicted sea level rise, the most impacted area will be the wetlands and mangrove areas which are crucial habitats for fish spawning as well as important for rice farming (Jallow, 1996).

Jallow (1996) offers important recommendations for the Government of The Gambia, stating that: “because much of the coastal area, including the capital city of Banjul, is built on low-lying, erodible sediments and subject to both erosion and inundation, both adaptation and mitigation strategies must be employed” (Jallow, 1996 p. 166). Although this study was conducted and published nearly ten years ago, there has still been minimal planning in The Gambia regarding adaptation and mitigation strategies. Moreover, there has not been the necessary policy reforms made to ensure that the vulnerability of Gambians living in coastal areas is minimized (Government of The Gambia, 2013; Drammeh, 2013).

What Jallow (1996) recommends is new and innovative sand management, in addition to the construction of seawalls and bulkheads to protect against sea level rise and storm surges. Jallow (1996) also calls for increased rehabilitation efforts, as well as sustainable planning and regulation, while also recommending wetland conservation initiatives, coastal management plans and increased public outreach and awareness.

Although Jallow (1996; 1999) discusses the correlated implications of sea level rise, he evades actually discussing how this is affecting coastal communities in The Gambia. My research builds upon Jallow's important contributions by examining the ways in which sea level rise is actually affecting the community members of Tujereng, including the rice growing areas and mangrove systems. Furthermore it endeavours to examine why his recommendations have not yet been acted upon. This consists of analyzing the complexity underlying such recommendations, including how they intersect with pre-existing policies or human interventions—as well as the ways in which these rehabilitation efforts would affect local communities.

Drammeh (2013), on the other hand, alludes to the complexity of the climate change discourse in the Gambia and contends that “the effects of climate change, combined with past human interventions (sand extraction, degradation of coastal environment) have increased the vulnerability of the coastal zone of The Gambia” (Drammeh, 2013, p. 123). He discusses how sand mining and dredging activities remove millions of tons of sediments annually, exacerbating other problems, such as sea level rise in the coastal zone (Drammeh, 2013, p. 125). Moreover, he argues that the effects of sea level rise and storm surges combined with inadequate urban planning, have already resulted in damaged or lost cultural sites and other infrastructure, as well as feeding and

nesting areas for birds and turtles. He also emphasizes the negative impact sea level rise is having on agriculture, noting that these impacts will likely be exacerbated in future years with the increasing salt water intrusion of fresh water sources or the inundation of rice growing areas. He illustrates the magnitude of these issues, stating that 64% of rice-growing areas will be at risk with the predicted sea level rise of one metre (Drammeh, 2013, p. 8). Drammeh (2013) recommends several necessary policy measures required, emphasizing the dire need for developing an Integrated Coastal Zone Management Policy. His recommendations are similar to those of Jallow (1996), yet both authors neglect to recognize the role of the community in shaping these policies.

The Government of The Gambia has prioritized mainstreaming climate change into developmental policy (the process by which all sectors integrate and consider the ramifications of policy within their sector on climate change and vice versa) while also recommending a Low Carbon Development Strategy. In order to fully mainstream climate change policy, a recent report published by the Government of The Gambia, recommends: “Integrating climate into decentralized development planning and implementation, supported by a financial mechanism, will allow local- to national-level climate change responses and coherent mainstreaming” (Government of The Gambia, 2013, p. 9). This would involve truly investigating what responses are occurring or desired at the community level.

Another study conducted by the Government of the Gambia (2010) examined the impacts that the adverse effects of climate change will have on ecosystems and ecosystem services, discussing how to integrate the necessary adaptation strategies to ensure sustainable development (Government of The Gambia, 2010). The study, however, fails

to examine the ways in which climate change is already affecting lived experience in The Gambia and what responses the affected communities are prioritizing. My research addresses the current dearth in the literature, examining how the adverse effects of climate change are affecting Central Capabilities in Tujereng, The Gambia, what responses are being prioritized at the community level, and the policy implications that stem from these impacts and findings. Additionally, my research explores whether climate change is actually being mainstreamed into national policy and to what extent responses are being decentralized through national policy measures.

2.2.3 National Climate Change Policy in The Gambia

The Government of The Gambia and the United Nations Environmental Programme created the National Adaptation Programme of Action (NAPA) in 2007 to identify the priority needs and activities required in response to the adverse effects of climate change in The Gambia (Government of The Gambia, 2007). Although the NAPA claims to be a participatory strategy, it still focuses on centrally designed adaptation strategies prioritized by “experts”. The NAPA even recognizes the shortcomings of this form of strategy, stating that:

In order to be effective many adaptation strategies need to be accepted by key players. Elitist/technocratic approaches in the past have failed to generate a sense of ownership and commitment leading to failure of government policies and projects in many places (Government of The Gambia, 2007, p. 28).

The adaptation strategies were prioritized by experts and analysts rather than selected by the communities affected. The NAPA explains the process stating:

To make an informed choice between options/alternatives with similar objectives (and time frame), a balanced set of criteria is indispensable to analysts/decision-makers who have the task of comparing the contribution to meeting associated

objectives (Government of The Gambia, 2007, p. 51).

All projects prioritized are large in scale and capital intensive, with the cheapest project being 230,000 USD and the majority of the projects being well over 1,000,000 USD (Government of The Gambia, 2007, pp. 60-86). This becomes problematic, as financing is described as one of the main obstacles for the NAPA (Government of The Gambia, 2007). Whereas if the communities affected were involved, the projects may have been more feasible, more effective and smaller in scale. The decentralization process for the NAPA claims to be done by way of integrating Village Development Committees (VDCs) to democratize development and decentralize state responsibility and decision-making of adaptation strategies (Government of The Gambia, 2007; Schroeder, 1997). In theory, using VDCs would be a much more effective means for designing and implementing adaptation strategies. My research investigates the NAPA in action, including which projects are being implemented, and whether the Tujereng VDC and wider community were included in the actual preliminary stages of the NAPA.

NAPAs created in collaboration with UNEP have been universally critiqued in relation to a number of pressing issues. Rinne (2011) argues that gender is often overlooked when planning the national adaptation strategies and solutions. She stresses that gender should be a fundamental consideration when planning the strategies – with women's groups and women community members being sought out and consulted – in order to improve gender mainstreaming in the formulation of adaptation strategies (Rinne, 2011). Rinne (2011) contends that men and women will face different challenges due to climate change. To a further extent, she emphasizes that currently NAPAs lack the appropriate integration of women's experience and opinions. This has the potential to

reinforce inequitable power structures, which already may exist. Hardee (2010) argues that NAPAs lack the necessary integration with poverty reduction strategies, as well as the necessary alignment between sectors and ministries including the implications of climate change on food security, health, education, energy, tourism, or coastal and terrestrial ecosystems (Hardee, 2010). Similarly, in a 2013 report on mainstreaming climate change issues into development strategies in the Gambia, the Government Consultant states that the nation needs improved sectorial integration and increased decentralization in the planning and project implementation of development and adaptation strategies (Government of The Gambia, 2013). One of the central factors intensifying the adverse effects of climate change is population growth. That being said, the adaptation policies do not include educational components on reproductive health or family planning into their strategies (Hardee, 2010).

The 2007 Gambian NAPA was created to prioritize the needs and activities required in response to the effects of climate change in The Gambia (Government of The Gambia, 2007). Although the NAPA claims to be a participatory strategy, it still focuses on centrally designed adaptation strategies prioritized by “experts” (Government of The Gambia, 2007). Nyong et al. (2007), argue that Sahel populations have been adapting their lifestyles for centuries due to harsh weather conditions and population pressure. They argue adaptation strategies should draw on this indigenous knowledge (A. Nyong, 2007, p. 787). In considering this argument, my research will examine whether the NAPA was truly a participatory process, engaging with local-level knowledge. Moreover, although climate change is affecting coastal communities, there has been little to no examination of the extent to which these impacts or NAPA affect local communities’

quality of life and lived experience.

2.3 Methodology

2.3.1 Data Needs

In order to answer my research question, my primary objective was to collect data that illustrated the ways in which the adverse effects of climate change are causing capability deprivation in the community of Tujereng. Since I employed Nussbaum's (2011) Capabilities Approach to determine the extent of capability deprivation in the community, I needed to examine how climate change was affecting the ten Central Capabilities defined by Nussbaum (2011): life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment (Nussbaum, 2011, p. 33) (see Appendix A). The data was collected through conducting primary research in the community of Tujereng. Only community members were truly able to inform my research questions as the questions were linked specifically to the actual realities, associated interpretations and perceptions of the Tujereng community.

The community of Tujereng is more communal by nature and the majority of community members spoke from the "we" rather than the "I" perspective. By adding a collective lens (social capital), it helped me to better answer my questions, as using a framework based on individualism was limiting the scope of my research in Tujereng. By using a collective lens, I was able to more fully understand the complexity of the situation and obtain more relevant data, better representing the community experience and interventions. I began examining the adverse effects of climate change and the correlated implications for Tujereng residents' Central Capabilities; that is to say that I was not only

examining the ways in which climate change was affecting the Central Capabilities, but also examining what ways Central Capabilities affected local adaptive capacity.

Finally, I also needed to examine what the Government of The Gambia was doing in response to climate change – in order to minimize capability deprivation in the community of Tujereng and The Gambia at large – and why these responses were prioritized. To obtain the necessary data to achieve my research objectives, I needed to interview Tujereng community members, policy-makers and government officials, while also acquiring the correlated governmental documents and policies.

2.3.2 Documentary Evidence

I entered The Gambia on November 28, 2013, for the field portion of my research and met with the Nova Scotia Gambia Association (NSGA), the partnering non-governmental organization coordinating my research logistics. The NSGA briefed me on the current situation in The Gambia and introduced me to the NSGA staff members working in Tujereng. They were then able to provide me with the insight needed to form my data collection strategy, including which specialized libraries I could gain access to through their assistance. Following this, I visited the National Statistics Bureau and retrieved any statistics, information and maps I could access regarding Tujereng and The Gambia as a whole. This allowed me to divide the community into sections, to ensure members from all areas in the community would be sought out and represented in the research process. In addition, I was permitted to utilize the National Environment Agency's (NEA) and Department of Forestry's Documentation Centres, where I was able to gain access to documents, reports and environmental assessments which otherwise would not have been available to the general public. This allowed me to refine my data

collection strategy even further, as I became more aware of the environmental challenges Tujereng was facing.

2.3.2 Research Approach

The NSGA acted as a liaison with the community of Tujereng, providing me with qualified staff and a translator in order to ensure that Gambian cultural norms and traditions were followed throughout the interview process. I employed a qualitative case study approach in the community of Tujereng for collecting the primary data needed to determine the ways in which the adverse effects of climate change are affecting the Central Capabilities of local populations. The case study approach is used to examine one single case or lived experience in detail within a larger phenomenon (Perecman, 2006; Yin, 2009). The case study in Tujereng helped me shed light on the larger phenomenon of climate change and the implications for coastal populations, by examining actual lived experience in detail. This was the best way to examine the relationship between changes in climate and capability deprivation in Gambian coastal communities, as Tujereng is a rice farming community already feeling the adverse effects of climate change and mobilizing efforts in response. In order to analyze the ways in which climate change is affecting Central Capabilities, I needed to look at the micro rather than macro level analysis of the phenomenon. Due to the short duration of time available for field research (six weeks), it seemed most appropriate to examine one community in depth rather than compare two cursory case studies. As the Central Capabilities are abstract and interpreted differently across cultures (Nussbaum, 2011), the only way to fully understand this relationship was by examining one community in depth, and the community best suited was Tujereng, recommended to me by the NEA and NSGA.

2.3.2.1 Why Tujereng?

The community of Tujereng was selected for the case study of my research primarily due to its increasing vulnerability to the adverse effects of climate change. Being a coastal community located in a country that is becoming severely affected by coastal erosion and sea level rise, it offered a tangible examination of this adverse effect that is often discussed primarily as a future implication for other nations. Moreover, the community has various livelihood strategies, including fishing, farming and forestry, which are dependent on the natural environment, allowing a more diverse examination of the ramifications of climate change on local livelihoods. Tujereng is a rice-growing community and with the predicted inundation of rice farming areas due to sea level rise (Drammeh, 2013), it provided an appropriate location to investigate what impact this will have on local and national food security.

In addition, the NEA and NSGA also recommended Tujereng due to its impressive community organization and well-respected *Alkalo*. The community still utilizes the traditional model of governance, including the Council of Elders, while also integrating newer structures – the Village Development Committee and NSGA Peer Education team – with both actively working to improve community life. Due to Tujereng’s capacity for organization, this improved my ability to conduct successful research thanks to their willingness to participate in research and development projects.

That being said, the case study approach is not without its limitations, as the results should not be generalized and applied to all other communities in The Gambia. My research findings are place-based and relate solely to the lived experience of Tujereng community members. That being said, broader lessons learned regarding the vulnerability

of coastal communities in The Gambia, social capital and pre-requisites for successful community-based conservation, and adaptation initiatives could be utilized to inform national climate change policy and future community-based initiatives in The Gambia.

2.3.2.2 Qualitative Research Approach

I applied a qualitative research approach because I wanted to exercise a multi-faceted methodology that would allow me to utilize different micro-level (individual lived experience) case studies, techniques and sampling methods combined, to ensure the validity of facts (Denzin, 1998; Mayoux, 2006). Rather than following strict guidelines, qualitative research encompasses a flexible and reflective data collecting process and analysis strategy (Mayoux, 2006). Moreover, rather than examining a large number of cases with few variables, qualitative research instead looks at fewer cases in fine detail including an extensive amount of variables or effects (Scott, 2013). In considering this, I decided that taking a qualitative methodological approach would be best suited for examining abstract concepts such as Central Capabilities, as they may be defined differently across cultures, communities and individuals.

Nussbaum (2011) argues that capabilities are plural and in most cases cannot be measured quantitatively, as each capability has a certain level of dependency on the other Central Capabilities. In addition, each capability is prioritized, understood and utilized differently by each individual or community. Therefore, the Central Capabilities are best examined as a set, through a qualitative research lens (Nussbaum, 2011). I endeavored to develop a research process that was flexible and reflective, so as to better adapt to and describe complex experiences concerning the adverse effects of climate change. In

addition, having in-depth conversations, rather than relying on informants to fill out surveys or questionnaires, helped me to understand the complexity of, as well as different interpretations and explanations for, the changes in climate that are affecting the community as whole, as well as each individual's given reality.

2.3.2.3 Participatory Research Approach

Participatory research enables local people to take control over the research process, including how data is generated, analyzed, owned and shared (Chambers, 1994). Although I did not take a participatory approach, I did apply various principles, which Chambers (1992) describes as central to participatory approaches. The community members were seen as experts in my research, owning the valuable knowledge required for attaining my research objectives. No outside entity, including government officials, could describe the relationship between capability deprivation and changes in climate in the community of Tujereng as accurately as the community members themselves. This also incorporated a reversal of learning in the research process, whereby the community members informed and advised other community members and myself on the ways climate change was already affecting their community, including the local responses needed, or already occurring, within the community.

Another important principle for participatory research is triangulation, which is the crosschecking of data collected through utilizing numerous research techniques and informants to ensure validity (Chambers, 1992; 1994). I employed triangulation to help me seek diversity, reliability and validity, through implementing different research strategies and techniques to ensure data consistency. These principles helped to guide my

research but in accordance with Chambers (1992) goals for participatory approaches, although I can hope that my research will motivate action, the central objective is not to empower the community to ‘*plan and to act*’, as many of the changes need to come from outside the community. My central objective is to give Tujereng community members an opportunity to tell their stories concerning the ways climate change is causing capability deprivation, and to advocate, instead, for policy reforms that will enhance the capabilities and improve the realities of those living in Tujereng, and The Gambia at large.

2.3.3 Research Techniques

I conducted my field research in the community of Tujereng, The Gambia, from November 28, 2013, until January 11, 2014. The entirety of my research was facilitated by the NSGA, including travel logistics and data collection techniques, which enabled me to enter the community according to local customs and traditions. In addition, all methodological techniques were facilitated with the assistance of a translator working for the NSGA and other NSGA staff members. Another student researcher and I were taking notes during the interview sessions, while also using a digital audio recorder, which I transcribed once I returned to Canada. It should be noted that informed consent was provided in verbal rather than in written form, through the assistance of the translator, as many participants did not speak English or have the necessary literacy skills required to complete written consent.

On December 4, 2013, I met with the community *Alkalo* (head of the community) and introduced my research, seeking his blessing to enter the community of Tujereng, to conduct my research. After receiving the *Alkalo*'s blessing, On December 15, 2013, I discussed my research objective and up to date findings with the community elders to

ensure that my research was supported by the Council of Elders and not considered intrusive or damaging to the community. During these discussions I described my research approach, including the various methodological techniques I would be using to obtain my research objectives, which were all approved and supported by the Council of Elders. As previously mentioned, I utilized a multitude of data collection techniques including: '*photovoice*'; Peer Health Educator community interviews; the creation of a community film; semi-structured interviews; direct observation; focus groups; the snowball method; and triangulation, to ensure the data collected was diverse, reliable and valid.

Photovoice is a process by which photography is used as a catalyst for discussion (Wang, 1997). The goals of this methodology are: "1) to enable people to record and reflect their community's strengths and concerns, 2) to promote critical dialogue and knowledge about important issues through large and small discussion of photographs and 3) to reach policy makers" (Wang, 1997, p. 369). I used this research technique as an activity with the Peer Health Educators at the Tujereng Upper Basic and Senior Secondary School. There were 30 participants in total, 15 boys and 15 girls, ranging in age from 16-19, who took part in this activity on December 15, 2013. The PHEs were divided into 4 groups, with each group having their own camera. First I ensured all participants were familiar with how to use a camera. The participants and facilitators walked around the surrounding area, with the participants choosing which route to take. The participants were asked to take photos of the following:

- areas in the natural environment that have undergone environmental changes in their lifetime

- areas in the natural environment that are important to them
- areas in the natural environment that are in danger or unhealthy
- and areas in the natural environment that are in need of protection

This approach allowed the participants to decide what was important, in order to minimize my preconceived notions and bias. Moreover, it functioned to ensure those without literacy skills were included. Each group presented and discussed their findings with the other PHEs and these presentations and discussions were all recorded as audio files, which I later transcribed to be analyzed. However, *photovoice* is not without its limitations. As the facilitator, I had little control over which photos were taken, which produced inconsistent data, as some of the photographs taken had little to do with environmental change. Although this is also one of the strengths – correcting facilitator assumptions – it did not always have the desired results. In addition, it would be difficult to inform policy merely with photos and different community narratives. That being said, this can be remedied through triangulation and the use of other research methodologies (Berbes-Blazquez, 2012).

In addition, the 30 Peer Health Educators (PHEs), 15 boys and 15 girls, were asked to interview their family and community members regarding how the environment had changed over their lifetime. These interviews were conducted during the period of December 14, 2013 and December 15, 2013. The interviews were all transcribed by myself after returning to Canada so that they could be analyzed and compared to the *photovoice* data. This helped me to understand the ways the environment had been changing in the community, but with the PHEs determining the questions and people to be interviewed. This data collection strategy was useful in understanding which issues the

youth in Tujereng were prioritizing and why – and the correlated implications for individual and collective capabilities in the community.

Another data collection tool I utilized was similar to *photovoice*, but instead was done through the filming of a documentary style film in the community of Tujereng – which was later shown during a community film night. This research tool had similar goals to *photovoice*, also endeavoring to mobilize community discussion and to inform policy through critical reflection on environmental strengths and weaknesses in the community. To watch the community film, *Environmental Change Over Time: Tujereng, The Gambia* please follow the link listed below:

<https://www.youtube.com/watch?v=8bAgnv6gL6Q>

The central interview questions were as follows:

- What constitutes the environment?
- Have you noticed any changes in the natural environment in your lifetime?
- How do these changes affect you and your community?
- How do you and your community cope with these changes – what are you doing in response?
- Are there any areas in your community that are in need of protection?
- What advice would you give to others in regards to these changes?

The community film included 13 male and 11 female participants, ranging in age from 16-80, interviewed between the dates of December 4, 2013 and December 11, 2013. However, the NSGA media unit conducted the filming rather than community members, as a video camera is more difficult to use (and more costly) than digital cameras. The film was composed of a series of on-camera interviews that were edited according to

recurring themes and topic relevance by the NSGA media unit. The primary content included community members discussing environmental changes in their community and conservation initiatives, with the film including footage from the community coinciding with the changes being discussed. In addition, the Tujereng Peer Education team provided educational sections regarding the environmental changes discussed by their community. The Village Development Committee in Tujereng also assisted in facilitating and organizing the filming process, which helped make community members feel more comfortable with participating.

The community members took ownership over the film, guiding the media unit to different areas throughout Tujereng, which they perceived would best represent the changes affecting their community. The film was shown at a community film night in January 2014. It was hosted by the NSGA, VDC and Tujereng Peer Educators, who also performed educational dramatizations in Mandinka – the dominant language spoken in Tujereng – concerning climate change and the importance of environmental conservation. It should be noted that policy-makers who participated in my research were also invited to the community film night (with some attending). As the documentary was filmed in Mandinka, it posed many challenges in using it as a research methodology. Again this reduced my control over the themes discussed in the creation of the film, minimizing any preconceived notions I had developed. After completing the filming, a translation was completed by an NSGA staff member, which I transcribed to help me understand the various themes that had arisen and to analyze in comparison to the other data collection techniques. Both *photovoice* and the community film helped me to understand the ways climate change was causing capability deprivation in the community – while having

minimal control over the ways the narratives were being constructed. This technique helped me to understand the ways social capital was being utilized to mobilize efforts in response to climate change. Had I not used this technique, I may have missed the significance of integrating a collective lens for my theoretical framework.

Another crucial tool utilized for gathering primary data was the use of semi-structured interviews. I conducted 19 interviews over the period of December 11, 2013 until January 7, 2014, with 12 male participants (5 government officials and 7 community members) and 7 female participants (2 government officials and 5 community members), ranging in age from 20-80. Rather than having a rigid interview format with pre-determined questions, I instead used semi-structured interviews, which were facilitated through the use of a topic guide that was flexible and adaptable, and varied depending on each individual participant and their responses (Scott, 2013). This technique helped complement the data previously obtained through *photovoice* and the community film. Moreover, in determining the ways that collective and individual capabilities are being affected by climate change, I needed to have a flexible research approach that did not reduce complex relationships. As such, semi-structured interviews helped me guide the research process while still allowing for participants to divulge knowledge on the topics that were most relevant to their given reality.

Direct Observation was an additional technique I employed to realize my research objectives. Observation, as described by Scott (2013), is a “crucial data production tool in the methods tool-kit” (Scott, 2013, p.265). I used inobtrusive observation to inform the development of my thesis, meaning that the majority of the direct observation occurred in the natural environment and context (Scott, 2013). Throughout my time in The Gambia, I

made sure to keep organized field notes so that I could later refer back to them, to clarify any questions that might arise, and verify various themes throughout the analysis process. This helped me to understand the important social structures, relationships and power dynamics within the community and The Gambia at large, which was needed to fully grasp the complexity of the relationship between climate change and capability deprivation in the community of Tujereng.

Three focus groups were also conducted in order to obtain youth perspectives on the ways that the adverse effects of climate change were affecting community capabilities. One was conducted on January 6, 2014, including 3 male participants between the ages of 20 and 30, who were members of the Tujereng Youth Environment and Health Group. The other two focus groups were conducted with the Tujereng PHEs on January 9, 2014, having one group of 15 male participants with the ages ranging between 16 and 20, and the other group having 15 female participants with the ages ranging between 16 and 20. Focus groups are utilized to examine the ways in which a small number of research participants interact with one another as they respond to questions posed by the researcher (Scott, 2013). Therefore, these focus groups were used to examine the ways in which youth peer groups would interact with one another as they responded to questions about climate change. My aim was to further inform my research sub-question concerning collective capabilities and agency specifically among the youth, as the majority of my other research techniques had highlighted elderly knowledge in the community.

Aside from *photovoice* and the focus groups, research participants were recruited using the snowball method. The snowball method is a qualitative technique, utilized to

find participants through referrals made by previous participants, who are asked to recommend others who they feel will have valuable knowledge on the topic (Biernacki, 1981, p. 141). This was the most relevant technique for recruiting participants, as my research required a certain level of knowledge concerning changes in climate, such as sea level rise or rainfall patterns. That being said, all local community members who wished to participate in my research were included, so long as they were above the age for given consent (sixteen years of age).

I endeavored to include an equal representation of men and women, including various age groups and occupations, to have more representative data. However, as participants were volunteers, there was an under-representation of female participants for certain data collection techniques. This was rectified through exercising triangulation and a multi-faceted approach that employed numerous research techniques. Triangulation is crucial for ensuring the validity, diversity and relevance of data collected. This means employing an integrated methodological approach with complementary research techniques used to cross-check data retrieved and consolidate strengths (Chambers, 1992; Mayoux, 2006). This is why I chose numerous diverse data collection techniques to ensure all the aforementioned goals were achieved while collecting as well as analyzing the data.

2.3.4 Analysis strategy

The aforementioned data collection techniques were all analyzed according to a similar strategy in order to formulate a coherent and convincing thesis. Using triangulation while analyzing the data helped me to ensure that the data collected was reliable; triangulation of research methodologies allowed me to cross-check data from

different techniques in order to ensure validity and consistency. As both another student researcher and I took notes while in the field, I used these notes to verify recurring themes and to widen the lens of analysis. As the other student research and myself likely have distinct worldviews, we may have interpreted the interview content differently. In addition, I transcribed all of the audio recordings of the interviews, focus groups, the *photovoice* activity, and the community film, so that the data could be mined in line with my analysis strategy. All of the data was mined manually, searching for themes indicating the ways the adverse effects of climate change are affecting Nussbaum's (2011) aforementioned list of Central Capabilities (see Appendix A for explanations of capabilities). I used Nussbaum's list of Central Capabilities in accordance with each individual research participant's interpretation to determine the level of capability deprivation occurring in the community of Tujereng, and how this is caused or exacerbated by climate change. Furthermore, I utilized manual coding rather than using any type of software in order to minimize the chance of reducing the data, with the goal of maintaining a better representation of the lived experience. The manual codes included the ten Central Capabilities, changes in climate, social capital and collective agency to begin with, while other codes were determined as additional recurring themes arose.

2.3.5 Challenges

I recognize that no form of research is without bias. As I have spent the majority of my life in Canada, I realize that the bulk of my knowledge has been constructed by "Western" ideas. Both the data collected from *photovoice* and the community film were used to help minimize my own preconceived notions, as the participants were given an element of control concerning the way in which my research was conducted, what

information was represented, and how. Although this reduced my control over some of the data, I understand that, as the researcher, I am still the individual constructing the knowledge for interpretation in my thesis. In doing so, I endeavored to portray the community concerns as objectively as possible. Moreover, by using a translator, the data collected was interpreted through another lens that may portray a message other than that desired to be revealed by the research participant. The way I endeavored to minimize these challenges was through being self aware and critical, while employing a multi-faceted research approach that utilized the crucial methodological tool of triangulation, cross-checking and verifying all data collected.

Chapter 3

This chapter presents an analysis of the local-level knowledge and perceptions of the community residents and key policy-makers concerning the changes in climate occurring in the community of Tujereng and the Gambia at large. This chapter is divided into two sections. The first section will present the data demonstrating the adverse effects of climate change occurring in the community of Tujereng. The second section will utilize the Capabilities Approach (Nussbaum, 2011) to analyze the extent of capability deprivation occurring in Tujereng as a result of a changing climate.

3.1 The Adverse Effects of Climate Change in Tujereng, The Gambia

Prior to discussing the ways in which climate change is affecting the Central Capabilities of community members in Tujereng, I first had to determine what environmental changes the community perceived to be occurring and if these changes were represented in the pre-existing literature. In speaking with community members, I

discovered that the community of Tujereng has experienced a number of climatic fluctuations throughout their lifetime, including: increasingly hotter, drier seasons; erratic and decreasing rainfall patterns; sea level rise; salt water intrusion; and degrading forests and ecosystems due to the adverse effects of climate change. This section will present the data in order to demonstrate the ways in which climate change is negatively affecting the quality of life in the community of Tujereng.

3.1.1 Changing Seasons and Temperature

A 2011 report published by the Government of The Gambia indicated that there would likely be an increase in average annual temperature of between 3 and 4.5 degrees Celsius (°C) by the year 2075 (Malanding Jaiteh, 2011, p. vii). However, residents in Tujereng are already noticing significant changes in seasons and temperature patterns. Numerous community members discussed the changing seasons, highlighting the decreasing length of the cold-dry season and increasing temperatures:

“When I was a young boy at the age of ten, twelve, so on, in the 50s going into the 60s. I used to experience very cold dry season here and then in those days in November like December where we always used to be very cold. Even the elderly would have to put some sticks together and put fire and we’d be warming up. Late in the evenings towards the half of the night we would be warming up. And now we don’t have such weather again. Although it goes cold, but for a short period maybe between December to April or May it is time to warm up again. These are big changes” (Interview 2, December 11, 2013 – Tujereng VDC member).

“When I was a child, it used to be very cold during the time of Ramadan which is November to February, but now [in December] it is still hot. This is an indication of a changing climate” (Tujereng elder in community film: *Environmental Change Over Time* – December 10, 2013).

Other community members spoke about rising temperatures, emphasizing that, previously, the temperatures in previous years were not as hot as they have been in recent years:

“Before the weather conditions is different from now. The earth was not hot like this” (Tujereng elder, PHE interview 1, December 14, 2013).

“People would work on their farms under the sun for the whole day. The sun was not hot like this. When we were young and realize that the earth is becoming warmer and warmer we used to say the sun is coming towards the earth.” (Tujereng elder, PHE interview 1, December 14, 2013).

One of the fascinating findings throughout my research can be demonstrated by analyzing the following quotation:

“Because now people are always complaining about the high temperatures and that is as a result of the cutting down of trees and then the emissions of certain gases into the atmosphere because sometimes these people cutting down the tree they do what we call the charcoal production which emit a lot of smokes into the atmosphere which is tampering with the ozone layer which is resulting in the high temperatures. So many people are always complaining about the high temperature which is a result of the human activities on the earth” (Interview 11, December 20, 2013 – Tujereng teacher).

Many community members attributed climatic fluctuations, including the rising temperatures, to their own environmentally destructive behavior. As mentioned in the literature on climate change, developing countries such as The Gambia, have contributed minutely to the greenhouse gases, which are causing the changes in climate (Dodman, 2009), yet many residents of these countries still feel responsible for their increasing vulnerability.

3.1.2 Rainfall Patterns

In addition to changing seasons, Tujereng community members noted changes in precipitation patterns and the correlated effects these changes are having on agriculture and local quality of life. According to hydrologists, average rainfall in The Gambia has not only been decreasing, the last 30 year period represented in the data is less than 858.3 mm – marking the most recent period as the driest phase measured to date (Dia Ibrahima, 2012, pp. 17-18).

Average Annual Rainfall in Banjul Organized by 30-year Series

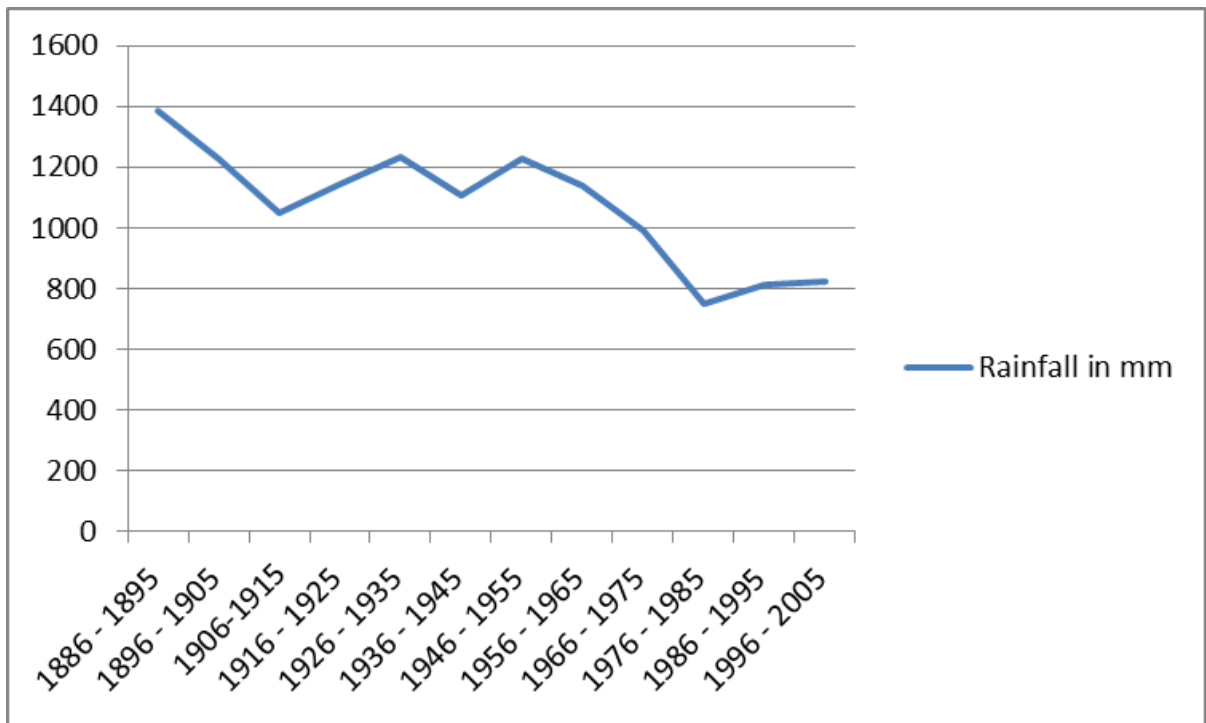


Figure 3.1: Banjul's Average Annual Rainfall Between 1886 and 2006

Source: Average Rainfall in The Gambia in Millimeters reproduced from: Dia Ibrahima, M. (2012). Vulnerability Assessment of Central Coast Senegal (Saloum) and The Gambia Marine Coast and Estuary to Climate Change Induced Effects . Banjul: Coastal Resources Center and WWF-WAMPO, University of Rhode Island p. 18.

One of the most prominent effects of climate change being felt in the community of Tujereng, is erratic or declining rainfall patterns. The majority of interviewees noted the declining rainfall. However, it should be noted that participants also discussed sporadic or inconsistent precipitation patterns, differing from rainy seasons in the past, with many farmers blaming the rain, or lack thereof, for decreasing agricultural productivity:

“Before they used to have a lot of rainfall and now the rainfall is not very ok” (Interview 1, December 11, 2013 –Tujereng rice farmer – via translator).

“Some of the changes are the rains, because before, there was a lot of rain, they could work and then have a lot of yields. But now, that is not happening” (Interview 2, December 12, 2013 – Tujereng community member – via translator).

“There was a time our parents used to tell us they used to experience very heavy rainfalls. There was a time that the rainfall was very heavy and we have recently have had rainfall that is not as consistent” (Interview 19, January 7, 2014 – Tujereng community member).

“Before the rainfall used to be enough, the crops had good yields and we grew enough to eat” (Tujereng elder/rice farmer in community film: *Environmental Change Over Time* – December 10, 2013).

A recent report developed by USAID, the Republic of The Gambia, WWF, and the Coastal Resource Center (2012), states that inconsistent rainfall patterns and reduced precipitation in The Gambia will result in a drastic decline in agricultural production and threaten food security. The report predicts reduced crop diversity, while higher salinity levels in rice fields are expected to reduce the productivity of rice growing areas (Dia Ibrahima, 2012). My research revealed that the predicted effects were in fact already occurring in the community of Tujereng. Community members are already noticing increasing salinity levels in rice growing areas and are attributing it to the declining rainfall patterns:

“There is less rainfall now and we in Africa depend on agriculture to live, so if there is less rainfall it is going to be hard for us. Our moms work hard in the fields yet their harvest does not represent this hard work because of the lack of rain. There are rice fields that are becoming salty and that salt water kills the rice, everybody knows that” (Tujereng youth in community film: *Environmental Change Over Time* – December 10, 2013).

In addition, Tujereng community members have attributed reduced crop stability and productivity, coinciding with declining crop diversity in recent years, to declining rainfall patterns:

“Because in those days, they used to have a lot of rice. They didn’t buy any imported rice from a bag. They don’t like it. They just would get their fresh rice that they would eat all year round. And they grow maize, millet, all the crops would turn out well so feeding was not a problem. Because there was enough rainfall but that is all going down” (interview 12, December 20, 2013 – Tujereng rice farmer – via translator).

There were two recurring concerns that arose when discussing climate change in the Gambia, which were very eloquently illustrated in this quotation from a Gambian Government Official:

“The country is highly dependent on rain fed agriculture. And then two, coastal tourism is also something the country is very dependent upon for the economy. When it comes to climate change rainfall is one of the issues and Gambia is part of the Sahel and most of the projections we see by research, is that rainfall is going to be reduced significantly in this region. So that is just something that covers The Gambia you know so it is a very big concern. Secondly coastal tourism so you can see how much the country depends on tourism with all the big hotels along the coastline from Banjul towards Tujereng. Largely, most of these are low lying areas so climate change is also expected to cause some sea level rise and low lying countries are expected to suffer a lot. So at least if you have those two things in mind, you know, climate change is a big issue” (Interview 13, January 2, 2014 – Government Official, climate change expert).

Although this quotation predominantly focuses on the potential economic consequences of the effects of climate change, similar to policy makers, local residents also seemed very concerned with the effects that sea level rise and rainfall would have on

local quality of life. The data, however, illuminated that the increasing vulnerability of local agriculture due to declining or erratic rainfall patterns is also being exacerbated by the rising sea level.

3.1.3 Sea Level Rise

As The Gambia is a low-lying country many scholars have discussed the future implications of a rising sea level (Jallow, 1994; Jallow, 1996; McGranahan, 2007; Drammeh, 2013). Tujereng community members also articulated their growing concerns regarding the repercussions of sea level rise in their community:

“The sea is coming closer at a fast pace. Before when you would look at the distance between the rice fields and the sea it was far and full of small trees. Now all of that is gone. The sea has taken everything. When it is high tide the sea goes far up there and when the tide goes out it pulls the sand back into the sea. That is what is happening here” (Tujereng Fisher/elder in community film: *Environmental Change Over Time* – December 10, 2013).

As expressed by Drammeh (2013), the rice fields in Tujereng are at extreme risk of becoming inundated. However, as explained by Tujereng community members, this could happen more hastily than scholars have anticipated if appropriate adaptive strategies and conservation efforts are not developed:

“In those days when we were young you would walk a long distance before you would get to the sea. But now from where I am standing, you can see the sea is very close. The distance has moved over 30 metres. If you look at the mining area here, 50 years back there were many big holes between here and the sea from the mining. There also used to be many small bushes from which people would harvest cotton to make pillows. The distance now between the stream over there and the sea is almost 50 metres. If this sand dune, which separates the stream and the ocean, is removed, the salt water will reach the stream and the women’s rice fields and gardens will be destroyed. I would suggest that people of the village and government come up with a plan to preserve this sand dune, because if it is removed it will cause big problems for all of Tujereng and The Gambia at large,

as many people benefit from this area” (Tujereng elder/ VDC member in community film: Environmental Change Over Time – December 9, 2013).

There were no discrepancies in the data regarding whether sea level has been rising in The Gambia, however, when asked about the sea level, many participants discussed the sea level of the community adjacent to Tujereng. In the neighboring community, Tanji, sea level rise is extremely prevalent with the high-level watermark coming very close to the main road, market space and fish smoking area.

“Now if you come all the way to the fish landing sites, to a community like Tanji, where you have almost all that surrounding villages coming to Tanji. Tanji is part of Tujereng in the past, the same Bojang family. So the brother of the Alkalo in Tujereng, left Tujereng and settled in Tanji, because it used to be the same land. So if you come to Tanji, you see that the decayed is now the land, the beach has almost disappeared and the place where canoes are landing now, its almost nowhere and you can see at night that the canoes will almost all be anchored at sea, offshore instead of onshore” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

Members of the Tujereng community also discussed the need for developing adaptive strategies, including the construction of sea walls and the creation of buffer zones by planting trees or mangroves to protect the community and rice growing areas.

“The way the sea was before and how it is now, it has come so much closer. When we were young the place we used to go to touch the sea, that place is now far inside the water. It is really troublesome and destructive. They used to mine sand here on the beach , which left big holes there, and the sea is now coming towards these holes, If the sea reaches this place our rice fields will be affected and we won't be able to grow rice. Unless something is done to address the problem, like building a wall between the holes and the sea, or planting mangroves or other trees. If not, the sea will enter that area. We need to stop cutting the trees and plant more trees, that is how we can have peace” (Tujereng elder in community film: Environmental Change Over Time – December 9, 2013).

Adaptive strategies have been developed at the national level, involving a beach nourishment project to minimize the effects of coastal erosion and sea level rise in certain areas of the country:

“The past few years we have been experiencing erosion along our coastline... that in early 2002... we had a project it of 22 million dollars, to protect our coastline. And when that project the intervention was in two forms, we had the soft intervention. That is beach management. This is just having the machines offshore and dredging sand and dumping it along the coastline. So the intervention was twofold: dredging the sand offshore, and dumping it on the shoreline, thereby creating a beach” (Interview 6, December 18, 2013 – Government Official).

Kololi Beach



Image 3.1: Kololi Beach Before Coastal Protection Project, NEA - 2004

Source: Coastal Erosion in Kololi Beach: Photograph taken by National Environment Agency at Kololi Beach, The Gambia (2004)

Kololi Beach



Image 3.2: Kololi Beach After Coastal Protection Project, NEA - 2004

Source: Coastal Protection Project in Kololi Beach: Photograph taken by National Environment Agency at Kololi Beach, The Gambia (2004)

The beach nourishment project was completed through the assistance of the Dutch firm Royal Haskoning (Global Investment and Business Center, 2012) but was only a one-time intervention. While appreciated, even Government Officials explained that these interventions were not sustainable solutions, as the current high water mark is now nearly identical to where it had previously been before the intervention.

“That was mainly a protective activity. You know the beach was gone, highly eroded, so that was a project that came and they re-nourished the beach around the hotel and Senegambia areas. It was largely a protection scheme. A Dutch company, they did the work in Banjul and Senegambia area. The one in Banjul is stable for now. In the Senegambia area if I am aware it was 120 -150 metre

stretch, but now I think it is even less than 15 metres. Within 10 years it has almost gone back to the same” (Interview 13, January 2, 2014 – Government Official, climate change expert).

“In 2010, the sea there was almost to Banjul, the beaches has been gone and then there was a project of 20 million dollars that was used to reconstruct the beach. Around Senegambia area the beach was regained, but now if you go there, totally almost all the beach has gone again. So one thing also they are saying that maybe when we do the dredging the sand used in that place, is not the correct sand to replace, that was in that place. That was also causing rapid erosion of the beach, but sea level rise is also a factor” (interview 5, December 18, 2013 – Government Official).

“Even in Senegambia now, you have seen the photo for the protection, if you go to Senegambia now, you will not realize that there was an intervention again.” (Interview 6, December 18, 2013 – Government Official).

Although the entire coastal zone was, and continues to be, in need of adaptive strategies in response to sea level rise and coastal erosion, the beach nourishment project was only applied in the tourist zone and capital city rather than in communities such as Tujereng:

“And sites or areas around the coastline were identified for protection based on their importance, social or economic importance. You start from, because that funds could not protect the whole coastline, the entire 20 km of coastline that we have. So areas were identified based on their priority of importance” (Interview 6, December 18, 2013 – Government Official).

In considering this statement, it brings one to question the nature of national interventions, policy pronouncements and adaptive strategies. If communities are not prioritized based on social or economic importance, how are communities meant to improve their adaptive capacity, considering the speed at which the sea is rising? In response, communities such as Tujereng are left to mobilize their own efforts by strengthening various Central Capabilities, enhancing local adaptive capacity, which will be expanded upon in the subsequent chapter.

3.1.4 Salt Water Intrusion and Increased Salinity Levels

Due to a changing climate and decreasing precipitation, The Gambia can expect to see salt intrusion of the water table (Dia Ibrahima, 2012). The detrimental impacts of this will be intensified due to sea level rise, causing both salt water intrusion and salinization of fresh water bodies (Dia Ibrahima, 2012; Drammeh, 2013).

“In terms of salt-water intrusion, we have had studies in the past where we have salinity risk along the coast beyond which if you continue up you have salt water. And we have also realized that the saline intrusion is coming towards the eastern part of the country along the coastline. So that is also a threat” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

However, scholars including one interviewed in the field have noted that these threats are already having detrimental impacts on estuaries, ecosystems, species and livelihoods in The Gambia:

“So far we can see the irregularities in the exchange between salt and fresh water because I am working at the estuaries. And usually you will see there’s a natural regulation in the salinity levels of the estuaries but right now it is all over the place. You can hardly tell. Right now, we just came from the rainy season and the salinity is still as high as 32 ppt. When it usually stops at 28, 25 around that. So we feel it is causing a lot of harm there, a lot of mangroves are dying. We are attributing it to salinity change there is excess salt that they cannot tolerate. Fishes are also declining there are certain species we are not seeing anymore. The impacts are really pronounced in these areas that I am working at” (interview 8, December 19, 2013 – Gambian PhD student researching the effects of climate change on mangroves).

As previously mentioned, academics have argued that anthropogenic activity has resulted in the degradation of mangroves (Gailey, 1965; Satyanarayana, 2012), which correlates with data collected in the field. However, there are efforts being created to protect mangroves and estuary ecosystems:

“They used to have a lot of mangroves and they used that for firewood. Now along the coastline you can hardly have them. Except from the Tanji Bird Reserve, which government are on the first side of really preserving so we can maintain the ecosystems and also the marine-life and the birds that are sanctuary. If you have been to that place you will see the birds that also migrate to that place from certain parts of the year. So it’s a very good eco-tourism destination. And I think it is important that we try to maintain and nurture that place” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

The paradox however, is that mangroves are important for decreasing the vulnerability of coastal communities against the negative effects of climate change (Jallow, 1999), yet are also being destroyed by these effects (Satyanarayana, 2012).

3.1.5 Deforestation

The conundrum regarding mangroves and climate change is also relevant when discussing Gambian forested areas at large. An interview with a Government Official with the Department of Forestry articulated this paradox and the associated challenges they are facing:

“Of course it [climate change] is affecting the forest. But I believe deforestation is also contributing greatly to climate change. So deforestation is contributing a lot to climate change as a result of deforestation is why we have all these windstorms and problem of global warming, all the stuff like that, flooding –it’s all because of deforestation. The climate change is also affecting the forest in reverse, because with these problems now, due to low rainfall most tree species now are dying, some of them need a lot of water, if they lack water they are dying. Due to climate change also, there is intrusion of salt in the certain forest areas which is also affecting some mangrove vegetation which is also another problem” (Interview 7, December 18, 2013 – Department of Forestry).

Academics assert that, due to population growth and urbanization, human activity has overexploited and destroyed Gambian forests (Thoma, 2005; Government of The Gambia, 2007), a process which is now being accelerated due to declining precipitation rates, increasing concerns regarding desertification and the encroachment of the Sahara

(Thoma, 2005). With erratic and declining rainfall coinciding with rising temperatures, forest regeneration rates are expected to suffer (Government of The Gambia, 2007). Rather than attributing deforestation to the decline in rainfall, community members instead attribute the decline in rainfall and the correlated negative effects, to anthropogenic deforestation, assuming all blame:

“When I was a child the environment here was thick with forest and there was a lot of rainfall. Now the environment is different and there is less rainfall. We are the cause of it because we cut down the trees and we didn’t replace them. So that’s why when the rain does fall there is so much erosion because the rain runs away with the earth and top soil. That’s why now our crops don’t do well. When we were young a farmer could get 30 bags of groundnuts by himself but now its different, now a farmer can plant a big space and only get 12 bags or less. The soil has lost its fertility” (Tujereng elder in community film: *Environmental Change Over Time* – December 10, 2013).

However, as previously mentioned, climate change is much more complex than is illuminated in the previous quotation. Developing countries have barely contributed to the greenhouse gas emissions that are causing the global phenomenon of climate change (Huq, 2007; Dodman 2009). Yet, Gambian residents and government officials alike feel a sense of urgency in minimizing their contributions to climate change:

“In most developing countries their contribution to green house gas emissions are largely through deforestation. The country is having very good programs to reduce deforestation. I heard on the radio shows discussing how greenhouse gases are being released into the atmosphere” (interview 13, January 2, 2014 – Government Official, climate change expert).

The 2008-2010 Gambia National Forests Assessment affirms that climatic impacts contributing to the degradation of Gambian forests are having detrimental consequences for rural populations (Government of The Gambia, 2010), with forest resources being important for producing traditional medicines as well as supporting the livelihoods of the rural poor (Government of The Gambia, 2007). Reduced availability of

forest products is believed to be connected to climatic fluctuations, predominantly erratic and declining rainfall patterns (Government of The Gambia, 2007). Throughout the field research this was a common theme, with a traditional healer living in Tujereng expressing the difficulty of finding medicines derived from forest products:

“He said it is difficult to get some of the medicines because most of the medicines he is using are coming from trees and most of these trees are completely finished around our area here” Interview 17, January 6, 2014 – Tujereng traditional healer – via translator).

Of course, it should be noted that human activity has been the primary cause of deforestation in The Gambia. That being said, the consequences of anthropogenic deforestation have certainly been worsened due to the detrimental effects of a changing climate.

3.2 The Adverse Effects of Climate Change and the Correlated Implications for Tujereng Residents’ Central Capabilities

The aforementioned adverse effects of climate change (including: increasingly hot, dryer seasons; erratic and decreasing rainfall patterns; sea level rise; salt water intrusion; and degrading forests and ecosystems) are negatively impacting quality of life and exacerbating capability deprivation in the community of Tujereng. As mentioned in Chapter 2, the Capabilities Approach views poverty as more than economic deficiency, viewing it instead as capability deprivation (Sen, 1999). Examples of capability deprivation would include the inability to be adequately nourished or the inability to obtain adequate shelter (Sen, 1999; Nussbaum, 2011). Through my data analysis, I found that the Central Capabilities most threatened were: *Life, Bodily Health, Senses Imagination and Thought, Emotions, Other Species, and Control Over Ones (Material)*

Environment and Bodily Integrity. This section will serve to expand upon the ways in which the aforementioned Central Capabilities are being affected by the adverse effects of climate change in the community of Tujereng.

3.2.1 Central Capabilities Affected by Climate Change

3.2.1.1 *Bodily Health: Decreasing Food Security and Food Sovereignty*

One of the most prominent themes arising when discussing the impact of climate change on *Bodily Health* is increasing food insecurity and hunger:

“Environment is related to health. When there is no health it leads to hunger. If you see now in Tujereng there is a lot of sickness. It touches the elders but mostly the children” (Tujereng father in community film: *Environmental Change Over Time* – December 11, 2013).

This comment is especially thought provoking due to the participant’s interpretation; although the question was inquiring about the health of the people, he instead discussed the health of the environment –insinuating that if the environment is not healthy, it will lead to hunger or lack of *Bodily Health*. This quotation could also be connected to the Central Capability, *Other Species*, as it draws attention to the importance of having a healthy environment in order to be adequately nourished and to maintain *Bodily Health*.

Lack of food security in the community of Tujereng was often attributed to the declining precipitation rates, with many Tujereng residents expressing their growing concerns surrounding this topic:

“When there is not enough rain they have problems with their crops, so there is like less harvest or sometimes even you know, they don’t have anything to harvest because of the poor rain. So it affects them, like if you grow something and you don’t harvest anything that means feeding is a problem” (Interview 1, December 11, 2013 – Tujereng rice farmer – via translator).

“The abundance of food depends on the rainfall. Before, it could rain for three days without stopping and at the end of the season we would have good harvests. We used to grow couscous and millet, then dry it and pound it to cook porridge for both the young and the old. There was plenty of food. But now you have only small harvests, so when you cook your porridge you hide it when people come over because there is not enough to share” (Tujereng elder and farmer in community film: *Environmental Change Over Time* – December 11, 2013).

Declining rainfall is hindering the locals’ ability to grow food, reducing their ability to be adequately nourished, which is increasing vulnerability and affecting local quality of life.

Many participants explained that due to declining rainfall, people are no longer able to feed their families, resulting in more illnesses due to lack of adequate nutritious food. This, in turn, takes away from the time needed for further food production:

“Even your health when you think about it, it’s [declining rainfall] affecting you. People get sick and you have to worry how to treat them. A lot of things are happening” (Interview 1, December 11, 2013 – Tujereng rice farmer- via translator).

It is not surprising that when asked about the correlation between environmental changes and health, research participants frequently spoke about decreasing food security and hunger. However, it became increasingly apparent throughout my research that local community members also associated illness and disease to the types of foods they were eating, as they could no longer grow enough to eat:

“If you come to our way of living as well. Like the way we... the things we eat before and now, there are big changes which I believe has made us to experience certain sicknesses that we were not at all experiencing” (Interview 2, December 11, 2013 – Tujereng VDC member).

“These [environmental] changes affect health too. Because what they used to grow was what they used to eat. Their forefathers were healthy and lived long because they would eat what they grow” (interview 12, December 20, 2013 – Tujereng rice farmer – via translator).

As the Food and Agricultural Organization explains, food security: “exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2003, p. 28). Yet, as the comments below make clear, the issue in Tujereng is much more complex than lack of access.

3.2.1.1.1 Food Sovereignty

Food Sovereignty is “the right for each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity. We have the right to produce our own food in our own territory. Food Sovereignty is a precondition to genuine food security” (Via Campesina, 1996). This is relevant to my analysis of Tujereng, as many community members attribute illness to the imported foods they are eating:

“Whenever they would take something that is natural, now you can buy food – like even the rice – you never know how long the rice has been sitting in this bag or what kind of chemicals are used to preserve the rice in this bag. So like all these things, she thinks is like affecting the health” (interview 12, December 20, 2013 – Tujereng rice farmer – via translator).

Many research participants discussed their inability to grow enough food to eat, resulting in families purchasing imported foods, which they were connecting to new ailments. Moreover, they are no longer able to grow many crops that traditionally had been grown due to decreasing rainfall patterns.

“Climate change is a concern for the whole world and more specifically in The Gambia. The climate change can affect agriculture and looking at The Gambia – the cultivation of certain crops” (interview 11, December 20, 2013 – Tujereng teacher).

“We used to have peanuts, cassava, couscous, millet, a lot of things we grow here. Because then the land was so fertile and we can grow anything here and we can

benefit from them. But nowadays, one way or another, the rainy season gets shorter. At least any crop that you have to farm has to be an early variety of at least three months. More than three months there is a likelihood of not harvesting anything. Because if the rains still go to three months exactly, you find it difficult for the crop to get ripe and we believe the environment has something to play on that” (Interview 2, December 11, 2013 – Tujereng VDC member).

The adverse effects of climate change are inhibiting the community of Tujereng’s ability to produce foods that are culturally and traditionally relevant. In addition, they are forced to purchase foods that they are attributing to growing occurrences of illness and disease. These commentators may not have empirical evidence to support their concerns but, in accordance with the theoretical framework of the Capabilities Approach, communities such as Tujereng are being denied the ability to choose what food is being produced and consumed in their community. This is due to decreasing agricultural productivity and diversity caused predominantly by declining and erratic rainfall; this lack of choice is further exacerbated by the detrimental effects of sea level rise, thus leading to the degradation of various Central Capabilities. If the capability of *Bodily Health* is being deprived, then it is likely that *Life* would also be affected, should the situation deteriorate.

3.2.1.2 *Life: Increasing Risk of Climate Hazards*

As Nussbaum (2011) explains, all capabilities are connected and should not be examined in isolation. This becomes clear when discussing the Central Capability of *Bodily Health*, as it is fundamentally intertwined with the Central Capability of *Life*. Climate hazards occurring throughout The Gambia include: torrential rainfall; storms; drought; heat waves; and flooding, all of which have been correlated to increasing CO₂ levels in the atmosphere and a rising sea level (Government of The Gambia, 2007).

Currently, climate change is not directly endangering the lives of Tujereng community members; however, some community members mentioned their concerns regarding the potential climate hazards, impending risks and natural disasters correlated to climate change:

“Our villages are very close to the Atlantic Ocean. So you will find that the closer the sea the most danger we live in. Because you visited the place and there are certain hills like sand hills in between the village and the sea. If those sand hills are removed it means are opening a gate for the ocean to just flow in. Which can be dangerous, just like a tsunami or whatever. It can be dangerous” (Interview 2, December 11, 2013 – VDC member).

“I think for the past decade it [climate change] has been a growing concern overall. If we look at for example, the disaster occurrences over the years they have been increasing and increasing. Before we used to have 1 or 2 disaster hot spots but now we are at 7, including Banjul. So it’s a great, great concern to all of us” (interview 8, December 19, 2013 – Gambian PhD student researching the effects of climate change on mangroves).

3.2.1.3 *Senses, Imagination, and Thought: Religion, and Traditional Practices*

The Central Capability of *Senses, Imagination and Thought*, is very complex. This capability may be interpreted differently depending on the individual or culture, making it difficult to express, inquire about, and analyze given the language barriers. That being said however, Islam is the principal religion throughout The Gambia (Gailey, 1965) and it is very important to the daily lives of a majority of Gambians. A substantial number of research participants discussed the impact climate change is having on their ability to practice religion or visit important religious areas. As previously mentioned, Tujereng community members are correlating various ailments and increasing hunger to decreasing agricultural productivity, which they have attributed to decreasing rainfall. Numerous

community members spoke about the ways in which food insecurity and related health concerns are affecting their ability to practice religion:

“You see even the religion itself; you cannot practice your religion if you are not healthy. See if you are not healthy you will not be able to practice your religion because it needs some actions especially as Muslims. You need to sit down, you need to stand up, you need to bend. You know all movements are within the practice of this religion. If you are not healthy, you will not be able to do it properly... If you are not healthy you cannot practice you religion 100 percent, you can’t. So it [climate change] of course has some impact. (Interview 2, December 11, 2013 – Tujereng VDC member).

“Before you can even worship you know, you must be well fed. If feeding is a problem you can’t concentrate to say even your prayer and you are even thinking about how to feed your family so it all contributes a lot” (Interview 1, December 11, 2013 – Tujereng rice farmer – via translator).

“These changes affect you. Before you can worship, you must be healthy, if you are sick you cannot worship properly. And why she said, it is because even the food that we eat is contributing to our sickness” (Interview 12, December 20, 2013 – Tujereng rice farmer – via translator).

With Tujereng community members no longer able to grow enough food to eat, their ability to be adequately nourished is declining due to climatic fluctuations. This is affecting their ability to practice religion due to hunger, ailments and the correlated strain this puts on families. This demonstrates the interrelation of all Central Capabilities – decreasing agricultural productivity and diversity affects *Bodily Health*, which as a result, affects *Senses, Imagination and Thought*.

In addition, climate change is directly affecting cultural structures and religious areas throughout The Gambia. Due to sea level rise, cemeteries have been damaged along the coastal zone:

“We have other social important features there... the Muslim cemeteries which were almost on the verge of being lost by the action of erosion and of course

the highway to Banjul was very close to the high water mark” (Interview 6, December 18, 2013 – Government Official).

“During that time to coastal erosion, we lost our cemeteries to erosion in the 80s and that was something that was very close to our hearts. Because where you have the remains of you forefathers that is something you really need to preserve” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA, Tujereng elder).

Due to sea level rise and increasing coastal erosion, cemeteries along the coastal zone were almost nearly swept away by the sea prior to the Coastal Protection Project in 2004. These structures have both religious and cultural significance. Although the Coastal Protection Project repaired the coastal area, many gravestones were lost or damaged and, as the sea continues to rise, these sites become increasingly vulnerable due to the unsustainable nature of the Coastal Protection Project (as it was only a one time intervention).



Image 3.2: Muslim Cemeteries After Coastal Protection Project, NEA - 2004

Source: Coastal Protection Project at Muslim Cemeteries: Photograph taken by National Environment Agency at Kololi Beach, The Gambia (2004)

In addition to affecting religion and religious areas, climate change is also affecting the community's ability to practice or receive traditional medicine. Traditional healers continue to be the dominant healthcare administrators throughout The Gambia, with the government promoting traditional practices and medicine throughout the country (Peterson, 2008). As described in Tujereng:

“So, we have special people here who know so much about plants and their benefits. So THEY do go to these forests and get the plants they need for every sickness. They boil it... if it is a wound they will dry it, pound it, to make it into powder, put it there and tie it. Or even a snakebite, you don't go to the hospitals. The old man who lives here, the father to the Alkalo, was our village doctor. He

was the biggest doctor here” (Interview 2, December 11, 2013 – Tujereng VDC member).

As previously mentioned, it is becoming increasingly challenging to find traditional medicines that had previously grown in the community of Tujereng. Not only is this important for local livelihoods, it is imperative for local quality of life and culture:

“For him and his profession, the forest is the most important thing in his life, more important than anything. Because all he uses to treat is from the forest. So without the forest he will not be able to treat” (Interview 17, January 6, 2014 – Tujereng traditional healer – via translator).

Due to climatic fluctuations, the degradation of forest ecosystems and the reduced availability of forest products are inhibiting Tujereng community members from both receiving and practicing traditional forms of medicine. As such, Gambians are being denied the capability to choose what form of healthcare they wish to seek out, as many traditional remedies can no longer be found in the community of Tujereng. Traditional medicine has existed in The Gambia long before the Islamic religion or Western medicine and is an important facet of Gambian culture and identity (Peterson, 2008).

Senses, Imagination and Thought are thus being directly affected, with those who wish to act as traditional healers not being able to practice their profession and way of life to its fullest extent. Additionally, those seeking traditional healing techniques may experience degrading *Bodily Health*. This may be the case if they are not able to receive the desired form of treatment for their ailments, due to lack of forest resources for medicinal purposes. This problem is related to the degradation of ecosystems due to climatic fluctuations—a circumstance intrinsically intertwined with the Central Capability of *Other Species*.

3.2.1.4 *Other Species: Endangered Ecosystems and Habitats*

The Central Capability of *Other Species* is the most obvious capability being impacted by climate change, given the degradation of the natural environment and ecosystems occurring in Tujereng. Throughout my research, I found that numerous participants discussed the interconnectivity of all species. Not only are trees important for traditional healing purposes, Tujereng community members also spoke about the importance of preserving the environment for the benefit of the planet at large:

“In the environment we are all connected. The trees are connected to human beings and human beings are connected to the trees. The same goes for wild animals. If any one is harmed, all will feel the effects. So if the environment is not healthy, people will also not be healthy” (Tujereng elder in community film: *Environmental Change Over Time* – December 11, 2013).

“The environment is something that is very important. God created the universe and everything is interconnected and operates together. If one part has a problem it will affect everything. That is why it is important to teach environmental education in schools, so that children will know how to handle the environment, so that people can live in harmony with nature” (Tujereng school teacher in community film: *Environmental Change Over Time* – December 11, 2013).

However, these connections are being reduced and damaged due to anthropogenic activity and climatic fluctuations harming the ecosystems. As a result, many participants have begun advocating for sustainable development in their community. Although the term sustainability has become a controversial concept (Connelly, 2007), for the purpose of this discussion, I will use the original definition from the Brundtland Report (1987), as this definition fits best with the community perspective: “[d]evelopment which meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987). The following quotation demonstrates the role

conservation plays in ensuring natural resources will not be depleted for future generations:

“I think it’s the role of everyone to participate. So if it is good, it is ours. I always tell them one concern that you know in the past, if our parents or grandparents have killed all the forest, do you think you will be alive today? I say so they use it wise and leave some for you. So we also have to use something and leave some for our grandchildren. So that there will be sustainability. If you want to experience sustainability, to them, you are not telling them not to use it, but you can use and have in mind that your grandchildren have to make use of the forest” (Interview 5, December 18, 2013 – Government Official).

Although Tujereng community members spoke about the importance of promoting the preservation of the environment for future generations, this was often a reaction to the loss of species, which community members noted has been occurring in The Gambia for generations due to environmental changes:

“He said before, even it has made some changes in the animals that live in the bush, like elephants, lions, tiger, and other things. These are things that were in The Gambia before. They live in our forest, but as the forest is disappearing, the animals are also disappearing. He even heard of this when he was a child. It was when he went to America he was able to see these animals physically. He saw them in the zoo there, these were things that were living in the wild here. But then there was forest” (interview 17, January 6, 2014 – Tujereng Traditional healer).

Not only are forest ecosystems and species that had traditionally existed being affected by climatic fluctuations, but also the habitats and migration patterns of various bird species from around the world are feeling the impacts of a changing climate. This is important when considering the fact that the Tujereng-Tanji region has already developed conservation efforts to protect these species, including those used at the Tanji Bird Reserve:

“Here, Tanji Bird Reserve, I tell you, is the most important park for bird species. Because we have migrating species coming from Europe, America, Asia and all African countries. They all come here for nesting, breeding and resting. We have an island here along the coast which is part of the park. But this sea level rise has affected this island. Because we have lost our Baobab trees and our cashew nut trees along the island and even the vegetation on the ground we have lost that because of sea level rising. The trees have all fallen down and the sea has taken them over the past two years. This affects the bird habitats as many birds including herons will build their nests and lay their eggs on top of the trees. This last year, 2013, we lost so many Caspian terns and royal terns and grey headed gulls, few nest on the island because they don’t have enough spaces. 20 % of the world population of royal tern, nest on the island here” (Interview 15, January 6, 2013 – Department of Parks and Wildlife – Tanji Bird Reserve).

The degradation of forest ecosystems, mangroves and natural habitats are correlated to climatic fluctuations. The Central Capability of *Other Species* is being affected with the nesting and migration patterns of various bird species’ from around the world feeling the impacts of a changing climate. Even though the Tujereng-Tanji region has developed various conservation efforts including a community forest and bird reserve to protect these species, the adverse effects of climate change are having detrimental impacts on these efforts. As a result of the reduction of the Central Capability of *Other Species*, Tujereng community members were also feeling their attachment to their natural world being affected – having an impact on the Central Capability of *Emotions* as a consequence.

3.2.1.5 *Emotions: Solastalgia*

Tujereng community members’ capability to have attachments to things outside themselves (specifically the environment) is being hindered. Tujereng community members discussed numerous emotions arising when discussing the aforementioned

effects of climate change, including feeling: sad, frightened, threatened, worried, and unsettled. These emotions, however, were often associated with the deprivation of the *Other Species*. The most frequent response when discussing the way the environment has been changing was one of sadness. However, the following response helped me to understand the complexity of the situation at hand:

“It’s a mixed feeling. When you look around there is a lot of development at first there was forests surrounding the village and all this but now people are settled there, which means development has come. Because even electricity and other things are all part of it. But the sad part of it is, you know the garbage and the dumping and other things that people are throwing around that were not existing. Plastics and other things. And when you talk about the rainfall, they do not have the rice that they used to have. And when you talk about the sea, they used to have a lot of fish – there is a type of fish called bonga fish that is full of bones. It was next to nothing here. But everybody liked ladyfish or butterfish because they had no bones. But this one is just like next to nothing that was worth small coins. But that one alone, because of the fishing scarcity people are now consuming that and that one alone is now costing – when you used to buy a bunch of it for coins, now you have to pay 6 dalasis for one. Which is sad, because she thinks in those days they didn’t even want to buy that, it was next to nothing, but now that one, you cannot even afford it. So that is another part that makes you feel sad. It is harder and harder to feed your family” (interview 12, December 20, 2013 – Tujereng rice farmer – via translator).

This response sheds light on the global phenomenon of climate change. Climate change is the result of the previous understanding of development or growth paradigm – with development viewed as the process of industrialization, economic growth and “progress”. However, that form of development often inhibits the understanding of development in terms of capabilities, or freedom to live a life one has reason to value. Tujereng community members attribute the declining rainfall to their own actions, whereas the decline in rainfall is much more complicated and global in scale. Nonetheless, it is interesting that the connection is drawn between local development and

the environmental changes at the community level, as it relates to the research participants' direct lived experience.

Fear was another prevailing emotion evident when discussing the way the environment has been changing. This is not surprising considering the changes that have already been occurring in their community, especially the rate by which the sea is encroaching:

*“This sea, this one right here! It’s coming, It’s coming very close. Because when we were young where we used to go to touch the water, if I want to go there now, I will drown. The sea has eaten all of the beach. Before, the water stopped here and there was forest in between. Now, the only left is the sand. There is a place near the rice fields we call “mining area”. Between that place and the water there is just a small distance and the sea is coming closer. If plans are not made to build a barrier it will enter the rice fields. Sometimes when the tide is high, the water is very powerful and it forces its way into the rice fields and that is salt water. The place where the water used to stop when we were young, now no one is brave enough to go there because it is far inside the sea – and that is scaring us, The sea is coming too close to us” (Tujereng elder in community film: *Environmental Change Over Time* – December 10, 2013).*

In considering the ways in which climate change may affect emotions, Glen Albrecht (2007) discuss the impact environmental change can have on communities, often resulting in the loss of sense of place, which community members perceive they have little control over. They define this as “solastalgia”: “the distress that is produced by environmental change impacting on people while they are directly connected to their home environment” (Albrecht, 2007, p. 95). This is similar to nostalgia (literally, “homesickness”), which in its original connotation, described the feeling of distress caused from missing one’s home environment. However, solastalgia occurs when the resident is still living in their home environment (Albrecht, 2007, p. 96). Climate change could be one of the central causes for feelings of solastalgia emerging in communities

across the globe (Albrecht, 2007, p. 98).

Although I found that local community members, especially the elders, were concerned and distraught over the environmental changes occurring in their community, they felt a strong sense of agency. Another emotion discussed throughout my field research was determination alongside a sense of responsibility or agency.

“The climate change like I said, is a factor of concern. The community should make sure that we minimize the rate of smoke going into the atmosphere, we have to reduce and minimize because it may be a factor or concern but we can try to minimize the level to an extent” (Focus group 1 (interview 18), January 6, 2014 – Tujereng Youth Environment and Health Group).

Interestingly, even those who are educated on climate change and the associated impacts, rather than pointing blame at the industrialized or developed countries, still conveyed their sense of agency and responsibility for addressing the situation:

“My advice for Tujereng is to protect the environment by planting more trees. These trees will help reduce the amount of greenhouse gases that scientists have shown are harmful to the atmosphere; therefore, planting more trees is to our benefit. We can also help to minimize our contributions to climate change by sorting our rubbish because burning plastic and other things can contribute to the amount of harmful gases in the atmosphere. These harmful gases can damage the ozone layer, which will be harmful to humans and the planet at large. Maybe you have noticed that more people are complaining about the weather – that it’s too hot, that there is less rain, and so on – this is all due to destructive human activity, which is harming the environment and causing climate change. If we change our negative behavior and attitudes towards the environment, this will benefit human beings as well as plants and animals” (Tujereng elder in community film: *Environmental Change Over Time* – December 10, 2013).

Although it is becoming increasingly apparent that Tujereng community members are feeling distressed, afraid and anxious about the way the environment is changing, they have not lost hope. In fact, when asked if they felt as if they had control over the situation at hand, all participants felt optimistic about their ability to change the situation. This could be attributed to underlying cultural factors such as the inherent resilience of

Gambian people. Moreover, although Tujereng community members are feeling significant changes in their sense of place, they are not feeling total loss as of yet. However, it should be noted that, due to the lack of public education concerning climate change, many community members consulted likely do not yet understand the gravity of the situation at hand. With climatic fluctuations predicted to increase and worsen (IPCC, UNEP, WMO, 2013), Tujereng community members can expect their land and livelihoods to become increasingly affected.

3.2.1.6 Control Over One's Material Environment: Land and Livelihoods

In order to examine the ways that climate change was affecting the Central Capability of *Control Over One's Material Environment*, I inquired about the ways in which climate change is affecting Tujereng community members' land and livelihoods. Often, the women would speak about the ways in which declining rainfall had been affecting their farmland's fertility:

“when you come to your work place, that is their gardens, the changes affect them because even the crops that they grow will not yield. And also when you come to their homes too it affects them in one way or another” (Interview 1, December 11, 2013 – Tujereng rice farmer – via translator).

This was a common theme throughout most discussions with female farmers. However, one interview differed slightly. Due to heavy rainfall, typically uncommon during the seed planting season, her crops had been destroyed:

“This year she has a nursery for rice, and she does that so they will grow and be transplanted. But what happened was there was heavy rain and a flood washed away all of that nursery so she has had some difficulties with that and had to start it again. When you have limited seeds and lost all that in one go you have to go again and that was a challenge she faced with the rain” (Interview 12, December 20, 2013 – Tujereng rice farmer via translator).

She also explained that, after replanting the seeds, the rains were not good and her crops did not do well, making it very difficult to feed her family.

Rice farming is something that nearly every woman does in Tujereng. The *Alkalo*, or first settlers on the land, are the actual owners of the rice fields or land in which the women farm rice. Women are required to approach the *Alkalo*, for permission to farm and, often times the female elders of the compound request the land for rice farming. They are then granted the land on a usufruct arrangement: it is lent to them to use, but they do not technically own it. If the *Alkalo* or his family wants the land back, they must give it up; however, the women are commonly able to have the land to use for a very long time. The rice fields are then used for feeding their families but never for generating income. For every ten bundles of rice that they reap, nine are for feeding the family and one is given as charity (Personal Communication with Tujereng Community Member, June 13, 2014).

If the situation is to worsen in Tujereng, it is likely that the land will be taken away due to decreasing food security and sovereignty. Moreover, with the risk of inundation of the rice fields in Tujereng, the women will not have access to land necessary for feeding their families. Gambian policy-makers repeatedly mentioned that sea level rise poses a serious threat, not only to land, but also to the livelihoods of many Gambians:

“You will also realize the coastline represents the major economic activity of the country, the country is a tourist destination so you have a lot of hotels along the coastline, which is a means of employment for a lot of the coastal communities. A lot of youths go there people also go there to sell their products and produces, that is also disappearing. I don’t know if you visited the Senegambia area. Seven years ago the government spent 20 million US\$ to nourish the beach. Out of 100 metres of beach which was nourished, we lost 85-90 metres of beach and that is a

threat to the tourism industry because the tourists come for the sunshine. You have few that come for ecotourism but many more come for the clean beach and the sun, so if you lose that you will lose tourism numbers” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA, Tujereng elder).

With land and livelihoods being in great distress, it is crucial to consider the rate at which these changes in climate are happening in The Gambia. Personal security becomes a major source of trepidation, especially considering the concerns being expressed by community members regarding food, land and water security.

3.2.1.7 Bodily Integrity

In recent years, the discourse on climate change has shifted its attention to concerns regarding human conflict and security. As rising temperatures and extreme weather patterns sweep the globe, the threat to water and food insecurity increases. It has been argued that the effects of climate change will create rising tensions, both at a local and global level (Oli Brown, 2007). Moreover, according to a recent article written in *EcoWatch*, the Ebola virus outbreak could be linked to climate change (Eyob, 2014), which correlates with arguments made by Dodman et al. (2009) discussing the impact of global warming on increasing numbers of diseases and parasites. With increasing global fear concerning the Ebola virus, various nations have already begun closing their borders, denying entire West African nations the capability to move freely from place to place (Anderson, 2014).

With heightened concerns about the degradation of food security, I inquired as to whether any environmental changes had led to conflicts in the community. Although many community members noted various conflicts that had arisen due to the

environmental changes occurring in their community, they all affirmed their faith in the local governance systems in solving these disputes:

“But conflicts of that nature doesn’t go far because in Tujereng here the Alkalo is working very hard with his team that if people are not doing something right he makes sure he steps in. Like even sometimes you find people on the road trying to get sand and you know that if you dig that place in the rainy season water can stop and cause stagnant water. But in those cases it is minimized here because the Alkalo is very strict on that” (Interview 1, December 11, 2013 – Tujereng rice farmer).

“Sometimes there is a quarrelling or whatever, but normally they are all settled here. We don’t go to courts outside Tujereng” (Interview 2, December 11, 2013 – Tujereng VDC member).

It is interesting that all participants highlighted their support and faith in their traditional forms of governance for resolving environmental conflicts. In the next chapter I will expand upon the ways in which the local governance systems, including the Council of Elders and the *Alkalo*, have been utilized to enhance adaptive capacity and resolve environmental conflicts at both the local and national level.

I suggest that the Central Capability of *Bodily Integrity* is being threatened due to the adverse effects of climate change, but currently in the community of Tujereng, *Bodily Integrity* is not as large a concern as other Central Capabilities, such as *Bodily Health*. However, should the situation worsen as predicted by recent reports (McGranahan, 2007; Government of The Gambia, 2007; Government of The Gambia, 2011; Dia Ibrahima, 2012), local governance systems may not be able to control conflicts. That being said, it should be noted that if local adaptive capacity is not enhanced and the deprivation of other

Central Capabilities worsens, it is likely that tensions and conflicts will heighten due to increasing food and water insecurity.

Chapter 4

This chapter will utilize the Capabilities Approach to frame adaptive capacity in the community of Tujereng. I will do so by describing the ways in which the community of Tujereng is mobilizing the Central Capabilities of *Affiliation*, *Control Over One's (Political) Environment*, *Practical Reason* and *Play* to enhance adaptive capacity and collective capabilities.

4.1 Central Capabilities Being Utilized to Strengthen Adaptive Capacity

This section will serve to illuminate the ways in which the community of Tujereng is mobilizing to enhance collective adaptive capacity. I will frame this section using the Central Capabilities – helping me to explain the Tujereng experience, including local activities enhancing their quality of life and capabilities in spite of a changing climate and environmental degradation. The Central Capabilities I found the community to be mobilizing in order to strengthen local adaptive capacity to improve communal quality of life were: *Affiliation* (through the use of social capital), *Control Over One's (Political) Environment* (through environmental democratization), *Practical Reason* (through the use of environmental education) and *Play* (through the use of traditional customs and drama).

4.1.1 Affiliation: The Role of Social Capital and Collective Agency in Enhancing Adaptive Capacity

Social capital encompasses values of reciprocity, networking abilities and good governance (Veltmeyer, 2007). The values of social capital can influence a community's adaptive capacity; communities have an inherent ability to adapt, yet this capacity is intrinsically intertwined with their ability to act collectively (Adger, 2003). The community of Tujereng has been acting collectively to enhance its quality of life and minimize capability deprivation. The community is very well organized and has developed various initiatives at the local level to enhance their quality of life and cope with the adverse effects of climate change directly affecting them. For example, the women of Tujereng have been actively working together to minimize the effects of hunger, which, as previously mentioned in Chapter 3, they have attributed to declining rainfall patterns:

“She is also growing crops to minimize hunger and all these things. That is like, She joined women to do gardening and they are also trying their level best to produce some harvest that can feed the people” (Interview 1, December 11, 2013 – Tujereng rice farmer via translator).

Additionally, women spoke about collaboratively transforming rice-growing areas into vegetable gardens in response to the increasing salinity levels of rice growing areas:

“Sometimes they come together to find some solutions to environmental problems. Like if in the rice fields there are places where they cannot grow rice, the women come together and either turn that place into a garden whereby they can grow some vegetable crops and then even if it is a place where salt has been trying to take over the place, and they cannot grow rice they will turn it into a garden. If it is salty they will add some topsoil and add some manure to make sure that they are able to grow something there” (Interview 12, December 20, 2013 – Tujereng rice farmer).

In addition to developing various gardening initiatives, women in the community have also been actively engaging in forest protection and forest regeneration projects:

“In fact the last tree planting was done by women. You see? [Woman’s name] in Mourri Kunda was the one who chaired the women to do the planting there” (Interview 4, December 17, 2013 – Tujereng community member).

However, it is not just women organizing these initiatives – the community as a whole is doing their best to increase the amount of forest cover in Tujereng while also decreasing food security issues:

“the community, now we are planting tree. Because if you go, most plots of land belongs to people now and those people are planting edible trees in their compounds” (Interview 4, December 17, 2013 – Tujereng community member).

The community has also established a protected forest area – managed by the *Mourri Kunda* clan:

So this Mourri Kunda [clan], when this thing came up from the government, they decided to this format of what the German government and The Gambia has enacted on, in order to improve standard of community forestry in The Gambia” (Interview 4, December 17, 2013 – Tujereng community member).

“She said, the [Mourri Kunda] clan is big. It’s a big clan. It’s the biggest clan in Tujereng. So they have a lot of young people and also, they have other women also that join them. Like, as a clan, to help and work hand in hand with the young, to make sure that, you know, they take care of the forest and they grow more plants” (Interview 12, December 20, 2013 – Tujereng rice farmer).

This community forest was developed to minimize the effects of deforestation in Tujereng by developing a small community-managed forest area and the clan has also been initiating tree-planting activities:

“They have this community forest too, where they will stop people from, you know, cutting trees and sometimes they grow... but even on the river, uh the seaside, they try to plant some trees there too. So, yeah, they are also trying at their community level to bring back trees” (Interview 1, December 11, 2013 – Tujereng rice farmer via translator).

With deforestation being the second leading cause of anthropogenic GHG emissions (UNEP, FAO, UNFF, 2009, p. 37), one of the projects prioritized within the NAPA was the expansion of community participation in the management of forests and protected areas (Government of The Gambia, 2007). Although the NAPA project has not commenced due to funding restraints, the community of Tujereng has been working with the Department of Forestry to develop a management plan for the Mourri Kunda Community Forest (Personal Communication, December 18, 2014 – Forestry Department).

The community of Tujereng has also developed a Youth Health and Environment Group, who have been empowered by the *Alkalo* and elders of the community to sensitize the community on environmental issues:

“There wasn’t any group doing it, it was entirely done by the Alkalo. Individuals who would come and report certain eventualities to him, so pop in to see what harm or what he can do. But now, there is a group willing to do it, with the support of the Alkalo and the Council of Elders, to make sure that our environment is safe. Be it the forest, be it the sea, be it the dumpsites here, you see?” (Interview 2, December 11, 2013 – Tujereng VDC member).

The group feels that, collectively, it is their responsibility to educate the members of their community and advocate for environmental conservation, in order to ensure that the quality of life in Tujereng is protected and the adverse effects of climate change are minimized. By sensitizing other community members, especially more youth, they feel they will enhance their adaptive capacity:

“We feel that climate change internationally is a concern at both the international and local level. So we also feel as a group to also involve ourselves in this to see how we can minimize or control this climate change. Because the depletion of the ozone layer, we feel that it is an enemy to us. Because when the ozone layer has been destroyed the heat capacity now will come directly to us and there will be no protection there to cover us. So we feel that taking greater care of our environment should be the move of all the youths of Tujereng” (Focus group 1 (interview 18), January 6, 2014 – Tujereng Youth Environment and Health Group).

Each community has a Village Development Committee (VDC), consisting 10-12 members, who are responsible for increasing the participation of rural communities in development processes (National Environment Agency, 2010). In theory, using VDCs would be a much more effective means for designing and implementing adaptation strategies, yet my research found that VDCs and community stakeholders in the community of Tujereng were not fully represented in the development of the NAPA. That being said, the community of Tujereng is still utilizing this structure to stay organized and act collectively:

“But see everybody has to do it together. Otherwise it will be of little benefit. If only few people are just trying to cope with the [environmental] advices that are receiving them and the rest are just relaxing, I think it will not have that impact” (Interview 2, December 11, 2013 – Tujereng VDC member).

In corroboration with what is discussed above, Claude Ake (1996) argues that communities throughout the African continent often put more emphasis on the community rather than the individual (Ake, 1996). The community of Tujereng—and others in the surrounding area—exemplify his notion that communities will act together, supporting his argument about the power of communal values for enhancing local adaptive capacity.

“Communities will take it upon themselves and say this is not an individual effort, it is a collective effort that the community will have to intervene as a community and not as individuals. When you look at the sand mining scenario I have explained to you it was others farmlands, not their farm. But they took it upon themselves and said this is our community we should not fold our hands and say it was your farmland you should go and complain to the government. It was your rice field you should go and complain to government, they took it themselves and said it is a community and they have to intervene as a community and not as individual” (Interview 6, December 18, 2013 – representative from environmental agency).

In particular, the community of Tujereng mobilized to stop destructive sand mining activities that were happening in their vicinity. In order to fully conceptualize the situation in Tujereng, I must first explain the correlation and the associated complexities associated with sea level rise and sand mining in the community, the Gambia at large.

4.1.2.1 Sand mining

The Gambia’s coastal zone contains various deposits of minerals desired for extraction, including: ilmenite, rutile, titanium, titanium dioxide and zircon. Until recently, Carnegie Minerals (Gambia) Limited had exclusive mining rights over the majority of the country’s sand deposits, including those in Tujereng, Sanyang, Kartong and Batukunku. However, in January 2008, the Government of The Gambia expropriated the rights to these deposits, claiming that Carnegie Minerals was allegedly exporting minerals outside the contract agreement (Global Investment and Business Center, 2012).



Image 4.1: Sand Mining Truck in The Gambia

Sand Mining Truck: Photograph taken by Oliver Woods in the West Coast Region, The Gambia (2014)

The exploitation of these minerals began with commercial mining along the beach in the 1980s. These activities have extracted more than 150,000 m³ and have led to serious environmental degradation along the coastal zone of the country (Mendy, 2008, p. 10). Various community members, when discussing the way the sea has been encroaching on the community, mentioned the implications sand mining has had on their community:

“There was a time when they were mining the sand. Taking some trucks. Truckloads would be removed here. Over 100 or 200 truckloads every day except Saturdays and Sundays. They started here. Myself and [another man] went there to visit. When we saw it, I said to him “Now look here, this is dangerous for us! We cannot allow this it is dangerous for us! You know our village is just next door. This gap between the sand mine area and the sea, is being moved out, then it means water is coming in. They were taking all the ilmenite or the sand together away to make houses when they can be of better

benefits to the country so they were stopped (Interview 2, December 11, 2013 – Tujereng VDC member).

Although the community of Tujereng was able to eradicate sand mining in their village through community mobilization, the detrimental effects of unregulated sand mining activities remain.

“When we were young there was a company called G.M.L. that was mining minerals here. Both the company and the government were benefiting. Today, they are no longer here but the holes were left behind and the sea is getting closer to them” (Tujereng elder/ VDC member in community film: Environmental Change Over Time – December 9, 2013).

Though sand mining has been eradicated in the community of Tujereng, it is still occurring in the nearby villages. Other communities have had to take similar actions, mobilizing support from local residents and environmental agencies to eliminate the mining of sand in their communities:

“In some cases, like in the start in Kartong, they exhausted the sand and now the methods of mining does not fit with the communities themselves because they either go deep into the water table or go further that towards the coast. So that when the community realizes that is a wrong method of mining, so they have to intervene or come to the NEA and report the matter. Saying that we don’t want sand mining in our community again. So NEA intervenes to stop these activities. Nevertheless, truck drivers themselves are fond of going back to old mining sites and mine for themselves that’s illegal sand mining” (Interview 6, December 18, 2013 – representative from environmental agency).

Tujereng had to take similar actions, mobilizing support from the NEA to eradicate sand mining. Concerned community members approached the Council of Elders and upon achieving consensus, the elders spoke with the NEA, requesting support as a way of combining local knowledge with scientific knowledge to stop sand mining in Tujereng. Once the community was able to prove that the sand mining site was too close in proximity to the high water mark and was jeopardizing food security, the mining practices

were terminated. Yet, although the mining has stopped for now, it seems that some community members doubt the legitimacy of the agreement. The Village Development Committee made it clear however, that if any sand mining trucks return to their village, it will not be tolerated:

We discussed here that we must go to the National Environment Office and tell them we don't want that sand mining here again. Sand mining is going ahead between Sanyang and Gunjur. But this side, we don't want it here. And anytime they want to come over here, we will make a very big noise. So that the government comes they will send some people who come and see what we claim here” (Interview 2, December 11, 2013 – Tujereng VDC member).

Throughout the interviews, various community members also discussed the future risks associated with sand mining. Although the Government of The Gambia may be benefitting, Government Officials are not blind to the damages caused and the potential for serious implications in the future:

“You will also realize once you start mining sand uncontrollably you start dredging up to the salt water phase and the salt water will start to flowing towards the fresh water. The only thing that is helping us now is the ground water flow. The ground water flow is from east to west and is towards the ocean – we are not tapping to much of the ground water along the coast we are not reversing the flow. But if we continue mining, or drain a lot of water along the coast, we might reverse the flow. If it reverses then we will have serious problems” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

The demand for sand in the coastal zone is increasing rapidly due to the growing demand for construction materials from The Gambia's expanding construction industry (Jobe, 2011). In addition to extracting minerals from the sand, the sand itself is also mined and removed along the coastal zone for construction purposes. This sand is then

predominantly mixed with concrete for urban and tourism development purposes (Mendy, 2008).

“In the Gambia we use sand for so many purposes, for the construction of our building our structures. So there we see sand as a valuable resource to communities and the government. So it is important that we preserve it. If we don’t preserve it, we will be left with no options. The communities themselves are aware that we use sand to build our structures. The government is aware that we use sand to build their own structures as well. So it is easy when it comes to sensitization, you will tell them a few words and they will understand it is important that we protect our sand. If we lose our sand, where are we going to get our sand to build their own things?” (Interview 6, December 18, 2013 – representative from environmental agency).

Previously, when sand had been mined in the community of Tujereng, it was cheaper for local residents to purchase sand. Although sand is now more expensive, community members still recognize the importance of preserving the sand in their area. The conservation of sand in the community of Tujereng has been motivated by concerns surrounding coastal erosion, sea level rise and flooding:

“Before there was sand-mining here and during this time the sand was even cheaper because of the transport cost. The further you go the more you pay. When there was mining here, it was cheaper but it was eventually stopped. [The conservation of sand] is important. Because once the sand is mined so much you think of erosion, which is very important and dangerous – especially when it comes to flooding. But where they mined the sand is very much close to the beach. At the end of the day the places can not be cultivated again” (interview 19, January 7, 2014 – Tujereng community member).

Sand mining has led to the destruction and removal of the vegetation cover and sand dune formations, making the coast increasingly vulnerable to coastal erosion. Additionally, it has led to the destruction of habitats and biodiversity throughout the coastal zone. This is becoming increasingly apparent at the Tanji Bird Reserve, where

birds, turtles, fish, oysters and shrimp have been affected and valuable mangrove systems have been damaged (Mendy, 2008).

A recent report written by the National Environment Agency (2013) discusses the environmental shortcomings at the Sanyang sand mining site, just 7 kilometres from the community of Tujereng. The area being mined is 1.5 kilometres in length and is 200 metres from the high level mark. Although the distance from the sea is deemed adequate, the assessment reports various environmental damages. The topsoil at this site has been degraded beyond repair, destroying any chance of vegetation regeneration. Numerous trees have also been uprooted, which could have been avoided if the site was better coordinated. Finally, truck drivers have allegedly been dumping waste in the area, and inundation during the rainy season has led to stagnant pools of water. The NEA recommends additional monitoring and adequate regulatory frameworks put in place to reduce the degradation to the coastline and ensure that best practices are employed (NEA, 2013):

“[In Sanyang] the topsoil which is highly fertile was completely removed and never returned reducing the chance of future regeneration. And the team observed a number of trees, which could have been averted if mining was well coordinated which had been dug up because of the mining presence. The mine area is presently inundated with storm water forming a pool of stagnant water, which could be a breeding area for most disease-borne pathogens. It was during the rainy season about 100 trips of trucks are loaded in the dry season the load exceeds 100 -200 trips. This is due to high demand of sand for construction. Community members originally objected to mining from their village with their concern was sand dunes which, serve as a barrier between the village and the ocean would be removed. Which was solved after they realized mining was done far from the high water mark” (Interview 6, December 18, 2013 – representative from environmental agency).

There was, however, one large discrepancy in my research that became evident when speaking with some Government Officials. The government was placing the fault of

accelerated coastal erosion on illegal sand mining practices, arguing that the current regulatory framework is sufficient:

“Yes it [illegal sand mining] is being controlled and you have inspectors from geology who go along the beach to where they monitor. Before anyone could just go get sand from the coast, but now it is controlled by government because it is the main source of material for construction” (Interview 9, December 19, 2013 - Government Official).

Academics, however, argue that there are gaps in the current legislation associated with sand mining, including resource management and revenue sharing (Jobe, 2011). They further suggest that it lacks the necessary regulatory framework to ensure environmental preservation (Bubu Jallow M. B., 1996; Bijl, 2011; Drammeh, 2013). One representative from an environmental agency in The Gambia agrees that the current regulatory framework is not sufficient:

“Mining activities in the coastal zone cannot be stopped unless other alternatives are not introduced. Mining has to take place as long as construction is happening. The mining activities should be properly monitored to enforce and lay out regulations on sand mining to identify places and activities and techniques that are appropriate. NEA needs to continue to monitor mines for sustainable presence at the mines and to meet with stakeholders to bring strong rehabilitation measures. Police need to identify checkpoints along the way to mining sites to monitor trucks dumping waste because if you are going to the mining site you can see these heaps of waste along the coastline those are caused by truck drivers themselves at the sand mining sites thinking they can dump it and no one and no one will see them” (Interview 6, December 18, 2013 – Representative from environmental Agency).

Tujereng community members often associated the conservation of sand with reducing sea level rise, which is understandable, as the effects of sea level rise are currently being exacerbated by destructive and unregulated sand mining activities:

“if you just look moving towards the Atlantic Ocean, and there used to be what you call the sand dunes – 3 or so. That is protection the intrusion of the sea. If those sand dunes are removed that will mean that the sea will encroach onto the

land. So I think that that needs to be conserved so the sea will stop where it is” (interview 11, December 20, 2013 – Tujereng teacher).

“The effects of collecting the sand – if they all continued taking it then at the end of the day that will affect the area and that will encroach the sea or water level and if that happens they will all be affected “(interview 11, December 20, 2013 – Tujereng teacher).

“The protection of the sand dunes is very important because sea level rise is on the brink of climate change. Some of the elders say the sea is about 50 metres from the place it was before. The sand dunes are very important as the sea is rising we must protect the farrows” (Focus group 3 (interview 19), January 8, 2014 – Tujereng male Peer Health Educators).

Once the community of Tujereng realized the importance of preserving the remaining sand dunes, they quickly began advocating for the conservation of the shoreline, in order to minimize the potential correlated risks associated with sand mining and sea level rise in their community:

“We are fortunate here in Tujereng to have sand. Before, trucks used to go and take the sand. But when we realized it was to our own detriment, when we realized it was not the proper way, because removing that sand we are allowing flooding to take place and can cause disaster or calamity to the community. So the place was no longer used for that purpose” (Focus group 1 (interview 18), January 6, 2014 – Tujereng Youth Environment and Health Group).

Although sand mining has been eradicated in certain communities, in addition to exacerbating the adverse effects of climate change, communities are still feeling the correlated implications. Communities such as Tujereng have mobilized and eradicated sand mining in their community in spite of minimal or non-existent governmental intervention and began advocating for the conservation of sand. In order to enhance the capabilities of local community members, they determined that the choice was ultimately that of the community rather than outside institutions or entities. It is important to

examine the actions of communities like Tujereng in order to understand the ways in which communities can mobilize to enhance local adaptive capacity when there is limited governmental intervention or resources.

By strengthening their Central Capability of *Affiliation* or social capital, the community was able to enhance their adaptive capacity by preserving the coastal zone, including the sand dunes, which act as a buffer zone for the community's rice farming area:

“Concerted efforts by environmentalists and those environmentally educated advised that this particular area needed to be protected as a flood may come as a result of taking the sand. Concerted efforts have been done by community members to stop these [sand mining] actions” (Focus group 1 (interview 18), January 6, 2014 – Tujereng Youth Environment and Health Group).

The community acted in collaboration with environmental representatives, gaining support for their movement from outside entities requesting the government take action and eradicate sand mining in the community of Tujereng.

“For things like sand mining, we have to create lobby groups to talk to politicians and government officials and tell them that this activity is destructive and harmful to our community. These are actions we as a community have taken” (Tujereng Alkalo in community film: *Environmental Change Over Time* – December 9, 2013).

By strengthening *Affiliation* and social capital, drawing on pre-existing relationships and creating new ones – through respecting different ways of knowing (indigenous knowledge versus scientific knowledge) - the community has been acting collectively to enhance their adaptive capacity and reduce the detrimental effects of sea level rise. One elder spoke very eloquently about the efforts the community has taken to promote conservation and adaptation initiatives:

“Here in Tujereng, we try to protect our environment by stopping people from mining our sand, we avoid cutting down our trees and we try to plant more trees. These are things that we can do as a community to preserve our environment. Young people and old alike, have to stand together, because we the elders have seen yesterday and we have seen today” (Tujereng elder in community film: *Environmental Change Over Time* – December 9, 2013).

This comment is important because in The Gambia, there are various hierarchical structures, which may not always promote the sharing of knowledge, or *Affiliation*, to its fullest extent. I do not intend to discredit the activities or organizations within the community, but from my observation, it appeared that some of the women or poorest members of the community were often not fully represented or marginalized entirely from these groups. However, by having the youth (both boys and girls) learn from the elders’ lived experience (both men and women), and share their knowledge in turn with the elders, I believe adaptive capacity could be strengthened significantly in the community of Tujereng.

4.1.2 Control over one's Political Environment: Environmental Democracy

The Central Capability of *Control Over One’s Political Environment* is being strengthened at the local level to enhance the adaptive capacity of the community. I will utilize Environmental Democracy, as defined in Chapter 2, to frame the experience described by Tujereng community members. According to Claude Ake (1996), African countries need to place stronger emphasis on Africa’s social pluralism, community solidarity and cooperation (Ake, 1996). He advocates for a participatory model drawing on local culture and traditions that reflect the lived experience of those residents (Ake, 1996). He argues that democracy in Africa needs to put more emphasis on collective rights, including the rights of a community, rather than focusing solely the rights of

individuals (Ake, 1996). This model of democracy, which perhaps can be better understood as consensus building, will help me to frame the state of environmental democracy within the community of Tujereng.

Prior to discussing environmental democratization in the community of Tujereng, I must first elaborate on the local system of governance. The Gambia has a unique form of decentralization that integrates traditional systems into the political system:

“The Gambia here we have what we call the districts and then we have what we call the region division. Each district is headed by the chief and the chiefs under what you call the governors who are the head of the regions. These governors are minister of local government of land and those are the cabinets. We have what you call the cabinet and the judiciary. We have Alkalos every village there is what you call the compound elders, these elders are the founders of the village (interview 11, December 18, 2013 – Tujereng teacher).

The West Coast region of The Gambia has a traditional court system that is headed by the Chief of the region, the *Alkalo* of Gunjur. The other *Alkalos* in the region assist the Chief, forming the council for the tribunal court to resolve conflicts within the region that cannot be solved at the community level.

“The Chief of the region is in Gunjur, so in the village they have their traditional court set up so whenever they try to settle the disputes in the other areas – the ones that are so serious, they pass it over to Gunjur tribunal court. That is where the Chief sits and has the Alkalos. The Alkalos are the representatives for every village they all sit and discuss over the issue. Before the chief has a final say all of the Alkalos have to meet and discuss but the chief has the final say” (interview 11, December 18, 2013 – Tujereng teacher).

In Tujereng, they utilize a similar system at the community level, integrating the Council of Elders into a local model of governance. The Council of Elders is headed by the *Alkalo*, forming the *community court*. The Council of Elders meets every Sunday to discuss issues in the community rather than involving outside institutions or police.

“As far as our village is concerned. I am a member of the Council of Elders. And normally we meet every Sunday. Where we discuss the problems of the village and how to go about with our health systems and education systems and even our communications and all these things. I have the belief that myself together with other council members can talk about this and see how best we can let the community know about what we are talking about” (Interview 2, December 11, 2013 – Tujereng VDC member).



Image 4.2: Tujereng Community Court

Source: Meeting the Council of Elders at the Sunday Community Court: Photograph taken by Oliver Woods in Tujereng, The Gambia (2014)

Interestingly, when discussing the local model of governance, one community member actually described their system as being very similar to the one prescribed by Ake (1993). Rather than voting, the community uses consensus building. Their local model of governance reflects the way their country had traditionally been governed before colonialism, integrating elements of their culture, including Muslim customs and

the Council of Elders. Yet, although the local model of governance does not reflect the values of liberal democracy, the community members still refer to it as a democracy, one that instead reflects local realities and historical experience.

*“There are four Kabilos in Tujereng but we have the fifth one that is in the outskirts – so altogether 5 Kabilos. The eldest person from each Kabilo is the Kabilo head. And the Kabilo head plus the people can chose someone from the Kabilo to represent to be in the Alkalos chambers that is the elders council... it is based on **consensus** – because here it is more based on **tradition** so when the Kabilo heads say I choose X we say ok that is good so it is the Kabilo head that chooses it. It is based on the criteria that the person possesses. If the person doesn’t have a good character there will be people always say ‘no it’s a **democracy**. I think he or she could be better represented by this person. – they are more qualified’... there could be a discussion to come to a time but there is never an election. But it can always be discussed. This has been happening some hundreds of years ago. This is how chiefs or Alkalos were able to deal with their cases. So it is a long tradition. Of course it went to a point where it was a little bit fed out. But it was reintroduced. This way we can solve a lot of problems without going to the police or going to the court and the Alkalo and Council of Elders can talk about the issue or arbitrate the issue and everything will come to ease (Interview 10, December 20, 2013 – Tujereng teacher).*

The community court is also utilized to enhance environmental stewardship and democracy in the community of Tujereng. Every Sunday, in addition to addressing issues concerning health and education, the community also discusses environmental issues. These issues are discussed and, once a consensus is reached, various retributions or changes will be made:

“we come and assemble here every Sunday. We discuss the problems that we know of and we can discuss of any other new problem coming in. Like somebody cutting, or somebody throwing some dirt in a place where it should not be... you know.. all this. Somebody digging holes close to the road that can be dangerous all of these things... The Alkalo will ask [his assistant] to go and get that person to come here on a Sunday. Then we’ll ask him to stop it. If the hole that is digging, go and bury it, put the sand back. If you cut down a tree, that one the Alkalo fines you to pay an amount and replace it with another tree. You have to go and plant another tree and make sure it grows up. So you have to replace it” (Interview 2, December 11, 2013 –Tujereng VDC member).

In addition, following the community court, traditional structures are also used to share information with the larger community by way of town criers. Town criers have the responsibility of alerting society about recent or upcoming events and are often considered poets or prophets (Ojaide, 1983):

“they use some of those traditional structures to make sure they sensitize on environmental issues like the cutting down of the forest. They know that obviously those are very harmful effects so they normally discuss it at the elder meetings. So later the town crier will go around the community and announce on some of the things that had been discussed” (interview 11, December 18, 2013 – Tujereng teacher).

The community court and traditional model of democracy has been utilized to improve the adaptive capacity of the community, strengthening the Central Capability of *Control Over One’s Political Environment*. By using this model of democracy, the community of Tujereng was also able to strengthen environmental democracy at both the local and national level. By using the community court as a forum for discussing environmental issues and concerns, the community was able to build consensus and eradicate sand mining in Tujereng:

“During the time when they were mining, some people, they went to them - to the council [of elders] and told them that the mining place was devastating and something has to be done. So the council also plead to the government – to the authorities who were responsible especially the NEA and with their intervention they were able to stop. So of course they have their role to play.” (interview 10, December 20, 2013 –Tujereng teacher).

By utilizing the Council of Elders the inhabitants of Tujereng were able to eradicate sand mining in their community. This enhanced their adaptive capacity by slowing the effects of sea level rise, which the community perceived to be accelerating greatly due to the destructive, unregulated mining along the coastal zone.

It should be noted that, although this form of environmental democracy reflects the culture and tradition of the community, it is by no means perfect and may not fully represent all voices in the community. Consensus building in Tujereng is not a simple process; the community will discuss an issue while being mediated by the Council of Elders, with the *Alkalo* having the final say on the matter. From my observations, women did not have a very strong presence or loud voice at the community court. The Gambia's traditional structure is hierarchical and patriarchal, which may lead to complex power dynamics complicating environmental democratization processes by way of the community court.

However, in the case of Tujereng, although the hierarchical structure could marginalize some voices, my findings suggest that the success of Tujereng in collectively enhancing their adaptive capacity was partly due to this traditional structure. The *Alkalo* of Tujereng is very wise and respected by both outsiders and community members who spoke very highly of him:

“There are certain communities if you go there, if you don't consult, normally what we do if you go to any village, for example, if you go to..... we will use Tujereng... If you want to do any project you don't just go straight. We have to go to the Alkalo, and say this is what we are here coming. There is a project here coming. You will have to talk to them. So you see from the beginning on set, they are part of it, they know. So the Alkalo will now form there will go. We have the Village Development Committee chair he will call that person, for some women representatives, some you representatives, the communities they have youth representatives and women representatives because of this generation. And then we even ask them now to have handicap representative on the Village Development Committee. If you are going there for any project, we ask that we want a project where the youths will be represented, the women will be represented, even the disabled should be represented. Because what the disabled would want and what other.. would be different. So we want all of them to be represented so that we have a neutral plan and know what to do. So with their very different community, they have all that representation” (Interview 5, December 18, 2013 – Government Official).

By including the VDC while recruiting the participants, I was able to include voices and experiences of women community members who would not have otherwise participated, including numerous rice farmers. In addition, we were able to recruit various members of the Youth Health and Environment Group in order to fully understand the extent of organization within the community:

“I am very grateful to god that the village is organized. The youth in Tujereng have created a group called the ‘Health and Environment Group’, who have taken it upon themselves to educate and sensitize the community. We, the elders, have empowered them to stop anyone that is harming the environment. If they don’t stop what they are doing they are summoned to the Elders Council who will sentence them according to community bylaws. These are some of the solutions that we as a community have come up with (Tujereng Alkalo in community film: Environmental Change Over Time – December 9, 2013).

Although the community court could potentially be more inclusive, there are women in the Council of Elders and there were women present at the community court. Additionally, the Youth Health and Environment Group includes an equal representation of women, while recognizing the importance of incorporating female voices in the environmental choices and movements:

“There is a group of almost 20 members. We have been doing it for almost a year. We felt that the elders had done their quota it is now our responsibility to play our own part to see that the environment is being taken care of. Our role of major is that we sensitize people. Out of 20, 11 are women who are also very key players, because we feel men alone can not do it. We have to work with women to make sure it is not gender biased” (Focus group 1 (interview 18), January 6, 2014 – Tujereng YouthEnvironment and Health Group).

Various women participants spoke additionally about their influence on other women or the community at large, regarding environmental issues. The women

interviewed seemed to feel a strong sense of agency and involvement in conservation and adaptation strategies at the local level:

“she has some influence because she is someone who likes to work as a farmer. So when the first rain comes she is the first one to be seen in the rice field or in the farms to grow. In fact before people come, they will find that her rice has already gone up before they start their work. So people see her as a good example. – she leaves early in the morning to work in the fields and they will ask her to call them. If she has no influence on that they would not be doing this. She said even a lot of people give her their phone numbers asking to call them so they can also come and do some work” (interview 12, December 20, 2013 – Tujereng rice farmer).

“she tries to stop people if they are trying to do anything that is not good for the environment. If she sees you she will talk to you because there are programs that they listen to that are sensitizing them about how to keep you environment clean. So she is doing what she can and not to contribute to anything that can bring problems to the environment. She is also growing crops to minimize hunger and all these things” Interview 1, 2013 – Tujereng rice farmer).

By integrating the traditional model of governance with other newer strategies, such as the Youth Health and Environment Group, unofficial women’s groups and the VDC for the community of Tujereng have been able to strengthen the Central Capability, *Control Over the Political Environment*, in their community. The Council of Elders and community court has been utilized to enhance environmental democratization processes in a way that strengthens adaptive capacity in the community, while reflecting historical context and traditional structures. However, by integrating the new institutions alongside the traditional hierarchical structures, they are able to minimize the marginalization of women and disenfranchised members of the community.

4.1.3 Practical Reason: The Role of Environmental Education

The Central Capability of *Practical Reason* is being strengthened in the community of Tujereng with environmental education acting as an agent enhancing the adaptive capacity of the community and its collective capabilities. Every community member who participated in the research spoke about the importance of environmental education, however the reasons differed depending on the participant. Often community members spoke about the role of environmental education in changing negative behavior:

“Climate change – no one imagined it – it had been around for a decade or so now. But you will see that even among what you would call the literates, the knowledge is not widely spread people just don’t know much about it. Find you will say climate change, sea level rise, temperature change but what are the causes or what can they do these are still not very wide spread. What causes climate change is directly related to our livelihoods. If you want people to switch off their fridges and air-conditioning which is their comfort, you need to tell them and educate them so that they can understand (interview 13, January 2, 2014 – Tujereng Elder).

The community has collaborated with environmental agencies in the past in order to stop sand mining, but it was also illuminated that, by strengthening *affiliation* alongside environmental education, environmental management can be enhanced:

“We believe we should at least have community meetings whereby the council of elders with some people, even to invite some people from our National Environment Agency to come and speak to the people so we can learn more from them as to how to control our environment” (Interview 2, December 11, 2013 – Tujereng VDC member).

“We must have some teachers who are environmentally educated who will be able to teach the children how to control our environment. And the government has to have certain times when they will have this environmental education on the tv and on the radio. So that those who have not been to school can still learn of it broadcast in local languages. Most people will then know how to go about

with our environment” (Interview 2, December 11, 2013 – Tujereng VDC member).

Other participants spoke about the ways in which environmental education can be utilized to strengthen the adaptive capacity of a community through capacity-building educational initiatives. Specifically they spoke of those that help farmers to adapt their farming practices to better cope with the effects of climate change such as decreasing rainfall:

“Now if the climate is changing obviously it affects the agricultural production because 95 % of Gambian farmers depend on rain-fed agriculture. It can affect the rainfall but it can also affect the pattern of the temperature, so as a result at the end of the day it will seriously affect the productivity of crop cultivation so obviously I think that is a big concern that people should be studying. People must get an education on this” (interview 11, December 20, 2013 – Tujereng teacher).

“In most cases now everybody goes to school so most of the kids they learn about these environmental problems like climate change. They learn that the harmful affects of climate change maybe that they may threaten the rice or these particular things” (interview 11, December 20, 2013 – Tujereng teacher).

Community members predominantly spoke about the importance of teaching youth and students about climate change in order to enhance the resilience and adaptive capacity of the community:

“This [environmental education] is a very important thing because it will help students to better take care of their environment and be aware of what is happening and know the consequences of the climate change impact on their life and their animals and their plants. So when there is climate change education in the schools it will better equip students to be able to take care of their environment properly to avoid or mitigate some of the climate change issues” (Interview 2, December 11, 2013 – Tujereng VDC member).

“Environmental education can at least try to minimize some of these climate changes because if you sensitize, like for instance here we have social and environmental studies teachers if you sensitize the community and the students about the effects of the cutting down of certain trees which result in

the climate change then they can at least start to control the climate change” (interview 11, December 20, 2013 – Tujereng teacher).

“This [climate change] is dangerous because there are other places in the world that are covered in ice. This ice will melt if the temperature gets too high. When this happens, more water will fill the waterways and oceans, causing the sea level to rise. The sea will then take over the land, which could include our farming land, our settlement areas and even our homes. This is why it is important to teach our children how to manage the environment properly, so that they can make the world a better place” (Tujereng school teacher in community film: *Environmental Change Over Time* – December 11, 2013).

“So education is central in climate change. Even we need to go start it from the very low levels in elementary schools bring up programs that will at least, in the very simplified manner that will make those very young brains understand. It is very important for these programs for attitudes to change” (interview 13, January 2, 2014 – Government Official).

I found it especially interesting how often the community spoke about “controlling the environment”. However, one member of the Youth Health and Environment Group spoke about the minimal control they have over climate change, contending instead that if educated appropriately, their level of “control” can be enhanced. When framing the situation through the lens of the Capabilities Approach, environmental education can enhance their control over the situation, enhancing their ability to choose which responses would be best suited for their community:

“We have a little or a minimum level [of control] that we can start to make sure that people are adequately aware and educate them and let them know what climate change even is. So that at least when they know what climate change is, then they are educated, then you show them at least the positive or negative effects of it and that will help you at least control it gradually with time” (Focus group 1 (interview 18), January 6, 2014 – Tujereng Youth Environment and Health Group).

4.1.3.1 Peer Education

Drawing on ideas from Paulo Freire (1970), pedagogies should not be created for

communities, but instead with local community members, and should constantly be reshaped by different events and actors in a given community. The pedagogy should cause reflection and critical thinking that assists learners in realizing their ability to transform 'limiting situations'. Pedagogy should take teachers and learners on a path to critical discovery that will result in action and positive change for both parties involved. Various curricula, then, should facilitate environmental education as a participatory learning process rather than simply a transfer of knowledge (Freire, 1970).

Peer Education could be considered a capability-enhancing methodological approach that integrates participatory learning strategies. Peer Education is being utilized throughout The Gambia as a mechanism for sharing knowledge concerning various development issues. Peer Education is the transfer of knowledge between similar age or status groups, with the objective of changing behavior (Milburn, 1995; Wong, 1998; Perrott, 2014).



Image 4.3: Tujereng Peer Educators

Source: Tujereng Peer Educators: Photograph taken by Oliver Woods in the West Coast Region, The Gambia (2014)

The value of such programs for addressing environmental education is illuminated in the following quote:

“Peer Education is very good, because here we realize something, peer education has a lot of influence on people... they teach through the use of drama. And you’d be surprised that even these youth groups, even their peer groups, and they will talk on environmental education. There is a good set up for some program, they have to consult the young peoples, consult them, so they can participate in taking care of their environment not only environment, there are other issues that they can do, but now we are talking on the environment. I just see Peer Education as interpersonal communication, this is what we are doing... So it is very very important, its key. Because now we are talking of the younger generation, that has to really take action” (Interview 5, December 18, 2013 – Government Official).

The Canadian non-governmental organization (NGO), Nova Scotia Gambia Association (NSGA), has developed various curricula in collaboration with the Gambian

Ministry of Education and Canadian International Development Agency, including themes such as (but not limited to): HIV/AIDS, drugs/alcohol, environmental health, mental health and food/nutrition (Wong, 1998; Perrott, 2014). The NSGA is working with the youth in the community of Tujereng, training the brightest members to educate others on important issues relevant to their daily lives. A recent curriculum taught in collaboration with Saint Mary's University incorporates climate change education into the Peer Educator Curriculum. Peer Educators in Tujereng utilize dramatizations to sensitize their peers and community on climate change and the correlated implications. Throughout the focus group discussions I initiated during my field research, the Peer Educators discussed their perceptions of the role of Peer Educators:

“By visiting schools and villages we can sensitize them about climate change” (Focus group 2 (interview 19), January 8, 2014 – Tujereng female Peer Educators).

“You sensitize your friends to change behaviour” (Focus group 2 (interview 19), January 8, 2014 – Tujereng female Peer Educators).

“To educate as a Peer Health Educator we are educators and we need to educate everyone in the ways of climate change. Climate Change does not only change in Tujereng or my compound” (Focus group 3 (interview 20), January 8, 2014 – Tujereng male Peer Educators).

“The people I would like to educate are the people who have never gone to school – people who have gone to school, it [climate change] is learned there. So the people who are more needed to be sensitized are the people who never go to school” (Focus group 3 (interview 20), January 8, 2014 – Tujereng male Peer Educators).

Bangay and Blume (2010) argue that environmental education should include components that improve learners' capacities for critical thinking, and equip them with knowledge to adapt and cope with future environmental challenges of the changing

world. They argue that the curriculum must be created with larger goals than simply changing behavior; in addition, it should also foster reflection on the world in which learners live. In order to do so effectively, Bangay and Blume feel that locally-based and culturally relevant knowledge and forms of learning are necessary (Bangay, 2010).

Wong (1998), in her evaluation of Peer Health Education in The Gambia, argues that this pedagogical approach is in fact culturally appropriate and an efficient use of minimal resources. When discussing climate change with the Peer Educators in Tujereng, it became apparent that the students were able to connect the knowledge gained through reflection to their own community's experience in relation to a changing climate. Like the elders and adults in the community, the Peer Educators discussed the implications that climate change will have on agricultural production in the community of Tujereng:

“If trees are cut, clouds are not formed. Lack of rainfall is an effect of climate change. We need rain for the cultivation of crops” (Focus group 2 (interview 19), January 8, 2014 – Tujereng female Peer Educators).

“If it is too hot it means it is hard to work and it can affect your crops” (Focus group 2 (interview 19), January 8, 2014 – Tujereng female Peer Educators).

“If the sand dune is removed our farrows that people cultivate, the sea water will come there and they can't cultivate anymore” (Focus group 2 (interview 19), January 8, 2014 – Tujereng female Peer Educators).

In addition, one Peer Educator connected the adverse effects of climate change he was learning about in the classroom to changes he had been told about by his elders, demonstrating the ability to reflect on the world in which he is living:

“I think that climate change is affecting Tujereng because when I spoke to an old man who was 77 years old, when I ask him how was he weather in Tujereng before he says it was very cold and not as hot as now, the sun is getting too hot” (interview 19), January 8, 2014 – Tujereng male Peer Educators).

Moreover, one Peer Educator, after reflecting on the community experience was even able to offer valuable recommendations for what the community ought to do in order to minimize environmentally destructive practices and strengthen local adaptive capacity:

“The sand dunes on the beach side are very important for the rice. But in this case of sea level rise, the government and NGOs together with the village elders should cooperate to make those collecting for construction... we need to stop this malpractice” (interview 19), January 8, 2014 – Tujereng male Peer Educators).

Although climate change education is in the preliminary stages in the community of Tujereng, it is another building block helping the community strengthen their adaptive capacity and enhance both collective and individual capabilities.

4.1.4 Play: Incorporating play into Environmental Education

As mentioned in the previous section, the Peer Educators in Tujereng utilize drama as a mechanism for educating their community. This is an example of the ways in which the Central Capability of *Play* can be utilized to strengthen adaptive capacity and collective capabilities. Throughout my research in the field, I found there were multiple ways that the Central Capability of *Play* can be integrated into environmental education to help strengthen the Central Capability of *Practical Reason* as well as local adaptive capacity. One Government Official spoke about the ways in which they are working towards integrating local customs into environmental education initiatives:

“environmental education can be taken twofold: one, it can be in the kind of working in the schools; others will work with communities and stakeholders. For me, I think environmental education has played a role in certain programs we use the traditional communicators where we have developed videos and dramas that they use to play on tv or the radio for people to listen, because it is important for the person to know what we are saying in your local language. For sometimes when you demonstrate they have different ways of assimilating things. So what we also make use of is Kijenleng groups... like funny people... they form a troop... they call it Kijenleng. So these people, the

group of people, they are something like a comedy group. They use dance at naming ceremonies and try to make fun for people to learn. But in making those funs they are sending the message. So if you use them if you go to naming ceremonies they can just be singing songs on concerning climate change and you will be dancing and also passing the message. So there's another thing, what we also create in environmental education is that we usually have environmental groups in all the schools. And each of these environmental groups in schools they also have set up resource centres we have documents and send those documents for the further distributions. I think that environmental education plays a big role in the area of climate change.” (Interview 5, December 18, 2013 – Government Official).

Not only can *Play* be integrated into environmental education through the use of Kijenleng groups or local customs or traditions, Peer Educators in the Tujereng schools and Youth Health and Environment Groups within the community are also utilizing drama to educate the community of Tujereng. Augusto Boal (2000) argues that theatre can play a significant role in social change processes. As such, theatre could be considered a valuable agent in spreading environmental education regarding climate change throughout the community. Throughout the focus group with the Peer Educators in Tujereng, many participants discussed the importance of drama for sensitization processes:

“We have what we call sensitization programs which we plan to meet the community of Tujereng and to be organized annually at the market centre to educate people...we use drama to show them that these are the actions that we do” “many people like drama” “it [drama] can be used to educate people” “drama can be used to help people understand environmental education” “By making videos or drama we can sensitize people about climate change” (Focus group 2 (interview 18), January 6, 2014 – Tujereng Youth Environment and Health Group).

Moreover, the Peer Educators also spoke about the importance of “entertaining” to enhance the sensitization process:

“By entertaining you can sensitize people and the way we usually sensitize people is go into the village and use drama” (Focus group 2 (interview 19), January 8, 2014 – Tujereng female Peer Health Educators).

“Entertainment is very important using some skits will make them laugh” (Focus group 3 (interview 20), January 8, 2014 – Tujereng male Peer Health Educators).

By making the knowledge sharing a fun and engaging process, it is likely that sensitization initiatives will be more effective and well-received. Although *Play* may be the least prominent Central Capability enhancing local adaptive capacity, if strengthened alongside the other capabilities, it could significantly improve local adaptation strategies, including awareness-building campaigns throughout The Gambia.

By mobilizing the Central Capabilities of *Affiliation, Control over One’s Political Environment, Practical Reason* and *Play*, the community of Tujereng is working towards enhancing local adaptive capacity at both the individual and collective levels. Often communities are portrayed as helpless – lacking the necessary adaptive capacity to minimize vulnerability. However, I found that although the government has been unable to provide adequate interventions in Tujereng, the community is mobilizing the efforts needed to improve their adaptive capacity at the local level.

Chapter 5

The following chapter will offer suggestions as to what role governments, communities and outsiders should play in enhancing the adaptive capacity of communities vulnerable to the adverse effects of climate change. It will do so by offering recommendations for strengthening the current climate change policy to strengthen and build upon current and future community-based adaptation strategies.

5.1 The Role of The Government

If development, through the lens of the Capabilities Approach, is concerned with improving individual (or collective) agency to enhance one's own well being, then the role of the government is to provide an enabling environment for communities to strengthen the capabilities that will enhance local adaptive capacity. This would mean strengthening *Practical Reason*, by providing adequate environmental education to communities affected, including the individuals or groups that are unable to attend school. This can be done through enhancing *Play*, by way of local customs, such as *Kijenleng* groups or dramatizations created by local peer education groups, and environmental groups. In addition, it would mean strengthening *Control Over One's Political Environment*, by improving environmental democratization processes at both the local and national level, which, in the case of Tujereng, was strengthened by utilizing pre-existing traditional forms of governance. Furthermore, it would also mean strengthening *Affiliation*, by providing avenues for communities to build meaningful relationships with governmental bodies and climate change adaptation specialists. However, my findings suggest that the Government of The Gambia has been unable to provide adequate interventions in the community of Tujereng, which has led to the increasing vulnerability of local community members and the necessity for local action.

5.1.1 The National Adaptation Program of Action

Although the National Adaptation Program of Action (NAPA) was created as a “participatory process” to alleviate the vulnerability of Gambian populations to climate change, I found that only one community member had even heard of this policy and his response was not favourable:

“I believe... for me, it [NAPA] is just a phrase that is levered for the mind to hear, but not to enjoy” (Interview 4, December 17, 2013 – Tujereng community member).

Although the local Village Development Committees (VDCs) were meant to be consulted in the creation and planning of the NAPA (Government of The Gambia, 2007), the local chair of the Tujereng VDC said, *“No, I don’t know of it”* (Interview 2, December 11, 2013 – Tujereng VDC member), when asked if the VDC was involved in the preliminary stages of the NAPA.

5.1.1.1 Stakeholders and the Participatory Processes

As mentioned in Chapter 2, I wanted to investigate how participatory the preliminary stages of the NAPA were and who were considered the central stakeholders. The NAPA priority projects are large scale and centrally designed rather than small-scale and community designed (Government of The Gambia, 2007), leaving one to question the level of community participation. The NAPA states:

A limited number of site visits were undertaken in order to augment the PMT’s [Project Management Team] understanding of critical dimensions of problems, but to also galvanise and sustain stakeholder interest. PMT administration of structured questionnaires, face-to-face and telephone interviews with policy-makers, complemented by FGDs with stakeholders in different regions of the country, allowed the PMT to isolate and prioritise technically feasible and socially-acceptable adaptation strategies.

A draft version of the NAPA document was widely circulated for comments/suggestions and subsequently endorsed with some recommendations (i.e. proposals for amendments) by participants at a national validation workshop (Government of The Gambia, 2007, p. 89).

This assertion “proving” the participatory nature of the strategy brings one to question primarily, who are the stakeholders? Second, did all the stakeholders view the document?

What about those stakeholders who were illiterate, or were those who were illiterate not considered legitimate stakeholders? Another crucial component regarding this statement is the “limited number of site visits”. How can the adaptation strategy be considered participatory if all communities affected are not consulted regarding all stages of the strategy?

Government Officials were all familiar with the NAPA and when asked who the stakeholders were they often spoke about other governmental sectors, again leaving one to question the element of community participation:

“We see in the NAPA there are key issues that we choose, that is energy, forestry, and agriculture. Those are very important areas and already we have projects that we... food growing, then for agriculture, then for forest we have the concept so you see when we say... because when you look at the national climate change committee it involves institutional based committee, and all the institutions that have key in climate change, even the private sector they are represented in the national climate change committee. So all sectors have taken part in the preparation of that NAPA” (Interview 5, December 18, 2013 – Government Official).

When I asked who the stakeholders were, even one of the key contributors to the NAPA neglected to mention the role community groups or VDCs played in developing the NAPA:

“The NAPA was an opportunity for cross sectorial and across the country sensitization because we had a nationwide consultation and the stakeholders at the national level anyways, all the government institutions all the NGOs including the farmer organizations and we went to all the regions, where the farmer representatives, each of the 7 regions were all brought together and asked, not only being told that this is plan that is changing but also asking them what they have observed and what is happening?” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

However, when asked what role the communities should play in developing adaptation strategies, the contributor to the NAPA responded very articulately:

“they [communities] will also give you their indigenous knowledge which is very important and their coping strategies. In fact as part of the adaptation measures you have to look at the coping strategies that the communities take when they are affected by the climate and climate variabilities. And those are the things you try to enhance. Because when they are affected by a change – either a drought or flood, they use some adaptive or coping strategies, which are short term (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

Although it may sound like community knowledge was sought out, my findings suggest otherwise. I asked the contributor to the NAPA, who represented Tujereng as a stakeholder in the development of the NAPA and the response was *“The level of the West Coast Region”* (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA). This suggests that the NAPA was not truly a participatory process because communities affected such as Tujereng, were not actually involved or consulted in the designing of the adaptation strategies; rather one representative was chosen to represent the entire region.

5.1.1.2 “Participation”

Participation within the context of development was established as a counter-hegemonic approach – placing community members as the actors in their own development, rather than relying on outside “experts” or development practitioners. In theory, it aligns fittingly with the Capabilities Approach, as participation exercises popular agency, recognizing the value of local knowledge and capacities of local people (Hickey, 2004; Leal, 2007). Academics have argued that “participation” has become the buzzword of the neoliberal era—transforming both its meaning and motivation (Cooke, 2001; Leal, 2007). It has become the dominant development discourse and has been frequently co-opted by large organizations and institutions. As a result, it has now been

incorporated into development policy, stripping the word of its original ideology—which was meant to counter hegemonic development strategies (Cooke, 2001; Leal, 2007).

In Chapter 2, I summarized the critiques already voiced regarding the NAPAs. In addition to lacking the inter-sectorial integration and incorporation of a gendered dynamic, I would also argue that The Gambian NAPA is also lacking real participation in practice. The NAPA did not incorporate those most affected into the planning of their adaptation strategies. Communities need to be at the center of adaptation strategies, both in the creation and implementation phases, as their lived experience should determine which strategies are prioritized. If development is concerned with improving individual or community agency, then true participation would consider community members the experts in determining which projects should be prioritized. Moreover, if choice is both the means and ends to development, then enhancing environmental democratization processes should be central to enhancing local adaptive capacity and developing adaptation strategies.

5.1.2 Challenges for Policy-makers: Lack of Adequate Information and Resources

Being a policy-maker in The Gambia is not without its challenges. Due to financial restraints and lack of resources, only one prioritized adaptation project has even been implemented. These restraints make it difficult for policy-makers to truly employ participation in practice, with a predictable lack of concrete results:

“It is due to the financial restraints we face as a country. We are always striving to mobilize resources. You can imagine the NAPA that was finalized in 2007, and until now we only implemented one and are starting to implement 2 more. And we have another 6 more to implement, so if you go to the same communities that were affected by agriculture, forestry and all this and ask them the same questions even for another project, they will ask you what happened to the other

proposal that we submitted? So that is another challenge” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA).

In addition to the lack of adequate resources needed to implement adaptation strategies, the country also lacks adequate information, research and assessments regarding national vulnerability to climate change:

“Climate change information in regards to Gambia you need to do an impact assessment, vulnerability assessment and risk assessment and so that is not available. So in the end, the policy drawn is highly generalized the information they are using is not very specific to local, to me it is like having the right information for creating the policy. Because if you are able to do a climate change impact or vulnerability assessment for the coastal zone and you know that exactly this is going to happen and you have the right information, to draw up the right activities of what you need to do. But if you just depend on the global information, on Senegal, Gambia, Guinea Bissau and you want to conclude on that the information will not be as good as that specific to the local region. The information is inadequate” (Interview 13, January 2, 2014 – Government Official).

I am not discrediting the value of research and science in developing adaptation strategies but, when developing adaptation strategies, I suggest that combining different forms of knowledge (local elders and climate experts) is preferable, as this could enhance adaptation strategies significantly. Elders in communities such as Tujereng should certainly be considered experts regarding climate change in their community, as they are the real people who have been experiencing and adapting to the adverse effects of climate change for many years. In addition, involving communities in actual practice, as prescribed by one of the interviewees can improve project sustainability:

“I am a firm believer of bottom-top approach. I think science has basically failed a little, because we usually take a top-down approach now it is you realize you are bringing in projects that do not actually suit the communities. I think the communities should come in from the planning to implementation to benefits. They should be everywhere all along. Most of my programs before, I used to make sure we had each community represented at the planning and implementation so that they were able to keep their own program and the end

of the project. That is where sustainability comes in” (Interview 8, December 19, 2013 – Gambian PhD student researching the effects of climate change on mangroves).

I think that this quotation truly represents the shortcomings of the NAPA. Although the development of the NAPA may have included numerous “stakeholders”, the priority projects were centrally designed and prioritized, leaving one to ask what role should communities play in developing adaptation strategies? Moreover, if the “experts” do not have adequate knowledge and are forced to generalize, the adaptation strategies could be completely irrelevant to local realities.

5.2 The Role of The Community

As previously mentioned, communities need to play a significant role in developing adaptation strategies so that these strategies are relevant to local realities and sustainable. Government officials I spoke with recognized the necessity for community involvement, yet only representatives at the regional level were included:

“They [communities] should highly participate, projects have a short lifespan you know you have 2 years, 3 years, 4 years.... Whatever. But at the end of the day, the project is gone and is left with the communities – the beneficiaries. So it is good that they are involved from the beginning with the planning and execution, so when you leave the projects at least the community will still contribute whatever the community has achieved. But if you leave them out that is always an issue. At the end of the project, then, that is all. That is why they need to be included” Interview 13, January 2, 2014 – Government Official).

“they [communities] are the most vulnerable and the most affected also. Because with the climate change problem, food shortage here and there, it is the farmer who suffers most. They spend a lot of time in the field and at the end of the day they don’t harvest anything. Of course before the government takes action, and most of them are suffering. Of course it is important in the planning stage they are part, and participate equally” (Interview 7, December 18, 2013 – Department of Forestry).

This brings me to question why communities such as Tujereng were not consulted in the development of the NAPA? Participation needs to be more than just a buzzword utilized to validate policy; it instead needs to be truly integrated into practice and action including real communities in all stages of development and adaptation strategies.

In line with the Capabilities Approach, it is the government's job to provide an enabling environment for the communities to act as agents in their own development. As such, collaboration between government and communities is crucial for enhancing local capabilities, agency and adaptive capacity. A teacher in the Tujereng community discussed the importance of government-community collaboration with governmental bodies creating policies that affect real lives on the ground:

“I think it should be a collaboration between the government and the community or stakeholders because the government only make the policies which are implemented by the community. So here the community is the focal point to me. In the sense that they are going to implement what the government is trying to yearn for. The community involvement is going to be key, and it is only when the communities are involved that the project or whatever can be successful” (Interview 10, December 20, 2013 –Tujereng teacher).

Government officials argue that the first step would be to enhance the Central Capability of *Practical Reason* or environmental education in order to change negative behaviours and mitigate the effects of climate change:

“If communities are well sensitized and are and understand their actions which contribute to climate change if they are aware of some of the activities that they do then at least we can say we have impacted on the community. Sometimes they may accuse nature of changing the course but not realizing that their activities are also contributing to what they are experiencing. If they are aware they will say ok our actions also contribute to the reasons that we are facing today. So at least they will be able to reduce if not stop the negative activities that they do” (Interview 6, December 18, 2013 – Government Official).

However, as previously mentioned, the majority of the community members already attribute the environmental changes occurring in Tujereng to their own actions. I suggest that in order to reduce the vulnerability of communities such as Tujereng, environmental education and public-awareness-building campaigns regarding climate change need to be developed at a national scale to not only mitigate, but also adapt to, the adverse effects of climate change. This is something that community groups and NGOs have taken into their own hands in the community of Tujereng.

In spite of the governmental responses to climate change, or lack thereof, communities such as Tujereng are mobilizing together, to strengthen collective capabilities, which in turn enhances the capabilities of individual community members and local adaptive capacity. Ideally, national policy should protect the quality of life for citizens and regulate the private sector with that objective in mind. However, solutions such as adaptation or conservation initiatives need to come from within, so that the strategies are sustainable, relevant to local realities, and supported by the communities. If local-level wants and needs are properly integrated into national climate change policy, environmental democratization, or “choice”, can be expanded, which is crucial for enhancing local populations’ capabilities.

5.3 Local Adaptive Strategies

I suggest that in order to maximize minimal resources, what the policy-makers ought to do is strengthen the adaptive measures that communities such as Tujereng are already doing on their own. To reiterate what was already discussed in Chapter 4, Tujereng community members are already mobilizing to enhance collective capabilities,

which, in turn, is strengthening local adaptive capacity and quality of life. Central Capabilities playing a significant role in strengthening local adaptive capacity include: *Practical Reason*, or environmental education strengthened by way of the NSGA Peer Educators; *Control Over One's Political Environment*, or environmental democratization, enhanced through utilizing traditional forms of governance; *Affiliation*, or social capital; and *Play*, through employing traditional customs or drama. It is important to understand the various things communities are doing already in order to develop relevant and sustainable adaptation strategies. In addition to the activities discussed in Chapter 4, community members are also transforming their livelihood strategies to cope with climatic fluctuations:

“I think right now, most of them try to expand, move away from their traditional ways of earning their income on the coastal areas and wetlands. Like those who used to just harvest oysters, now I see them going into gardening during the rainy season when there is less salt. They go into gardening, growing corn, and things like that. That is their own adaptive strategies I guess” (Interview 8, December 19, 2013 – Gambian PhD student researching the effects of climate change on mangroves).

Additionally, community members are changing their cropping patterns to ensure that they are able to maintain food security. This will include growing crops that are more suitable for the changing climate and rainfall patterns:

“Normally, in those days the rainfalls for usually five to six months but now the rainfalls is four months or three months. So if you cultivate a crop that is late maturing it may affect your production. You need to cultivate crops that are quick maturing and are able to grow fast and mature earlier so this way farmers can harvest earlier before the rain stops.” (Interview 11, December 20, 2013 – Tujereng teacher)

However, as mentioned in Chapter 3, these changes in cropping patterns have led to the degradation of food sovereignty. Furthermore, Tujereng community members are

learning new ways to decrease the salinity and increase the fertility of their soil. These various techniques have been transferred by word of mouth from farmer to farmer:

“But some are inevitable, like nature can come in. In the rice fields, there will be certain areas that become salty and anything you plant there doesn’t grow. SO what they are thinking of now is getting lime – and thinking of using oyster shells and tilling it with the ground to minimize that. they have been trying ways, like some people will use top soil and take them and spread it in their rice field. Some will use the rice stalks after harvesting rice and it will turn to the manure so sometimes that compost helps. But this lime she wants to try, there is a lady that had a same problem with her rice fields so she tested it in the past rainy season and it worked. So she wants to try that this time to see if that will work too.”
(Interview 12, December 20, 2013 – Tujereng rice farmer).

In addition to developing and expanding adaptive gardening techniques to protect food security in their community, as previously mentioned, the community has also eradicated sand mining in their community and prioritized the conservation of sand, which also protects their rice farming area from the effects of sea level rise.

5.3.1 The Conservation of Sand as an Adaptive Strategy

It is the responsibility of the government to regulate the private sector, keeping its citizens’ capabilities and quality of life in mind. There is a dire need for coastal zone protection strategies, with current policy being inadequate in regards to sand mining (Drammeh, 2013). Although the conservation of sand is important—and similar to adaptation strategies—it has previously been argued that conservation initiatives need to include civil society stakeholder groups in order to be successful and sustainable (Jobe, 2011). I would add that conservation initiatives need to incorporate traditional knowledge and forms of governance in order to be culturally relevant and aligned with traditional ways of knowing and doing. The community of Tujereng utilized its traditional form of

governance, including the Council of Elders and community court, to expedite the conservation of sand in their community.

5.3.1.1 *Alternatives to Sand as a Construction Material*

Jobe (2011) argues that alternatives to sand as a construction material need to be researched and developed in order to reduce the rate by which the coast is eroding (Jobe, 2011). Government officials recognize the weight in these recommendations and noted that the country is developing various initiatives to do so:

“[sand] is limited. In fact one of the coastal protection projects is going to address alternatives to sand mining material so that we can use that for construction” (Interview 6, December 18, 2013 - Government Official)

“I think if you go to the land locked countries there is the clay materials to construct. If you go to Mali, Burkina, Niger, these are landlock countries, they don’t have the coastline they use their own local materials for construction. We are also in some parts of the country where they have the fire stone brick plant where they use the clay and they burn it and manufacture these small bricks which are used for construction. Government is going to go into those kinds of investigation to see how feasible those materials would be as an alternative to sand for construction” (Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA, Tujereng elder).

I would expand upon this, contending that communities should also be involved in developing coastal zone management policies, as communities such as Tujereng are already developing their own coastal conservation strategies. Policy should attempt to support rather than undermine such initiatives, while representing the actual wants and needs of citizens. The only way to truly integrate local knowledge and desires is by working with communities to develop and implement policy, unlike the approach adopted with the NAPA. Governments need to collaborate with communities like Tujereng to enhance local adaptive capacity and understand the meaning and motivation behind

conservation initiatives at the local level. In addition, indigenous knowledge should be sought out in order to develop and strengthen pre-existing conservation initiatives, especially those in the coastal zone. Moreover, local community members also have an abundance of knowledge regarding alternative construction techniques that could be utilized to reduce the nations dependence on sand and mitigate the detrimental effects of accelerated sea level rise.

5.3.1.2 *Indigenous Knowledge: Mud and Clay as an Alternative to Sand*

Prior to the last 50 years, architecture in The Gambia utilized mud as the principal construction material for building houses, mosques and other structures (Saine, 2012). When speaking to community members in Tujereng, it became apparent that using mud as a construction material is indigenous knowledge that has been passed down for generations. Tujereng community members emphasized the value of building houses using this indigenous knowledge and argued that, if built properly, the structure would be durable and strong, and can have a long life cycle:

“This house was built using simple materials. You have water, mud and sand. Round palm. For the sand I dig it here. There is a big hole behind the house where I dug. And I fetch water from the well down there but for the sand you have to buy it. Concrete is expensive. Right now building materials are extremely expensive and right now they are going up especially cement it has no specific price. This week you can buy it for a particular price and next week it will be increased. I found that it is against my income. SO I decide to build this simple one. This one, nobody needs to teach you. Because this one we have been doing since childhood. It’s common knowledge” (Interview 19, January 7, 2014 – Tujereng community member building mud house).

“Normally we mold the clay blocks for the structures. After you mold it then you then allow it to dry. When it dry then those blocks you use it to construct. You don’t normally put the cement there that is only the clay. When the blocks are dry then you just fetch some mud again, then use that to seal. This is the traditional way of building. You find the dirt there and it is believed that the topsoil is very good because if you just mold that one it doesn’t crack much. But if you just go

through the topsoil deep until you get to the reddish colour, then it is strong but when it is dry it will crack. The best thing is to mix all of it, the topsoil and the redsoil and that makes the best brick” (Interview 11, December 20, 2013 – Tujereng teacher).

“You see most of our houses here are not cement houses. You see, these are mud blocks. The hole that those people made before [as a dumpsite for rubbish] is still there but now it is used to make our blocks. Sand blocks, ordinary sand, not cement, only sand and water that is all. You make them and then you come and build your houses here because that place is more like clay so it is strong. You can make blocks out of it, then it goes strong so you can build houses. This house was built when I was not born. So this house is more than 60 years. There is no cement work on the walls see. So you make a choice on the sand you use then it is ok and it can serve you long” (Interview 2, December 11, 2013 – Tujereng VDC member).

“If the person knows how to construct it lasts for generations even your grandchildren can still stay in it. Like Mr. Bojang, his grandfather’s house is still standing and it is mud just like this one” (interview 19, January 7, 2014 – Tujereng community member building mud house).

More and more houses are now utilizing cement blocks instead of mud blocks, which retain more heat than the traditional style of architecture (Saine, 2012). Throughout the duration of my research in the field, I noticed that many houses were built out of concrete, however, in Tujereng, many structures still used the traditional way of building, using mud blocks. This method of building is not only more economical but one Tujereng community member also noted the sustainable nature of their indigenous knowledge, as it uses materials that can be found at the construction site rather than sand from the coastal zone:

“These houses predominantly use clay and are more environmentally friendly – because where you are able to collect the clay from you can still use the same place as a way where wastewaters can be thrown and it is more cost effective. Because you are not going to buy the sand – you know the dirt is going to be from your backyard and then used to build your house. So you will realize that

only a few areas will use cement and sand from the beach so this will also reduce the amount of sand mining from the ocean. This will also mitigate coastal erosion” (Interview 10, December 20, 2013 –Tujereng teacher).

As previously mentioned, government officials have discussed the importance of researching alternatives to sand for construction. They have begun developing innovative technology to incorporate mud and clay into mainstream construction:

“With cement you can leave it at any stage even if it rains. We need to now improve on those muds, see how you can use the mud that is going to be water resistant and would be durable. So that if you burn it and mix it properly. That is being done and practiced only that you have small bricks and you can make it on big blocks.... In Brikama there is the appropriate technology unit under the department of community development if you go there they will show you the kind of bricks they are using as alternatives to sand. What we need to do is propagate that and encourage people using it”(Interview 9, December 19, 2013 - Government Official, Key contributor to the NAPA, Tujereng elder).

Throughout my field research, I did find that various eco-lodges are using different construction materials, including a hybrid approach utilizing one-part cement for every six-parts of gravel used from the construction site:

“There is an Office for the Department of Parks and Wildlife there is an ecotourism camp, we used a material that would not need sand. They either use clay or gravel dust it is just like 6 parts to one part cement and you mix it so you have different shapes you can build out of it. So those buildings were built out of that. There are 5 huts and one below with none of the buildings using sand. The material they had there was gravel dust so that was what they used. 6 parts gravel dust and one part cement. Those buildings were constructed without sand. SO you have a lot of those things coming now” (Interview 13, January 2, 2013 – Government Official).

“The gravel is from the park here and it uses less cement, one bag of cement with 8 wheelbarrows of gravel. Cement is more expensive than this other one. It is clay gravel used not sand from the beach.” [The eco-camp cabanas] (interview 15, January 6, 2013 – Department of Parks and Wildlife – Tanji Bird Reserve).

I found it fascinating, however, that a community member in Tujereng had already been utilizing a similar technique. He had designed a hybrid house using mud blocks for the foundation and body of the house but was plastering the walls with cement to protect the mud bricks from any torrential rains.



Image 5.1: Mud Bricks in Tujereng

Source: Mud Bricks: Photograph taken by Meagan Symington in Tujereng, The Gambia (2014)



Image 5.2: Hybrid House in Tujereng, The Gambia

Source: Hybrid House: Photograph taken by Kebba Suso in Tujereng, The Gambia (2014)

He spoke to us about the value of utilizing the traditional architecture technique, yet modifying it slightly to enhance the house's ability to withstand storms:

"I believe that they should use mud because this one is very cool- because cement, when the sun is hot it heats the wall. But this one, it allows all type of weather. If the weather is hot that doesn't mean that the wall will really be hot. But with the cement if you touch it, it is hot. This one is different, it is much cooler and cost effective. The only problem is water, but if you plaster it well, even rain water can not disturb it. The outside wall is plastered with cement and there is a metal roof. Once you build the foundation with mud you plaster with cement and it will last for generations and more waterproof. There is also a fence around the house using the cement bricks. Because in the rainy season, the water will come near and this belt acts as a storm wall" (Interview 19, January 7, 2014 – Tujereng community member building mud house).

This example helps demonstrate the value of seeking out local knowledge in developing adaptation and mitigation strategies. Communities are already taking matters into their own hands, as communities naturally want to improve their quality of life. These efforts

should be examined to maximize adaptation and mitigation outcomes and minimize negative consequences. Indigenous knowledge should be sought out in order to innovate new technologies, resulting in the reduction of the nation's dependence on sand. Through collaboration and sharing different ways of knowing and doing, solutions can be sought out in order to minimize coastal communities vulnerability starting with the reduction of the nation's dependence on sand.

5.4 Recommendations

Although the community of Tujereng has been mobilizing to strengthen local adaptive capacity, these initiatives are not enough. After reflecting on the findings from my field research I would like to offer some recommendations that could significantly improve Tujereng's adaptive capacity and The Gambia's overall approach to climate change adaptation:

1. Policy-makers could maximize their limited resources by providing educational workshops for community groups and peer educators who would then educate the greater community by way of local customs (Town Criers or Kijenleng groups) or dramatizations. There are NSGA Peer Educator groups in 150 schools; training for these groups would be only \$54,750.00 (\$365.00 per school) (Symington, 2013), which would be a much more cost effective and decentralized mechanism for building awareness.
2. Although social capital has been critiqued by Veltmeyer (2007) for leading to a lack of government intervention, I believe that, in the case of climate change in The Gambia and the limited resources available to adapt to its impacts, it offers a viable opportunity and significant advantage for enhancing and strengthening adaptation strategies. In addition to Tujereng, other coastal communities, such as Kartong, are also mobilizing. These communities should be studied to understand what community characteristics lead to successful adaptation strategies. In order to enhance local capabilities and quality of life, the Government of The Gambia cannot afford to let any resource (be it financial or social) go unutilized.

3. Local structures of governance could be utilized to enhance conservation, adaptation and environmental management strategies at the local level, maximizing components of relevance and sustainability. Moreover, environmental democratization can be enhanced by way of integrating elements of tradition and culture to enhance sustainability and place-based relevance.
4. Governmental policy and state interventions need to take a stronger stance on: wetland and mangrove protection; sand management including, regulating the private sector and sand mining industry and truly eradicating illegal sand mining in the coastal zone; and developing an integrated coastal zone management strategy that truly integrates community wants and needs into the planning and implementation of such strategies.
5. Further research needs to be conducted, exploring alternatives for construction materials incorporating local knowledge, as they are already innovating hybrid approaches at the local level to reduce the reliance on sand as a construction material.
6. Governmental institutions need to integrate participation in theory into real action in policy planning and implementation, to ensure policies implemented, are relevant, sustainable and supported by local communities.
7. Policy-makers need to support coastal zone management strategies that strengthen local conservation initiatives and incorporates local knowledge.

5.5 Further Research: Social Ecological Systems

Nussbaum argues “the quality of the natural environment and the health of eco-systems are crucial for human well-being as including commitments to future generations” (Nussbaum, 2011, p. 163). As such, it becomes important when investigating the ways in which the climate is changing, to examine communities and their eco-systems together rather than separately. Although Nussbaum has *Other Species* defined as a Central Capability, in regards to climate change, this Central Capability could encompass a PhD dissertation in itself. It would seem appropriate to utilize a lens such as Social Ecological Systems (SES) framework in conjunction with the Capabilities Approach to offer a more dynamic, intensive and interdisciplinary examination of the

Central Capability of “Other Species” and its relation to enhancing quality of life and other Central Capabilities. The Community Conservation Research Network offers a valuable definition of this lens:

“The basic idea of SES is to be explicit in linking together the ‘human system’ (e.g. communities, society, economy) and the ‘natural system’ (e.g. ecosystems) in a two-way feedback relationship. This integration of humans in nature is important because in any conservation effort, there are interactions and ‘feedback’ between ecological (biophysical) and social (human) subsystems. This includes essential links related to people’s knowledge (e.g., local or traditional knowledge), and management institutions, as well as ‘rules’ and ‘norms’ that mediate how humans interact with the environment” (Berkes, 2014, p. 2).

Utilizing such an approach alongside the Capabilities Approach would offer a unique lens for framing the ways in which various conservation or adaptation strategies are implemented and reasons behind strategic selection and success for communities such as Tujereng or Kartong. Moreover, as previously mentioned, in The Gambia, coastal communities are extremely dependent on diverse eco-systems and are increasingly noticing the degradation of these systems due to a changing climate and anthropogenic activities:

“I think to a great extent [climate change is effecting the Gambia] because if you look at what was happening in the past and what is happening now, we have seen one, an erosion of the ecosystem along the coastal communities over the years. In particular, let me just cite Tujereng as an example, when we were young we used to have streams in Tujereng. Now you don’t have those. If you follow the rice fields, in Tujereng there is a place where they were mining sand, if you go to that area, those used to be lakes all the way to Batakunko. But now it is all dry and if you go to the coast, the beach, we have lost the beach and the coastline where we used to have a lot of trees, birds – you will see that all of these have disappeared now. The livelihood of the coastal communities depend on one: the fish and also the rice fields along there even the ecosystem where you have a lot of habitats and people also use the ecological – you have a lot of traditional plants that people were relying on, no you can no longer have them” (Interview 9, December 19, 2013 - Government Official, Key Contributor to the NAPA).

This lens would offer a considerable advantage for examining both human and natural systems and the ways in which these systems affect Central Capabilities and local quality of life in The Gambia.

5.6 The Role of Outsiders: Social Justice and Climate Change

The role of the government is to provide an enabling environment through the form of policy for communities such as Tujereng to develop all Central Capabilities and to strengthen local adaptive capacity. The role of the community is to understand its sense of agency and to determine what adaptive strategies are relevant to its experience. With self-definition and choice being the essential elements of the Capabilities Approach, international development agencies, outsiders, or researchers such as myself, have a responsibility nonetheless. Although the Capabilities Approach primarily has been used to gauge the level of appropriate state intervention in aiding citizens in developing all capabilities, Nussbaum (2011) has recently added a global obligation within this approach as well. She argues, “richer nations bear responsibility for assisting the efforts of poorer nations” (p. 115), contending that due to colonial exploitation, poorer nations (such as The Gambia) were underdeveloped while colonial powers became industrialized and wealthy. She argues that unequal systematic and political power has led to global inequalities and issues of social justice (Nussbaum, 2011).

In regards to climate change, the ways in which richer nations have become wealthy, industrialized and “developed” has in fact been causing real harm to developing countries such as The Gambia. Greenhouse gas emissions have increased by 40 percent since the pre-industrial period, causing the adverse effects of climate change (IPCC, UNEP, WMO, 2013, p. 9), which are affecting communities such as Tujereng. These

trends will not only continue in future years, but also increase the vulnerability of already vulnerable populations like Tujereng, with changes in extreme weather patterns and climatic events (IPCC, UNEP, WMO, 2013, p. 9). Least developed countries (LDCs) are the most vulnerable to the adverse effects of climate change and are emitting the least amounts of harmful CO₂ emissions (Dodman, 2009, p. 152). One community member articulated the concerns for Gambian populations if others in industrialized nations are not reducing their emissions:

“But the unfortunate thing about mitigation, is if you are doing your own part here and others are not following you are forced to adapt because the atmosphere is seamless you don’t have borders in the atmosphere When something is done in Canada, it can easily surface here. So that is the problem” (Interview 13, January 2, 2014 – Government Official).

Even if communities such as Tujereng are reducing their environmental impact, if those nations who have already benefited (such as Canada) do not change their attitudes and behaviors, it will be communities such as Tujereng that will suffer rather than the countries causing the detrimental impacts. Even though policy-makers in The Gambia recognize that wealthier nations developed by way of industrialization, they still endeavor to move away from that model of development. However, as articulated by one policy-maker, it will be difficult for The Gambia to achieve food security, alleviate poverty and develop sustainably, as they are already in the adaptation stage rather than mitigation stage:

“We need to ensure that we don’t follow the mistakes of the past, particularly those of developed countries who continued emitting in the last 150 years. Some would say they were not aware of the impacts then. Now that we are aware of the effects of climate change we need to mitigate and also adapt. But the priority for us because we are a very poor country and our livelihoods depend on agriculture and natural resource sectors that are so climate dependent you cannot really achieve your food security and alleviate poverty, which is the priority of a country

like the Gambia and develop sustainably” (Interview 9, December 19, 2013 - Government Official, Key Contributor to the NAPA).

As Nussbaum (2011) argues, the freedom of industry to pollute deprives individuals the ability to live in an unpolluted environment. Considering this and what we know about climate change, the freedom of nations to pollute is causing capability deprivation in communities such as Tujereng. The Central Capabilities or freedoms for any individual or community should certainly be prioritized over market or industry freedoms at the local, national and global level. In accordance with this perspective, it becomes the responsibility of outsiders, development practitioners and researchers to tell the story of communities such as Tujereng so that climate change can be given a human face. Moreover, it becomes our responsibility to demand global social justice by way of policy reforms that represent the interests of the most vulnerable populations rather than the interests of the most wealthy and powerful. The Gambian Government needs to provide the policy needed to enable popular participation, empowerment, and self-realization through capacity-building initiatives at the local-level. The government should consider the value that local-level knowledge will have in ensuring the effectiveness, relevance, sustainability and, most importantly, citizen support for governmental strategies. It is not what outsiders or experts think Gambians ought to do in response to climate change that is most important, but instead what Gambian communities choose to do.

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Appendices

Appendix A: Nussbaum's List of Central Capabilities

1. *Life*. Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
2. *Bodily Health*. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
3. *Bodily Integrity*. Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
4. *Senses, Imagination, and Thought*. Being able to use the senses, to imagine, think, and reason—and to do these things in a "truly human" way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
5. *Emotions*. Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
6. *Practical Reason*. Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance.)
7. *Affiliation*.
 1. Being able to live with and toward others, to recognize and show concern for other humans, to engage in various forms of social interaction; to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)

2. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin and species.
8. *Other Species*. Being able to live with concern for and in relation to animals, plants, and the world of nature.
9. *Play*. Being able to laugh, to play, to enjoy recreational activities.
10. *Control over one's Environment*.
 1. *Political*. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.
 2. *Material*. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers (Nussbaum, 2011, pp. 33-34).