GENDER VULNERABILITY TO CLIMATE CHANGE AND LIVELIHOOD SECURITY IN URBAN SLUM COMMUNITIES IN ACCRA, GHANA

Mensah Owusu

BA (Honours) University of Ghana MSc. (University College London, United Kingdom) MSc. (Kwame Nkrumah University of Science and Technology, Ghana)

Department of Geography, Environment and Population

School of Social Sciences Faculty of Arts The University of Adelaide

Submitted for the Degree of Doctor of Philosophy October 2016

TABLE OF CONTENTS

| TITLE PAGEi |
|--|
| TABLE OF CONTENTSii |
| LIST OF TABLESvii |
| LIST OF FIGURESx |
| LIST OF PLATESxiii |
| ABSTRACTxiv |
| DECLARATIONxvi |
| ACKNOWLEDGEMENTSxvii |
| ABBREVIATIONSxviii |
| CHAPTER ONE: INTRODUCTORY BACKGROUND AND STATEMENT OF |
| RESEARCH PROBLEM1 |
| 1.1 Introduction 1 1.2 Statement of Research Problem. 1 1.3 Purpose of the Study 4 1.3.1 Aims and Objectives 4 1.4 Justification for Study and Contribution to the Discipline 6 1.4.1 Social Dimensions of Vulnerability Largely Unexplored 6 1.4.2 Extending the Discourse beyond the Gender Dichotomy 6 1.4.3 Limited Understanding of the Peculiar Vulnerability of Informal/Marginalised 7 1.4.4 Neglect of Livelihood Security of Urban Poor Women in Adaptation Research in Ghana 8 1.5 Structure of Thesis 8 CHAPTER TWO: CONTEXT OF STUDY 12 |
| 2.1Introduction122.2Profile of Ghana122.2.1Geographical Location122.2.2Socio-Demographic Characteristics152.2.3Political Administration162.2.4Economy172.2.5Conditions of Slum/Marginalised Communities in Accra18 |

| 2.3 Climate Change Conditions, Institutional and Policy Architecture of Ghana | 20 |
|---|------|
| 2.3.1 Climate Change and its Manifestations | 20 |
| 2.3.2 Climate Change Institutional Framework | 22 |
| 2.3.3 Existing Climate Change Policies | 26 |
| 2.4 Gender Inequalities in the Ghanaian Society | 27 |
| 2.5 Mainstreaming Gender in the National Climate Change Institutional and Policy | y |
| Frameworks | 32 |
| 2.6 Conclusion | 35 |
| CHAPTER THREE: CONCEPTUALISING GENDER, SLUM AND VULNERABII | LITY |
| TO CLIMATE CHANGE | 37 |
| 3.1 Introduction | |
| 3.2 Climate change: Definition, Causes and Some Potential Impacts on Cities in th | |
| Developing World | |
| 3.2.1 Social and Human Consequences of Climate Change on the Livelihoods of | of |
| Urban Poor | 39 |
| 3.3 The Concept of Gender | 41 |
| 3.4 The Concept of Slum | 43 |
| 3.5 The Concept of Vulnerability | 45 |
| 3.6 Classical Approaches to Vulnerability Research | 47 |
| 3.6.1 Risk-Hazard Perspective | 48 |
| 3.6.2 Political Economy Perspective | 50 |
| 3.6.3 Integrated Perspective | 52 |
| 3.7 Interpretation of Vulnerability to Climate Change | 52 |
| 3.8 Gender and Vulnerability to Climate Change | |
| 3.8.1 Gender and Participation in Decision-Making | 55 |
| 3.8.2 Gender Division of Labour and Cultural Patterns | 56 |
| 3.8.3 Gender Differentials in Income and Assets | 57 |
| 3.8.4 Sex-Related Factors | 59 |
| 3.9 Case Studies of Gender Differentiated Impacts of Climate Change | 59 |
| 3.9.1 Health Impacts of Climate Change | 59 |
| 3.9.2 Impact on Food Security | 63 |
| 3.10 Gender and Climate Risk Perceptions | 65 |
| 3.11 Gender and Adaptation to Climate Change | 68 |
| 3.12 Conclusion | 72 |
| CHAPTER FOUR: METHODOLOGY | 74 |
| 4.1 Introduction | 74 |
| 4.2 Theoretical Framework | 74 |
| 4.3 Epistemological and Ontological Underpinnings of the Study | 78 |
| 4.4 The Research Strategy: The Quantitative–Qualitative Debate | |
| 4.5 The Mixed-Methods Research Approach | 86 |
| | |

| 4.5.1 Justification for the Choice of Mixed-Methods Research Strategy | 89 |
|--|-----|
| 4.6 The Choice of Qualitative Research Methods | 90 |
| 4.6.1 Review of secondary sources | 90 |
| 4.6.2 Reconnaissance Survey/Neighbourhood Visits | 91 |
| 4.6.3 Focus Group Discussions (FGDs) | 91 |
| 4.6.4 Selection of FGD Participants, Follow-up and Logistical Arrangements | 92 |
| 4.6.5 FGD Protocol | 93 |
| 4.6.6 Key Informant Interviews | |
| 4.7 The Choice of Quantitative Research Methods | 95 |
| 4.7.1 Survey | |
| 4.7.2 Sampling Strategy | |
| 4.8 Data Management and Analysis | |
| 4.8.1 Analysing Qualitative Data | |
| 4.8.2 Analysing Quantitative Data | |
| 4.8.3 Ensuring Data Validity and Reliability | |
| 4.9 Ethical Considerations | |
| 4.10 Limitations of Study | |
| 4.11 Justification for the Selection of Study Communities | |
| 4.12 Socio-Economic and Environmental Profiles of Study Communities | |
| 4.12.1 Old Fadama | |
| 4.12.2 Glefe | |
| 4.12.3 Faana | |
| 4.13 Socio-Demographic Characteristics of Respondents | |
| 4.14 Conclusion | 111 |
| CHAPTER FIVE: PERCEPTIONS AND VULNERABILITY | 112 |
| 5.1 Introduction | 112 |
| 5.2 Types of Climate Hazards/Risks Experienced in Sums | 112 |
| 5.3 Knowledge and Perception of Climate Change | 116 |
| 5.3.1 Differences in Climate Change Knowledge between Study Communities. | 116 |
| 5.3.2 Influence of Gender, Age and Education on Climate Change Knowledge. | 118 |
| 5.3.3 Synergy between Local Climate Change Knowledge and Existing Scientific | fic |
| Data | |
| 5.4 Socio-Economic and Institutional Drivers of Vulnerability | 123 |
| 5.4.1 Quality of Housing | 124 |
| 5.4.2 Availability and Quality of Infrastructure and Service Provision | |
| 5.4.3 Social Roles and Responsibilities | |
| 5.4.4 Accessibility to and Control over Resources/Assets | |
| 5.5 Conclusion | 145 |
| CHAPTER SIX: CLIMATE CHANGE AND LIVELIHOOD SECURITY | 147 |
| 6.1 Introduction | 147 |

| 6.2 Types of Livelihood Activities in the Study Communities. | 148 |
|---|-------|
| 6.3 The Impact of Climate Change on Livelihoods | 152 |
| 6.4 Impact of Climate Change on Physical and Human Assets | 155 |
| 6.5 Conclusion | 163 |
| CHAPTER SEVEN: ADAPTATION TO CLIMATE CHANGE | 165 |
| 7.1 Introduction | 165 |
| 7.2 Coping Strategies | 165 |
| 7.3 Capabilities and Constraints to Adaptation | 177 |
| 7.4 The Role of Local Institutions in Climate Change Adaptation | 183 |
| 7.4.1 Existence of Collaborative Partnerships in Climate Change Activities | 184 |
| 7.4.2 Mainstreaming Gender in Climate Change Adaptation | 188 |
| 7.5 Conclusion | 192 |
| CHAPTER EIGHT: CONCLUSIONS AND IMPLICATIONS | 194 |
| 8.1 Introduction | 194 |
| 8.2 Summary of Key Findings | |
| 8.3 Implications for Climate Change Adaptation Research and Policy-Making | |
| 8.3.1 Contributions to Knowledge | |
| 8.3.2 Implications for Policy-Making | |
| 8.4 Suggestions for Future Research | |
| 8.5 Conclusion. | |
| Appendix 1. Project Ethics Approval Letter | 209 |
| Appendix 2: Questionnaire | 210 |
| Appendix 3: Interview Guide for Women | 224 |
| Appendix 4: Interview Guide for Men | 228 |
| Appendix 5: Interview Guide for Local Authorities | 231 |
| Appendix 6: Interview Guide for the National Disaster Management Organisation | |
| (NADMO) | 232 |
| Appendix 7: Interview Guide for the Ministry of Gender, Children and Social Prote | ction |
| (MGCSP) | 233 |
| Appendix 8: Interview Guide for the Environmental Protection Agency (EPA) | 234 |
| Appendix 9: Interview Guide for Ghana Meteorological Services Agency (GMSA). | 235 |
| Appendix 10: Interview Guide for People's Dialogue on Human Settlements (PDHS | 5)236 |

| Appendix 11: Results of Mann Whitney U test on Strategies Implemented by Male and | 1 |
|---|-----|
| Female Survey Respondents to Protect Water Sources from Climate Hazards. | 238 |
| Appendix 12: Mann Whitney U test Results for Strategies Implemented by Male and | |
| Female Survey Respondents to Protect Houses from Climate Hazards. | 239 |
| Appendix 13: Mann Whitney U test Results for Strategies Implemented by Male and | |
| Female Survey Respondents to Protect Personal Belongings from Climate Hazards | 240 |
| Bibliography | 241 |

LIST OF TABLES

| Table 2.1 Roles of Main Institutions Dealing with Climate Change Issues | |
|---|--------|
| Table 2.2 Some Indicators of Gender Inequality (in percentages) | |
| Table 2.3 Some Policy Documents Relating to Climate Change and Gender | |
| Table 3.1 Two Interpretations of Vulnerability in Climate Change Research | 54 |
| Table 4.1 Fundamental Differences between Quantitative and Qualitative Research | h |
| Strategies | 85 |
| Table 4.2 Organisations Selected for Key Informant Interviews and Their Role in | |
| Climate Change Adaptation | 94 |
| Table 4.3 Allocated Samples for Study Communities | |
| Table 4.4 Socio-Demographic Characteristics of Survey Respondents | 110 |
| Table 5.1 Type of Climate Hazards Experienced by Male and Female Survey | |
| Respondents (Multiple Response) | 113 |
| Table 5.2 Type of Climate Hazards Experienced by Male and Female Survey | |
| Respondents by Study Area (Multiple Response) | 115 |
| Table 5.3 Type of Climate Hazards Experienced by Male and Female Survey | |
| Respondents by Age (Multiple Response) | 116 |
| Table 5.4 Percentage of Male and Female Survey Respondents who have Knowled | lge of |
| Climate Change by Age | 118 |
| Table 5.5 Percentage of Male and Female Survey Respondents who have Knowled | lge of |
| Climate Change by Level of Education | 119 |

| Table 5.6 Type of House Occupied by Male and Female Survey Respondents by Study |
|--|
| Area |
| Table 5.7 Percentage of Male and Female Survey Respondents with Access to Basic |
| Facilities by Study Area (Multiple Response)130 |
| Table 5.8 Percentage of Male and Female Survey Respondents who have Problem with |
| Location of Toilet by Age |
| Table 5.9 Types of Domestic Duties Performed by Male and Female Survey Respondent |
| across Study Areas (Multiple Response) |
| Table 5.10 Percentage of Male and Female Survey Respondents who Performed |
| Domestic Duties by Age (Multiple Response)134 |
| Table 5.11 Social Roles Performed by Men and Women in Community |
| Table 5.12 Assets Owned by Male and Female Respondents in Three Study Areas |
| (Multiple Response) |
| Table 6.1 Livelihoods of Male and Female Survey Respondents across Study Areas 148 |
| Table 6.2 Livelihoods of Male and Female Survey Respondents by Study Area 151 |
| Table 6.3 Specific Impacts of Climate Hazards on Livelihoods of Men and Women by |
| Study Area154 |
| Table 6.4 Types of Physical Asset Affected by Climate Hazards across Study Areas |
| (Multiple Response) |
| Table 6.5 Impact of Flooding/Rainstorm/Windstorm on Greater Accra Region, 2011 . 157 |
| Table 6.6 Challenges Posed to Water Sources of Male and Female Respondents by |
| Climate Hazard by Study Area (Multiple Response) |

| Table 6.7 Diseases Experienced Frequently by Male and Female Survey Respondents |
|---|
| across Study Areas (Multiple Response)163 |
| Table 7.1 Strategies Implemented by Male and Female Respondents to Protect Houses |
| from Impact of Climate Hazards across Study Areas (Multiple Response)169 |
| Table 7.2 Strategies Implemented by Male and Female Respondents to Protect Houses |
| from Impacts of Climate Hazards by Study Area (Multiple Response)170 |
| Table 7.3 Strategies Implemented by Male and Female Respondents to Protect Personal |
| Belongings from Impacts of Climate Hazards across Study Areas (Multiple |
| Response) 173 |
| Table 7.4 Strategies Implemented by Male and Female Respondents to Protect Personal |
| Belongings from Impacts of Climate Hazards by Study Area (Multiple Response) 174 |
| Table 7.5 Strategies Implemented by Male and Female Respondents to Protect the |
| Vulnerable from Impacts of Climate Hazards across Study Area (Multiple |
| Response) 175 |
| Table 7.6 Strategies Implemented by Male and Female Respondents to Protect the |
| Vulnerable from Impacts of Climate Hazards by Study Area (Multiple Response) 176 |
| Table 7.7 Sources of Early Warning Information for Male and Female Respondents by |
| Study Area (Multiple Response) |
| Table 7.8 Challenge/Constraints Faced by Local Authorities in Developing and |
| Implementing Gender-Responsive Climate Adaptation Interventions in Slum |
| Communities |

LIST OF FIGURES

| Figure 2.1 A Map of Ghana Showing Some Important Geographical Features |
|--|
| Figure 2.2 A Map Showing the Ecological Zones of Ghana14 |
| Figure 2.3 A Map Showing the Topography, Flood and Drainage Vulnerability of Slums |
| in Accra |
| Figure 2.4 Scenario for Mean Sea Level Rise (Taking Present Trends into Account) 21 |
| Figure 3.1 UN-Model Depicting the Poverty-Slum Nexus |
| Figure 3.2 Framework Depicting Risk-Hazard/Outcome Vulnerability |
| Figure 3.3 Framework Depicting Political Economy/Contextual Vulnerability |
| Figure 4.1 Gender-Climate Change Framework75 |
| Figure 4.2 Research Methodology and Structure 104 |
| Figure 4.3 A Map of Accra with an Arrow Showing the Location of Old Fadama 106 |
| Figure 4.4 A Map of Accra with Blue Arrow Showing Locations of Faana and Glefe . 108 |
| Figure 5.1 Percentage of Male and Female Survey Respondents who have Knowledge of |
| Climate Change by Study Area117 |
| Figure 5.2 Perceived Meaning of Climate Change by Male and Female Survey |
| Respondents121 |
| Figure 5.3 Perceived Periods for Climate Hazards by Male and Female Respondents |
| across Study Areas |
| Figure 5.4 Average Rainfall and Temperature for Accra (1994-2014) 123 |
| Figure 5.5 Types of Home Maintenance Activities Undertaken by Male and Female |
| Respondents across Study Areas |

| Figure 5.6 Percentage of Male and Female Respondents with Access to Basic Facilities |
|--|
| across Study Areas |
| Figure 5.7 Percentage of Male and Female Respondents who spent more than One Hour |
| per day on Domestic Duties (Multiple Response)135 |
| Figure 5.8 Percentage of Male and Female Respondents Belonging to Social |
| Associations by Age |
| Figure 5.9 Types of Assistance Received by Male and Female Respondents from Social |
| Associations across Study Areas (Multiple Response)142 |
| Figure 5.10 Percentage of Male and Female Respondents aware of Local Decision |
| Making Structures by Study Area144 |
| Figure 6.1 Percentage of Male and Female Respondents whose Physical Assets were |
| Negatively Affected by Climate Hazards by Study Area (Multiple Response)158 |
| Figure 6.2 Challenges Posed to Water Sources of Male and Female Survey Respondents |
| by Climate Hazards across Study Areas160 |
| Figure 7.1 Strategies Implemented by Male and Female Respondents to Protect Water |
| Sources from Flooding across Study Areas (Multiple Response)166 |
| Figure 7.2 Strategies Implemented by Male and Female Survey Respondents to Protect |
| Water Sources from Flooding by Study Area (Multiple Response)167 |
| Figure 7.3 Factors Underlying the Choice of Coping Practices of Male and Female |
| Respondents across Study Areas (Multiple Response) 177 |
| Figure 7.4 Percentage of Male and Female Survey Respondents who Received Early |
| Warning Information by Study Area178 |

| Figure 7.5 Sources Through which Male and Female Respondents Received Early | |
|--|-----|
| Warning Information across Study Areas (Multiple Response) | 179 |
| Figure 7.6 Schema of Collaborative Institutional Arrangements for Climate Change | |
| Adaptation Policy Development and Implementation | 187 |

LIST OF PLATES

| Plate 5.1 Congestion and Unsanitary Conditions in Old Fadama | 126 |
|--|-----|
| Plate 6.1 Women Carting Water in a Canoe from Neighbouring Community to Faana | 162 |
| Plate 7.1 Water Storage Tanks Mounted on a High Platform in Glefe to Protect Water | |
| from Floods | 168 |
| Plate 7.2 Sandbags Laid Along the Beach in Glefe to Protect Houses from Sea | |
| Inundation | 172 |

ABSTRACT

Climate change remains a major development challenge for cities in the developing world due to their limited capacity to prepare for and to cope with its impacts. It is recognised that the impact of this phenomenon will be distributed differently among regions, ages, income groups and women and men living in cities. In Ghana, the marginalised majority, particularly women living in slums or marginalised communities bear the brunt of the climate change impacts. In spite of this, adaptation research in Ghana has focussed on the livelihoods of rural women to the detriment of poor women living in hazardous urban spaces. Yet, the challenge posed by climate change to urban residents in Ghana cannot be adequately met without understanding its gender dimensions.

This study explored the role of gender in shaping men's and women's vulnerabilities to climate change in three urban slum or marginalised communities in Accra, Ghana. A mixed methods design was used to collect quantitative and qualitative data which included 350 survey respondents, 7 key informant interviews and a number of focus groups. The findings of this study showed that climate change poses serious environmental hazards to residents of slum communities in Accra. However, in spite of their exposure to similar hazards, results showed that respondent perceptions regarding the causes and impacts of these hazards are gendered. Women in comparison to men showed a low level of awareness about climate change, even though it impacted negatively on their livelihoods. Women tended to more vulnerable because of the vulnerable location of their livelihood activities, limited access to productive resources, poor conditions of housing, low participation in localised adaptation decision making, as well as the heavy domestic responsibilities placed on them. The findings also demonstrated that men and women had different capabilities for coping with climate change which have resulted in different adaptive capacities. Although a number of local institutions were involved in building the adaptive capacities of slum residents, there were weak collaborative partnerships among these institutions to ensure effective gender mainstreaming in adaptation policy planning and management.

This study concludes that it is imperative for adaptation policy makers to consider the important role of gender in determining different levels of vulnerabilities among slum residents in order to develop appropriate adaptive strategies that address gender-differentiated vulnerabilities.

DECLARATION

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution, and to the best of my knowledge and belief, contains no material previously published or written by another person except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provision of the copyright Act 1968.

I also give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library catalogue and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

••••••

ACKNOWLEDGEMENTS

I wish to acknowledge and express my sincerest thanks to my supervisors Associate Professor Melissa Nursey-Bray and Dr Dianne Rudd who spent a great deal of their time and energy and shared their wealth of knowledge and guidance in the process of writing this thesis. Without their invaluable contributions, critical comments and advice, this thesis would not have materialised.

I am also grateful to the University of Adelaide for funding for my doctoral studies. Without the university's generous financial support this thesis would not have happened.

My thanks also go to all the teaching and administrative staff of the Department of Geography, Environment and Population (GEP) of the University of Adelaide for their assistance. I am also grateful to all my fellow research students of the GEP for their contribution and moral support throughout my PhD journey. Last but not least, my deepest gratitude and appreciation goes to my wife Beatrice Konadu and my sons Kendrick Owusu-Mensah and Geoffrey Owusu-Mensah for their understanding, moral and emotional support. Without their understanding and support this thesis would not have happened.

ABBREVIATIONS

| AMA | Accra Metropolitan Assembly |
|-------|--|
| CBD | Central Business District |
| СВО | Community-Based Organisation |
| CSO | Civil Society Organisation |
| DACF | District Assemblies Common Fund |
| DFID | Department for International Development |
| EPA | Environmental Protection Agency |
| FGD | Focus Group Discussion |
| G4 | Ghana Goes for Green Growth |
| GBV | Gender- Based Violence |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gases |
| GLSS | Ghana Living Standards Survey |
| GSGDA | Ghana Shared Growth and Development Agenda |
| GSMA | Ga South Municipal Assembly |
| GSS | Ghana Statistical Service |
| HBE | Home- Based Enterprise |
| HFA | Hyogo Framework for Action |
| IFPRI | International Food Policy Research Institute |
| IMF | International Monetary Fund |
| IPCC | Intergovernmental Panel on Climate Change |
| LAs | Local Authorities |
| MEST | Ministry of Environment, Science and Technology |
| MGCSP | Ministry of Gender, Children and Social Protection |
| MGDs | Millennium Development Goals |
| MLGRD | Ministry of Local Government and Rural Development |
| MoFEP | Ministry of Finance and Economic Planning |
| MTDP | Medium Term Development Plan |
| | |

| NADMO | National Disaster Management Organisation |
|------------|---|
| NALAG | National Association of Local Authorities. |
| NAMAs | Nationally Appropriate Mitigation Actions |
| NCCAS | National Climate Change Adaptation Strategy |
| NCCC | National Committee on Climate Change |
| NCCP | National Climate Change Policy |
| NCCPF | National Climate Change Policy Framework |
| NDPC | National Development Planning Commission |
| NGO | Non-Governmental Organisation |
| NREG | Natural Resources and Environment Governance |
| PDHS | People's Dialogue on Human Settlements |
| SBS | Budget Sector Support |
| SDGs | Sustainable Development Goals |
| SWD | Social Welfare Department |
| TEK | Traditional Ecological Knowledge |
| UNDP | United Nations Development Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UN-HABITAT | United Nations Human Settlement Programme |
| UNICEF | United Nations Children's Emergency Fund |
| UNISDR | United Nations Office for Disaster Risk Reduction |
| WEDO | Women in Environment and Development Organisation |
| WHO | World Health Organisation |
| | |