



Northern Ghana Human Development Report 2018

Bridging the Poverty Gap and Fostering Socio-Economic Transformation and Empowerment to contribute to Human Development for All



© UNDP, Ghana 2018
ALL RIGHTS RESERVED

This synthesis report draws on background papers prepared by a team of consultants as well as engagements with experts and policy makers. See Acknowledgments. The views expressed in this publication do not necessarily represent those of the United Nations, including UNDP, or their Member States.

Please note that the electronic copy of the report corrects for some errors and typos which were there in the first printed version. It also takes on board some of the important suggestions from reviewers which came after the report went to print.

No part of this publication may be produced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of UNDP, Ghana

Cover Design by Yamens Press Limited.

Printed by Yamens Press Ltd.

PREFACE	X
FOREWORD	XII
ACKNOWLEDGEMENTS.....	XIV
ACRONYMS AND ABBREVIATIONS.....	XVI
NORTHERN GHANA HDR: HIGHLIGHTS.....	xx
CHAPTER 1: INTRODUCTION AND APPROACH	2
<i>1.1 Background.....</i>	<i>2</i>
<i>1.2 Overview of the drivers of regional disparities and underdevelopment in the North.....</i>	<i>4</i>
<i>1.3 The Colonial Legacy of Northern Underdevelopment.....</i>	<i>5</i>
<i>1.4 The North-South Human Development Gap Post-Independence.....</i>	<i>6</i>
<i>1.5 Snapshot of Human Development in the North.....</i>	<i>11</i>
<i>1.6 The Application of a Regional Human Developmental Lens to address Imbalances.....</i>	<i>13</i>
<i>1.7 Objective of this Report.....</i>	<i>14</i>
<i>1.8 Towards Socio-Economic Transformation for Enhanced Human Development.....</i>	<i>16</i>
<i>1.9 Structure of the Report.....</i>	<i>18</i>
<i>1.10 Data for the report.....</i>	<i>18</i>
CHAPTER 2: DEMOGRAPHIC PROFILE AND THE STATE OF HUMAN DEVELOPMENT	19
<i>2.1 Introduction: Implications of the Demographic transition for Human Development.....</i>	<i>19</i>
<i>2.2 Demographic Characteristics.....</i>	<i>19</i>
2.2.1 Age and Sex Structure.....	20
2.2.2 Distribution of Households, Size and Composition.....	21
2.2.3 Marriage and Fertility.....	21
2.2.4 Age and Economic Dependency Ratios.....	22
2.2.5 Out-Migration.....	23
2.2.6 Ethnic and Religious Profile.....	24
<i>2.3 Human Development: Indices and Analysis of Drivers.....</i>	<i>25</i>
2.3.1 Measures of Progress in Human Development.....	26
2.3.2 Poverty Indices and Analysis.....	28
2.3.2.1 Monetary Poverty.....	28
2.3.2.2 Multidimensional Poverty.....	32
<i>2.4 Analysis of Drivers of Human Development.....</i>	<i>39</i>
2.4.1 Health.....	40
2.4.1.1 Health Infrastructure and Quality.....	40
2.4.1.2 Health Indicators.....	43
2.4.2 Education.....	49
2.4.2.1 Physical Facilities & Resources.....	50
2.4.2.2 Teachers.....	51
2.4.2.3 Gross and Net Enrolment Rates and Gender Parity.....	52
2.4.2.4 Educational Outcomes.....	55
2.4.2.5 Adult Literacy.....	58
2.4.2.6 Apprenticeship and Skills Training.....	59
2.4.3 Standard of Living & Livelihoods.....	61
<i>2.5 Snapshot of progress on MDG Indicators and the transition from MDGs to SDGs.....</i>	<i>61</i>
CHAPTER 3: LABOUR FORCE PARTICIPATION, JOBS AND THE STRUCTURE OF PRODUCTION	64
<i>3.1 Introduction.....</i>	<i>64</i>
<i>3.2 Economic Profile of the Population.....</i>	<i>64</i>
3.2.1 Vulnerability of Employment.....	66
3.2.2 Underemployment.....	67

3.3	<i>Structure of Economy and Employment</i>	67
3.3.1	The Primary Sector	69
3.3.2	Mining and Quarrying.....	72
3.3.3	Tourism and Livelihoods	73
3.4	<i>Vulnerability and Coping Strategies</i>	74
3.5	<i>Measures to enhance productive and decent employment and sustainable livelihoods</i>	77
3.5.1	Enhance access to affordable finance at all levels	77
3.5.2	Promote local markets, storage and reduction of post-harvest losses	78
3.5.3	Promote ‘structured demand’ for products of small farmers	78
3.5.4	Invest in scaling up formal and on the job skills development	79
3.5.5	Enhance the sustainability of livelihoods and adaptive strategies	79
3.5.6	promote inclusive measures to increase productivity across value chains.....	81
3.5.7	Focus on women’s economic empowerment and adopt gender-aware strategies.....	82
3.5.8	Address security and empowerment issues, particularly for migrant kayayei and children	85
CHAPTER 4: ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT		89
4	<i>Introduction</i>	89
4.2	<i>The Environment and Transformation</i>	89
4.2.1	Geology and Soil.....	89
4.2.2	Vegetation	90
4.2.3	Drainage	91
4.2.4	Rainfall.....	92
4.3	<i>Changing Climate</i>	93
4.3.1	Awareness of Climate Change and Concerns	94
4.4	<i>Impacts and Implications of the Changing Climate</i>	96
4.5	<i>Climate Change Adaptation and Mitigation</i>	98
4.6	<i>Natural Resources: Risks, Threats and Opportunities</i>	99
4.6.1	Natural Resource Base	99
4.6.2	Natural Resource Management and Exploitation	101
4.6.3	Emerging Issues and Threats	103
CHAPTER 5: TRANSFORMATIONAL INVESTMENTS IN INFRASTRUCTURE		105
5.1	<i>Introduction</i>	105
5.2	<i>Transport Infrastructure</i>	105
5.2.1	Roads.....	105
5.2.2	Air	107
5.2.3	Water-ways and Railways.....	108
5.3	<i>Energy Infrastructure</i>	109
5.3.1	Sources of Energy for Household Use	111
5.3.2	Gender and Energy.....	112
5.4	<i>Water and Sanitation</i>	112
5.5	<i>Infrastructure for Agricultural Production</i>	113
5.5.1	Irrigation and Improved Water Management.....	113
5.5.2	Warehousing and Storage	116
5.6	<i>Information and Communication Technology</i>	119
5.7	<i>Incentivizing Investment and Tackling Issues of Infrastructure Resource Management</i>	122
CHAPTER 6: GOVERNANCE, PARTICIPATION AND HUMAN SECURITY		124
6.1	<i>Introduction</i>	124
6.2	<i>Traditional and Western Governance Systems with regard to services and participation</i>	124
6.2.1	Resource Challenges and Implications for governance for human development	126
6.2.2	Partnerships and Initiatives to deliver services and ensure voice	129
6.2.3	Governance, Voice and Accountability	131

6.3 Governance of Land and Natural Resources and Emerging Issues	133
6.3.1 Land	133
6.3.2 Water Resources	135
6.3.3 Mineral Resources.....	136
6.4 Conflicts, Threats and Human Security.....	136
6.4.1 Extent and Drivers of Conflict.....	137
6.4.2 Emerging Threats.....	140
6.4.3 Crime and Safety.....	142
6.4.4 Trust and Social Cohesion	144

CHAPTER 7: REFLECTIONS AND RECOMMENDATIONS 145

7.1 Insights from Human Development Reports and Selected Country Experiences	145
7.2 Integrated Set of Recommendations.....	148
7.2.1 Investments to improve social development outcomes.....	148
7.2.2 Transformational investments in productive infrastructure and services.....	151
7.2.3 Promote sustainable resource management and resilience	154
7.2.4 Strengthen voice, participation and peace architecture.....	156
7.2.5 Planning and Financing the Transformation Agenda.....	157
7.2.6 Promote the use of disaggregated data and innovative approaches to track who is being left behind and how equity issues can be addressed.....	159

REFERENCES..... 160

APPENDIX 1: HUMAN DEVELOPMENT RELATED INDICES..... 180

A1.1 The Human Development related indices and their estimation.....	180
The Human Development Index (HDI)	181
Inequality-adjusted Human Development Index (IHDI)	181
Gender-related Development Index (GDI)	182
A1.2 Construction of the Multidimensional Poverty Index.....	183

APPENDIX 2: DATA SOURCES, BOUNDARIES & HOUSEHOLD SAMPLE SURVEY 187

A2.1 Introduction	187
A2.11 Northern Ghana: Boundaries and Issues	187
A2.12 Data Sources and issues of disaggregation	188
A2.13 Data Sources for specific areas of focus	188
A2.2 2014 NGHDR Field Survey.....	189
A2.21 Frame and sampling units	189
A2.22 Stratification.....	189
2.23 Domains and strata.....	189
2.24 Sample Size Estimation	190
2.25 Sample allocation.....	191
2.26 Computation of Weights.....	192
2.27 Training and fieldwork.....	193

LIST OF TABLES

Table 2.1 Summary of Inter-regional migration.....	23
Table 2.2 The Ethnic Profile of the Northern Savannah (%).....	24
Table 2.3 The Religious Profile of the Northern Savannah (%), 2010.....	25
Table 2.4 Global Goalposts for the Human Development Index.....	26
Table 2.6 Components of HDI for the Northern Savannah (2014).....	27
Table 2.7 Poverty incidence & poverty gap by region (%), 2005/06 -2012/13.....	28
Table 2.8 Subjective Poverty of Households in the Northern Savannah (%), 2014.....	34
Table 2.9 Subjective Poverty of Households by Region, Locality and Sex (%), 2014	35

Table 2.10 Health Facilities by Type and Ownership, 2015.....	40
Table 2.11 Total number of doctors 2009 to 2014 and Doctor/Population ratio for 2014	40
Table 2.12 Total Number of Nurses 2009 to 2014 and Nurse/Population Ratio for 2014	41
Table 2.13 Trend in Institutional Maternal Mortality Ratio by Region, 2010-2014	44
Table 2.14 Antenatal and Postnatal Care by region, 2014.....	44
Table 2.15 Proportion of Stunted and Underweight Children, 2014	46
Table 2.16 Livelihood groups and dietary diversity (days eaten).....	48
Table 2.17 Educational Resources in the Northern Savannah Zone, 2016/17.....	51
Table 2.18 Gross and Net Enrolment Rates (%), 2016–2017.....	53
Table 2.19 Percentage of Students who can read or write in English, 2014.....	56
Table 2.20 Percentage of students achieving minimum competency and proficiency levels in NEA (2013).....	57
Table 2.21 Percentage of students achieving minimum competency and proficiency levels in NEA (2016).....	57
Table 2.22 Adult Literacy Rate in English, 2014	59
Table 2.23 Snapshot of Progress on the MDGs	62
Table 3.1 Economic Activity by Region (%).....	68
Table 3.2 Composition of Production by Agricultural Households, 2010	69
Table 3.3 Distribution of Household owning livestock by locality	69
Table 3.4 Average Farm size in Hectares	70
Table 3.5 Maize sales by buyer type in NRGF Programme Area	71
Table 3.6 Livestock Off-take (Number of Animals kept and sold in a year per household)...	72
Table 3.7 Current Circumstance of Households that Reported Shocks.....	76
Table 3.8 Sex of Owners of Assets Lost and Sold.....	77
Table 4.1 Climate Change Risks.....	96
Table 6.1 Modes of land Acquisition by Region	133
Table 6.2 Modes of land Acquisition by Modality	134
Table 6.3 Threats of Concern to Households/Communities in Northern Savannah.....	144
Table A1.1 The dimensions, indicators, deprivation thresholds and weights of MPI.....	184
Table A2.1 Districts of NSEZ (63 Districts)	187
Table A2.2 Regional/Zonal Distribution of Sampling Frame	190
Table A2.3 Required households sample size by Region.....	191
Table A2.4 Distribution of Sample Size and EAs (GSS)	192

LIST OF FIGURES

Figure 1.0 Northern Ghana: Shifting Boundaries	1
Figure 1.1 Analytics of Human Development	2
Figure 1.2 Proportion of population below the poverty line (%) (2012/13).....	11
Figure 1.3 Nutritional Status of Children 2008 (%)	12
Figure 1.4 Towards an integrated approach to sustainable & inclusive human development. 16	
Figure 2.1 Distribution of Population within the NSEZ.....	20
Figure 2.2 Age-Sex Structure for the NSEZ.....	20
Figure 2.3 Age and Economic Dependency Ratios by Region.....	22
Figure 2.4 HDI Dimensions and Indicators	26
Figure 2.5 Poverty incidence by region (Poverty line=GH¢1,314).....	28
Figure 2.6 Extreme poverty incidence by region (Poverty line = GH¢792.05).....	29
Figure 2.7 The Poor in Rural and Urban Areas, by Region (1991–2012).....	31
Figure 2.8 Proposed Urban Centres Hierarchy	31

Figure 2.9 Incidence of Subjective Poverty by Location (%), 2014.....	33
Figure 2.10 Incidence of Subjective Poverty by Sex of Respondent (%), 2014.....	34
Figure 2.11 Multidimensional Poverty Incidence (%).....	36
Figure 2.12 Subjective & Multidimensional Poverty Headcounts	36
Figure 2.13 Intensity of Deprivation in the NSEZ.....	37
Figure 2.14 Multidimensional Poverty Index	37
Figure 2.15 Incidence of Deprivations among the Multidimensional Poor.....	38
Figure 2.16 Incidence of Deprivations among the Multidimensional Poor by Location.....	38
figure 2.17 Infant and under-five mortality rates by region, Ghana, 2011	43
Figure 2.18 Antenatal and Post-natal Care in the NSEZ by residence, 2014	45
Figure 2.19 Proportion of People aware of HIV/AIDS by Region, Residence & Sex	48
Figure 2.20 BECE results by region, 2015	56
Figure 2.21 Percentage of Youth who have completed or are currently enrolled in TVET/Tertiary Institutions, 2014	60
Figure 2.22 Percentage of Youth who are or have been Apprentices, 2014.....	60
Figure 3.1 Age and Economic Dependency Ratios by Region.....	64
Figure 3.2 Unemployment rate of young people aged 15–24 years by region	65
Figure 3.3 and Figure 3.4 Vulnerable Employment by Region, Residence and Sex.....	66
Figure 3.5 Proportion 15 years and older who are underemployed by region.....	67
Figure 3.6 Employment Structure of NSEZ	68
Figure 3.7 Average Worker Contribution to GDP, Number of Employees by sector (2010...)	68
Figure 3.8 Employment opportunities from exploitation by Region.....	73
Figure 3.9 Rural Urban variation in terms of exploitation.....	73
Figure 3.10 Frequency of Shocks (%)	75
Figure 3.11 Household Coping Strategies in Response to Shocks in the NSEZ, 2014	75
Figure 3.12 Coping Strategies Utilized by Households Headed by Women and Men, 2014..	76
Figure 3.13 innovative services which can drive farm productivity.....	81
Figure 3.14 Increasing Farm Mechanization	82
Figure 4.1 Mean Monthly Rainfall for Navrongo in the NSEZ.....	92
Figure 4.2 Mean Annual Daily Temperature & Total Annual Rainfall (Sudan Savannah Zone)	93
.....	
Figure 4.3 Mean Annual Daily Temperature and Total Annual Rainfall Amount (Guinea Savannah Zone)	94
Figure 4.4 Knowledge of Change in Rainfall Pattern by Region	95
Figure 4.5 Awareness about change in temperature pattern by region.....	95
Figure 4.6 Changes seen on farm for past 10 years due to climate change	96
Figure 4.7 How climate change affects livelihoods.....	97
Figure 4.8 How climate change affects health.....	97
Figure 4.9 Regions receiving compensation from exploitation of natural resources	101
Figure 4.10 Over exploitation of resources.....	102
Figure 4.11 ActionAid’s Climate Resilient Sustainable Agriculture Initiative	102
Figure 4.12 Involvement of household heads in exploitation (Female)	103
Figure 4.13 Community Economic Activities by Sex	103
Figure 5.1 Households Using Fuel Types for Cooking (%)	111
Figure 5.2 Distribution of Irrigation by Region.....	114
Figure 5.3 CLEWS Model	115
Figure 5.4 Percentage of Households Owning Mobile Phones by Region.....	122

Figure 5.5 Households who own other ICT Equipment (%)	122
Figure 6.1 DACF and IGF Compared.....	127
Figure 6.2 Governance Challenges and Effects	127
Figure 6.3 Perception of Households about Corruption	129
Figure 6.4 Target Sectors of NGOs	129
Figure 6.5 Strategies of NGOs.....	129
Figure 6.6 Types of NGOs in Voice and Accountability (V&A)	131
Figure 6.7 Households Voting in 2012 Presidential and 2010 District Assembly Elections	132
Figure 6.8 Households Engaged in Community Development Activities in NSEZ.....	132
Figure 6.9 Conflict Situation in Community by Region and Location.....	137
Figure 6.10 Group Conflicts over Past 12 Months by Region and Location.....	137
Figure 6.11 Major Causes of Conflict by Region and Location	138
Figure 6.12 Confidence in Public Security by Region and Location	139
Figure 6.13 Person fallen Victim to Theft or Attempted Theft by Region and Location.....	142
Figure 6.14 Occurrence of Robbery and Burglary by Region and Types of Residence.....	143
Figure 6.15 How Safe People Feel Walking Alone at Night in Neighbourhood.....	143
Figure 7.1 Dimensions of Human Vulnerability.....	146
Figure A1.1 HDI Dimensions and Indicators	181
Figure A1.2 Dashboard 1: Life-course gender gap Indicators.....	182
Figure A1.3 Dashboard 2: Sustainable development Indicators.....	182
Figure A1.4 GDI Dimensions and Indicators	183
Figure A1.5 MPI Dimensions and Indicators	183

LIST OF MAPS

Map 1.1: Gold Coast Railways & Proposed Northern Route, 1922	5
Map 2.1 Spatial Variation of Poverty Incidence by District in UWR	29
Map 2.2 Spatial Variation of Poverty Incidence by District in UER.....	30
Map 2.3 Spatial Variation of Poverty Incidence by District in BA	30
Map 2.4 Spatial Variation of Poverty Incidence by District in NR	30
Map 2.5 Spatial Variation of Poverty Incidence by District in Volta.....	30
Map 2.6 Distribution of Health Facilities and Health Staff in Northern Savannah.....	42
Map 3.1 Estimated Regional Contributions to National GDP (%).....	67
Map 3.2 Per Worker Contribution to Income in the NSEZ, 2014	67
Map 3.3 Mineral Resources of the NSEZ and Illegal Mining ‘Galamsey’ Sites.....	72
Map 4.1 Digital Elevation Map of the NSEZ	89
Map 4.2 Agro-ecological Zones of the NSEZ	91
Map 5.1 Road Infrastructure Gaps in Trunk Roads	106
Map 5.2 Surface Condition	107
Map 5.3 Proportion of road Surface in Asphalt.....	107
Map 5.4 Volta Lake Transport.....	108
Map 5.5: Grid Coverage	109
Map 5.6 Solar Radiation Map for NSEZ	110
Map 5.7a and 5.7b land suitability (with and without irrigation) for groundnut.....	113
Map 5.8a and 5.8b Land suitability for bunded rice with high inputs (without and with irrigation).	113
Map 5.9 Potential Irrigation & Multi-purpose Dams.....	114
Map 5.10 Distribution of Warehouses in the NSEZ.....	117
Map 5.11 Sites of Processing Facilities in the NSEZ	118

Map 5.12 Critical Gaps in ICT Coverage	120
Map 5.13 ICT Infrastructure	121
Map 6.1 Ghana Conflict Map	139

LIST OF BOXES

Box 2.1 Some Perspectives on Criteria to Identify a Poor Person.....	32
Box 2.2 Regional Performance in Supervised Delivery	45
Box 3.1 Key Livelihood Issues	80
Box 3.2 The Case of Kayayei in Ghana.....	86
Box 5.1 Community aspirations for and perceptions about infrastructure provision	112
Box 6.1 Challenges Affecting Traditional Governance in Practice.....	128
Box 6.2 Existing Actions for Gender and Development	133
Box 6.3 Consequences of Natural Resource Management in NSEZ.....	136

LIST OF PICTURES

Picture 3.1 Tourist attractions in the NSEZ (Larabanga Mosque & Paga Crocodile Pond)....	74
Picture 4.1 Dry season shallot and tomato farming along River White Volta, UER.....	98
Picture 4.2 Major Crops of Upper West (Shea Butter and Sorghum)	100
Picture 4.3 Major Crops of Upper East (Millet and Groundnuts)	100
Picture 4.4 Yam and Cattle in NSEZ	101

Preface

This report comes at an opportune time when the Act establishing the Northern Development Authority (NDA), one of the three new development authorities for the country has been passed by Parliament and assented to by H. E. Nana Addo Dankwa Akufo-Addo, President of the Republic. The Northern Development Authority Act, 2017 (Act 963) mandates the Authority to accelerate economic and social development in the Northern Development Zone whilst achieving gender equality and empowerment of vulnerable groups in the Zone.

The report provides a comprehensive snapshot and analysis of the state of economic and social development, as well as agriculture, natural resources and infrastructure. This should prove useful for informing the work of the Northern Development Authority as well as relevant national and regional policies and strategies.

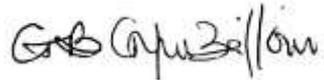
No doubt there has been progress over the years in advancing the development of Northern Ghana. Interventions such as the Free Compulsory Universal Basic Education (FCUBE), the National Health Insurance Scheme (NHIS), School Feeding Program (SFP), National Youth Employment Scheme, Youth Enterprise Support, and the Affordable Housing Scheme have helped to improve social indicators. In addition, infrastructure investments in extending road networks, connection to the national power grid as well as irrigation infrastructure among others, have contributed to reducing inequality gaps. Consequently, poverty rates have declined, ownership of durable assets has more than doubled and the use of flush & KVIP toilet facilities has risen. The Tamale Airport has influenced economic development in the region and the airport has in turn been influenced by the economic activities.

The report however points out that much still needs to be done. The three northern regions are inhabited by over a third of the poor people in the nation. More worryingly, the income gap between north and south has widened. The continued dependence of farmers on rainfed agriculture is a major contributory factor to out-migration and poor livelihoods in the regions. It also highlights the significant economic potential of the zone which can be leveraged for socio-economic transformation and poverty reduction.

The stage for the next phase of development has been set with the development and implementation of regional and city plans for Tamale and Buipe and the catalytic engagement of the private sector in agriculture, infrastructure and services. Opportunities for inclusive modernisation of agriculture have been identified. Land banks have been proposed to facilitate pooling of land and to give communities a continued stake in its use. Proposals for investments in water transport for bulk goods haulage, growth clusters and special economic initiatives are far advanced. In addition, the zone has potential for mineral deposits. This potential needs to be mapped out and extracted in a sustainable manner.

I am also pleased to note the pro-activeness in the leadership of some towns of the North in particular, Tamale, Buipe and Sangnerigu, who are demonstrating new ways of doing things. The District Assemblies in these towns have registered all their properties and are working on identifying and rolling out selected e-services to increase their internally generated funds and contribute to improved service delivery. These efforts point to the leapfrogging potential of ICT and digital addressing as catalytic agents for the socio-economic development of the nation and the importance of affordable digital services and infrastructure throughout all regions of Ghana.

The Government's Flagship Programme of 'One Village, One Dam' is particularly important for the three northern regions as it will help to reduce the dependence on rain-fed agriculture and improve crop yields. Similarly, the 'One District, One Factory' Initiative will contribute to the industrialization policy of Government and promote agriculture, human and natural resource advantages of each district. I am confident that the findings and recommendations of the report will contribute to thought leadership and stimulate policy discussions and actions to quicken the pace of the socioeconomic transformation in Northern Ghana.



Prof. George Gyan-Baffour
Minster for Planning
Government of Ghana

Foreword

The human development approach is focused on the richness of human life, rather than simply the richness of the economy in which human beings work and live. It zeros in on people and their opportunities and choices. Since 1990, UNDP has supported the production of human development reports at global, national and sub-national levels. These apply the human development lens to different themes with a view to exploring the factors and processes that undermine human development outcomes, pointing to the inter-relationships between social, economic and environmental dimensions, and putting forward policy options that can better help to address the development challenges in question. People, their opportunities and choices need to remain at the forefront of policy discussions.

This national human development report, the second such regional report for Ghana, focuses on the North. The first regional report was for the Western Region (WR-HDR) on the theme of 'managing development opportunities for a secure future'. The WR-HDR report explored human development outcomes against a backdrop of significant natural resources. This report explores human development outcomes in the context of significant socio-economic disparities in what has historically been the most marginalized region in Ghana.

UNDP Ghana's Human Development Report 2007, *Towards a More Inclusive Society*, led the way at the national level and pointed to the need for more work at sub-national levels. It highlighted spatial patterns of inequality and the mutually reinforcing nature of social, economic and environmental factors underpinning such exclusion. It signaled that spatial socio-economic disparities could be significant as drivers of social and economic exclusion. The report looks at the drivers underpinning these disparities and the 'North-South development divide' before exploring opportunities and outlining recommendations for unleashing an inclusive socio-economic transformation in the North.

The theme of the report is particularly *a propos* as Ghana embarks on the journey of mainstreaming the Sustainable Development Goals (SDGs) into its national development vision and strategies. Whereas the Millennium Development Goals measured progress at national level, the SDGs call for progress to be assessed at both national and sub-national levels so that 'no-one is left behind'. As the 2016 Global Human Development Report underscores, in some depth, this is consistent with the human development approach which has long advocated for such a people-centered focus.

The human development reports typically use various measures to help track progress. The Human Development Index (HDI) is the most commonly used composite measure, drawing on achievements in health, education and income. It is an alternative to conventional measures of economic development such as income per capita or economic growth. As a summary measure of (average) human development, the HDI is typically calculated at the national level. As with other national averages, this can mask disparities and inequalities within regions and across social groups. Thus, where possible, national human development reports are increasingly undertaking disaggregation of the HDI in terms of regions, gender, race/ethnicity to unmask such disparities. The data needed to produce such disaggregated measures is challenging and often involve the use of proxies. Thus, sub-national HDIs need to be viewed with some caution. That said, it is attempted for this report as well.

Drawing on estimations of per capita income and the necessary measures for health and education, the HDI for the NSEZ zone was computed to be 0.116 for 2014 which is far below that for Ghana (0.575) as a whole the same year and that for the Western Region (0.455) in 2013). It speaks volumes about how deprived and less developed the NSEZ (three northern regions and the contiguous districts in Brong Ahafo and the Volta) is compared to the rest of the country. In particular, the index reflects significant disparities in terms of education as well as quality of livelihoods as compared to the national average.

The various chapters of the report delve into the drivers of deprivation that are measured by the HDI. The report not only provides a snapshot of the poverty and various social and economic development indicators but also the implications such as deepening inequality, outmigration of young people and the engagement of older people and children in the labour market. It presents an analysis of progress as well as the continuing deficits in infrastructure and public service delivery. It briefly explores some of the governance issues relevant to the North. Socio economic disparities, including with regard to access to land, along with limitations of formal and traditional governance mechanisms are found to put stress on the capacity of the zone's well-renowned peace architecture to resolve the simmering conflicts over land and chieftaincy in some parts of the North.

Given that the report brings together benchmarks for the various social and economic indicators and provides a broad-based analysis of the drivers of disparities it should prove valuable both for government's medium-term development agenda as well as for programming by the UN System in Ghana. The report itself puts an emphasis on the need for a multi-dimensional transformation agenda to address the interlocking social, economic and environmental drivers of the relatively slow pace of development in the area. Tackling this is important both for the north as well as for national development. The region has much to contribute to national progress and priorities particularly as they relate to agriculture, the growth of the domestic market, improvements in national development indicators as well as maintenance of the resilience and peaceful nature of the Ghanaian economy.

The contributions of the team of scholars from the two universities (UDS in Tamale and UG at Legon) who prepared background papers is acknowledged with appreciation. This is a synthesis report which has also drawn on various primary and secondary reports and analyses for which the team is grateful. Finally, the contributions as well as comments on the various drafts by various government and UN colleagues and experts is also much appreciated. We hope that this report will serve to inform advocacy and development efforts and stimulate lively discussions among Ghanaians and development partners on how to collectively contribute to the social and economic transformation in the North, going forward.



Dominic Sam
Country Director, UNDP Ghana

Acknowledgements

This report is a product of the advice, contributions and support of various individuals and institutions over the course of its production. The Report was formulated through an inclusive and participatory process that included representatives of the government and other stakeholders. UNDP would like to use this opportunity to express its gratitude to all who contributed either directly or indirectly at various stages.

The report received leadership and guidance from Mr. Dominic Sam, Country Director, Ms. Gita Welch, Country Director a.i. and Louis Kuukpen, Assistant Country Director, Programme. Their stress on the importance of this endeavor was critical. The preparation of the report was coordinated by the inclusive growth cluster, led by Mr. Kordzo Sedegah with inputs from Sylvia Sefakor Senu (Economic Analyst), Bernard Grouw (Programme Officer), Liz Chung (Programme Officer), Linda Lumbasi (Intern), Selorm Kugbega (National Service) and Mary Ankrah (Programme Assistant). Kordzo and the team reviewed drafts, provided inputs and nudged it along to completion. Ms. Christy Ahenkora (then head of SRLP) was instrumental in launching the initial design process and Lawrence Lachmansingh (Peace and Governance Advisor) got us to think critically. Praise Nutakor assisted with communication and messaging.

Background papers and chapters: The approach to the production of background chapters was unique. It involved a team of academics from the University of Ghana (UG) at Legon and the University for Development Studies (UDS) at Tamale. The coordinators were Professor Seidu Al-hassan, UDS (now Pro Vice-Chancellor and then Coordinator, Institute for Continuing Education and Interdisciplinary Research (ICEIR), now known as Institute for Interdisciplinary Research and Consultancy Services (IIRaCS)) and Professor Jacob Songsore, Department of Geography and Resource Development, UG.

Professor Jacob Songsore prepared a background chapter on the *Socio-Economic Transformation and Human Development in Economically Marginalized Societies: The Ghana Case*. Initial background chapters on the *Demographic and Socio-Economic Profile and Human Development* and *Poverty and Inequality in the NSEZ* were jointly handled by Dr. Abena Oduro and Dr. Eric Osei-Assibey, both of the Department of Economics, UG. Dr. Sylvester Gala of the Faculty of Integrated Development Studies, UDS, wrote a draft for *Governance, Participation and Human Security* while Dr. Mavis Dako-Gyeke of the Department of Social Work, UG prepared the *Child Abuse and Protection* background paper. A paper on *Community Empowerment and Livelihood Options* was prepared by Prof. Seidu Al-hassan. The background chapter on *Environment, Energy and Climate Change* was written by Ms. Emelia Guo and Dr. Alex Barimah Owusu, RS/GIS Lab, Department of Geography and Resource Development, UG; Mr. Wumbei Abukari of UDS prepared the background chapter on *Natural Resource Exploitation and Management*, while the initial draft of the *Transformational Changes in Infrastructure, Agriculture and Agribusiness* paper was prepared by Professor Ramatu Al-Hassan, Department of Agricultural Economics and Agribusiness, UG with assistance from Mr. Wumbei Abukari. We are grateful to them all for their contributions and patience with this process.

The background papers were supplemented by use of additional reports and analyses.

Data and NGHDR Field Survey: We would also like to acknowledge the role of Mr. Francis Bright Mensah of Ghana Statistical Service (GSS) for his role in generating and analyzing various data and estimating some of the critical indexes.

The role played by Mr. Rashid Yakubu, ICEIR, UDS and Mr. Alhassan Cosmos Lukeman, ICEIR, UDS with regard to the 2014 Field Survey, all the 46 research assistants as well as heads of institutions and organizations who provided information during the interview process is gratefully acknowledged. Appreciation is also due to members of the communities and traditional authorities who gave the survey team their cooperation.

Review, Advisory and Editing: We owe a debt of deep gratitude to the various colleagues who engaged with us, reviewed various sections and provided context and inputs to make the report more useful to policy makers. These include: Charles Abugre, then CEO of SADA, who engaged in detail as well as the dedicated members of SADA team and members of advisory group for the regional master-planning process (such as Kofi Kekeli Amedzro of LUSPA as well as Prof. David Millar); Prof. Samuel A. Donkoh sent in helpful suggestions; John Hall and Astra Boni of UNDP's Human Development Report Office undertook a thoughtful technical review and brought in Milorad Kovacevic to explain to us the technicalities, challenges and options for calculating sub-national HD indices. From UNDP Ghana, the engagement of Stephen Kansuk (Programme Analyst, Sustainable Development), Paolo Dalla Stella (Cluster Manager, Sustainable Development) Justice Agbezuge (Peace and Governance Analyst) and Nana Chinbuah (Cluster Manager, Governance) are acknowledged with much appreciation. We are also grateful to the UN technical team which reviewed the high-level findings. We wish to acknowledge Prof. Cletus K. Dordunoo (CEO, ClayDord Consult, Accra, Ghana) and his team (Dr. Kwaku Mensah Ganu, Mrs. Gertrude Missodey, and Mr. Anthony K. K. Dordunoo) for editing of an early draft. Technical oversight, elaboration of some sections and the final synthesis was undertaken by Radhika Lal (Economic Advisor).

Acronyms and Abbreviations

Acronyms	Description
ABFA	Annual Budget Funding Amount
ACEP	Africa Centre for Energy Policy
ACET	African Center for Economic Transformation
ASM	Artisanal and Small-Scale Mining
BA	Brong Ahafo
BECE	Basic Education Certificate Examination
BOG	Bank of Ghana
CB	Capacity Building
CBOs	Community Based Organizations
CD	Capacity Development
CEO	Chief Executive Officer
CEPA	Centre for Policy Analysis
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CGAP	Ghana Commercial Agriculture Project
CHAG	Christian Health Association of Ghana
CHPS	Community Health Planning Service
CHW	Community Health Worker
CPI	Corruption Perception Index
DA	District Assembly
DACF	District Assemblies' Common Fund
DCE	District Chief Executive
DFID	Department for International Development
DHDRs	Districts Human Development Reports
DHMT	District Health Management Team
DMTDP	District Medium Term Development Plan
EPA	Environmental Protection Agency
EPZ	Export Free Zone
ERP	Economic Recovery Programme
ESID	Effective States and Inclusive Development
FAO	Food and Agriculture Organization
FBO	Farmer Based Organisations
FC	Forestry Commission
GDHS	Ghana Demographic and Health Survey
GDI	Gender-related Development Index
GDP	Gross Domestic Product
GEI	Gender-equality Index
GER	Gross Enrolment Rate
GES	Ghana Education Service

GETFUND	Ghana Education Trust Fund
GHC	Ghana Cedi
GHS	Ghana Health Services
GIF	Infrastructure Investment Fund
GIFTEL	Ghana Investment Fund for Telecommunications
GIS	Geographic Information System
GLSS	Ghana Living Standards Survey
GNA	Ghana News Agency
GNI	Gross National Income
GoG	Government of Ghana
GRA	Ghana Revenue Authority
GRATIS	Ghana Regional Appropriate Technology and Industrial Services
GSGDA	Ghana Shared Growth and Development Agenda
GSOP	Ghana Social Opportunities Project
GSS	Ghana Statistical Service
HC	Health Centre
HD	Human Development
HDI	Human Development Index
HDR	Human Development Report
HIPC	Heavily Indebted Poor Country
HIV/AIDS	Human Immunodeficiency Virus Infection and Acquired Immune Deficiency Syndrome
HPI	Human Poverty Index
ICOUR	Irrigation Company of Upper Region
ICSE	Classification of Status of Employment
ICT	Information and Communications Technology
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IFTC	Integrated Tamale Fruit Company
IGF	Internally Generated Funds
IITA	International Institute of Tropical Agriculture
ILO	International Labour Organization
IMMR	Institutional Maternal Mortality ratio
IMR	Infant Mortality Rate
IPEP	Infrastructure for Poverty Eradication Program
IPT	Intermittent Preventive Treatment
ISODEC	Integrated Social Development Centre
ITN	Insecticide-Treated Nets
JDPA	Joint Development Planning Area
JHS	Junior High School
KITE	Kumasi Institute of Technology, Energy & Environment
LC	Lands Commission

LEAP	Livelihood Empowerment against Poverty
LIPW	Labour Intensive Public Works
LMIC	Lower Middle-Income Country
LUSPA	Land Use and Spatial Planning Authority (previously TCPD)
MDAs	Ministries, Departments and Agencies
MDG	Millennium Development Goal
MESTI	Ministry of Science, Technology and Innovation
MIC	Middle Income Country
MLGRD	Ministry of Local Government and Rural Development
MMDAs	Metropolitan, Municipal and District Assemblies
MMYE	Ministry of Manpower, Youth and Employment
MOF	Ministry of Finance
MOFA	Ministry of Food and Agriculture
MoH	Ministry of Health
MOTI	Ministry of Trade and Industry
MPI	Multi-Dimensional Poverty Index
MVP	Millennium Village Project
NADMO	National Disaster Management Organisation
NCTE	National Council for Tertiary Education
NDPC	National Development Planning Commission
NEA	National Education Assessment
NER	Net Enrolment Rate
NGDF	Northern Ghana Development Fund
NGOs	Non-Governmental Organizations
NHDRs	National Human Development Reports
NHIS	National Health Insurance Scheme
NR	Northern Region
NRGP	Northern Rural Growth Programme
NSEZ	Northern Savannah Ecological Zone
NG-HDR Survey	Northern Ghana Human Development Report Survey
NVTI	National Vocational Training Institute
OASL	Office of the Administrator of Stool Lands
ODI	Overseas Development Institute
PHC	Population and Housing Census
PIAC	Public Interest and Accountability Committee
PPP	Public Private Partnership
PPP	Purchasing Power Parity
PRMA	Petroleum Revenue Management Act
PRMB	Petroleum Revenue Management Bill
PTR	Pupil-Teacher Ratio
RCBs	Rural and Community Banks
RCC	Regional Coordinating Council

RWI	Revenue Watch Institute
SADA	Savannah Accelerated Development Authority
SAP	Structural Adjustment Programme
SARI	Savanna Agriculture Research Institute
SBA	Skilled Birth Attendant
SDF	Spatial Development Framework
SHS	Senior High School
SIF	Social Investment Fund
SLF	Sustainable Livelihoods Framework
SMAM	Singulate Mean Age at Marriage
SPSS	Statistical Package for the Social Sciences
SRID	Statistical Research and Information Department
SSA	sub Saharan Africa
STAR	Strengthening Transparency Accountability and Responsiveness
STME	Science, Technology and Mathematics Education
STWP	Small Town Water Project
TCPD	Town Country Planning Department
TFR	Total Fertility Rate
TVET	Technical and Vocational Education and Training
UDS	University for Development Studies
UER	Upper East Region
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USD	United States Dollar
UWR	Upper West Region
VA	Volta Region
WHO	World Health Organization

NORTHERN GHANA HDR: HIGHLIGHTS

This human development report is a *supra* regional report for Ghana. The first regional report was for the Western Region (WR-HDR) in 2013 on the theme: ‘managing development opportunities for a secure future’. The report explored human development outcomes against the backdrop of abundant natural resources in the Western Region and its significant contribution to Ghana’s development. The current report focuses on Northern Ghana¹ and explores human development outcomes in the context of significant socio-economic disparities in what has historically been the most marginalized area. The report was informed by analysis of data synthesized from existing literature and the results and a survey in 2014. It is hoped that the findings and recommendations will provide useful inputs for policy discussions and will be relevant for developing strategies for transformational change.

Key Findings

- **Human Development and HDI:** The report notes that human development outcomes are low compared to national averages. It measures this through the 3 dimensions of human development – health, education and living standards. The HDI, which is a composite index draws on achievements in these 3 areas. The HDI for the Northern Ghana was estimated to be 0.116 compared 0.575 for the national HDI for 2014. It is worthy to note that the estimate for Northern Ghana is not as technically robust as the national HDI and is presented for illustrative purposes with a view to promoting discussion on the drivers of low human development.
- **High Poverty and significant inequality:** The Northern, Upper East and Upper West regions have long had the highest poverty headcount ratios in the country, exceeding the national average by large margins. There is progress with the contribution of the three Northern regions to national poverty declining over time. However, poverty levels remain high. The Upper West Region had the highest incidence of poverty for the country with many districts having poverty headcount ratios of over 80%.
- **Poor Road Infrastructure:** Despite significant progress in improving road infrastructure, the road and transportation networks mostly run south to north; and at border towns are in deplorable condition. Connectivity within the zone is a huge challenge.
- **ICT Gaps:** There are inadequate infrastructure gaps and the regulatory framework does not make for affordable access to information, communication and technologies (ICTs).
- **Poor Quality Education:** The North has the majority of deprived districts in the country and educational performance of students in all three Northern regions was, on average, significantly poorer in comparison to the other regions. For instance, in 2016, for P6 Mathematics, the percentage of students in Greater Accra demonstrating proficiency was more than four times greater than those for the 3 regions of the North; and for P6 English it was more than 3 times greater.

¹ The boundaries of Northern Ghana have shifted over time. In 1983, the Upper Region was apportioned into Upper East (UE) and Upper West (UW) Regions and the North then encompassed NR, UER and UWR. Later, there was a recognition that some of the contiguous districts in the neighbouring Brong Ahafo (BA) and Volta (VR) regions also shared many characteristics with the 3 northern regions and they were all clustered together as the Northern Savannah Ecological Zone (NSEZ). In November 2017, the bill for the Northern Development Authority (NDA) was passed and approved by the President in January 2018. The NDA will address development in the NR, UER and UWR. This HDR, which was conceived of in late 2014, provides data and analysis for the 3 northern regions and where possible for the contiguous districts in BA and VR.

- **Healthcare Delivery Challenges:** In terms of healthcare, the poorest staffed region in the country is the Northern Region (NR). For example, the region's health worker to population ratio is one nurse to 1,255 people compared to the national average of one nurse to 959 people. However, the Upper East region had the highest nurse to population ratio, having 1:669, far better than the national average. This was attributed to the Upper East region's strict adherence to a policy to retain its trainee health workers.
- **High Youth Unemployment:** The Northern Region had the highest rate of youth unemployment with the 2014 field survey finding close to 4 out of every 10 youth to be unemployed. The lack of jobs and economic opportunities encourages young people to migrate in large numbers to the South.
- **Challenges with Energy Access:** There is inadequate connections to the grid and in many areas the power supply is unreliable, which affects business growth and social lives. Solar and hydroelectric power appears to be significantly under-tapped. More than 15 potential dam sites spread across the zone have been tapped that can generate small to medium-quantities of hydro-electric power.
- **Illegal Mining:** Small-scale and artisanal mining, often illegal and most often unsustainable, has emerged as a coping livelihood strategy in various parts of the North. There needs to be a focus on sustainable livelihoods and sustainable resource use.
- **Long Standing Chieftaincy and Land Disputes and emerging threats:** vigilantism, herder-farmer conflicts and conflicts over land use are emerging as threats to human security. Amongst others, the effective functioning of the Regional and National Houses of Chiefs to adjudicate critical issues relating to land or successions and to resolve farmer-pastoralist conflicts are hindered by inadequate resources.
- **Data Gaps** - One of the key challenges for regional or district level transformational planning has been the lack of systematic information on almost all facets of development in the North.
- **Gender Inequity** - The prevailing gendered division of labour and access to assets needs to be addressed. Women's economic involvement is most often limited to low productivity activities which provide little opportunity for them to move up the ladder.
- **Climate Change Impact on Agriculture** - The threat of prolonged droughts, rising temperatures and unreliable rainfall are already negatively impacting agriculture, and threatening productivity and food insecurity in the region.

Key Recommendations

Proposed suggestions for addressing the development challenges confronting the Northern Region include the following:

- **Scale up Quality Education and Healthcare:** Institutional challenges in attracting and retaining staff in the education and health sectors, particularly in more rural and under-served contexts need to be addressed including by facilitating access to housing for health and education staff and by providing incentives. Given the significant service delivery gaps in the zone, the official plan for expanding the CHPS compound initiative is welcome. The roll-out can be ramped up through innovative Public Private Partnerships.

- **Climate Resilience:** Focusing on irrigation and integrated water management, including through local capacity strengthening, can increase the resilience of communities to floods and drought, and facilitate diversification of their livelihoods.
- **Sustainable agricultural practices:** Consider various measures to address land degradation, deforestation (for charcoal production but also for farming) and other unsustainable agricultural practices. These measures could include planting of trees and grasses, to facilitate grazing and assist with water conservation (riparian buffers); developing and enforcing a clear policy on the use of fire for clearing land for agriculture, hunting or festivals; placing savannah forests/woodlands under self-financing community management where possible; and restoring degraded forest reserves.
- **Livelihood Diversification:** There is also a need to focus on crop diversification and income diversification, including through a focus on game-changing crops, grasses and livestock. Investment is required for warehousing, cold chains and processing infrastructure to increase value addition and to reduce post-harvest losses. In addition, a shift to non-farm activities is needed, including through an investment in skills development – e.g., scaling up of informal apprenticeships, formal and on the job skills training
- **Social Protection:** Scale up social protection and public works to address deep poverty and expand the scope to include a focus on resilience enhancing activities such as water conservation, grasses and tree planting and agricultural asset development (storage facilities/warehouses, community boreholes).
- **Gender Equity:** Ensure gender equity by developing a concerted strategy to mainstream gender equity concerns. With regard to economic empowerment, identify how to help women to add more value, integrate into higher rungs of the value chains and secure more affordable and scalable finance.
- **Transportation and improved access to regional markets:** Improve transportation, logistical and other support services for intra-zonal and transit trade; deepen zonal and regional markets and stimulate the setting up of production and service centres to service cross-border traffic.
- **Energy Access:** New investments are needed to diversify energy sources (grid and off-grid) for households, and also to support the development of industries. For instance, there is the need for increased investment in hydro and renewable energy, including solar.
- **Promotion of Regional Planning Efforts:** There is an urgent need for information gathering, analyses and planning efforts to address regional market failures, infrastructure and service delivery gaps, enhance sustainability of bottom-up local development programmes and promote sustainable urbanization.
- **Resource Mobilization and Investment:** Mobilization of funds, the promotion of effective resource allocation and investment for the transformation agenda could help address the deep human development deficits in Northern Ghana to ensure that no one is left behind. In the context of moving towards Ghana beyond Aid, it is critical to identify new types of development cooperation and partnerships to ensure that the North does not experience further marginalization.

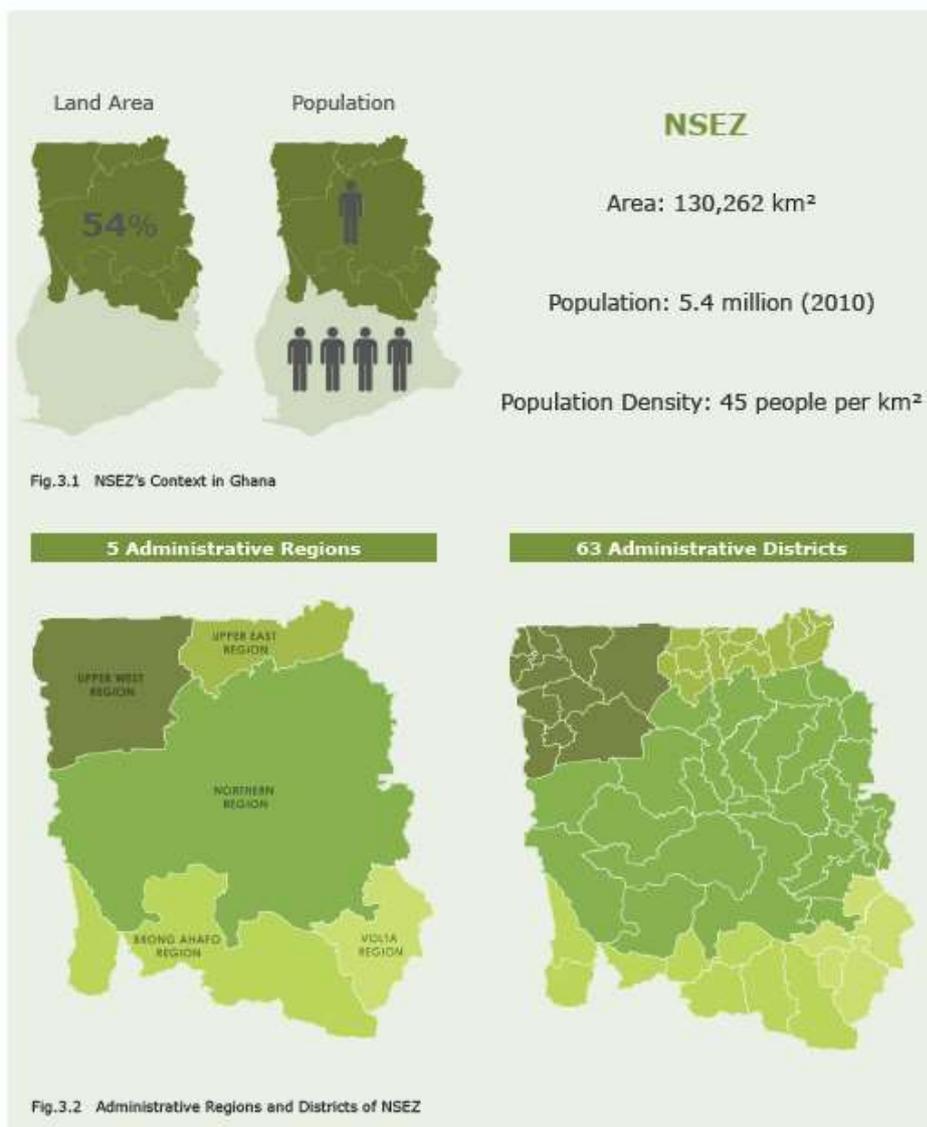


Fig.3.1 NSEZ's Context in Ghana

Fig.3.2 Administrative Regions and Districts of NSEZ

FIGURE 1.0 NORTHERN GHANA: SHIFTING BOUNDARIES

Source: SADA (Nov 2016) Northern Savannah Ecological Zone Concept Master Plan Report

*The boundaries of **Northern Ghana** have shifted over time. In the colonial period, the North was the Northern Territories. In 1960, this was separated into the Northern and Upper Region. In 1983, the Upper Region was apportioned into Upper East and Upper West Regions. The North was then assumed to encompass the three Northern regions - Northern Region, Upper East and Upper West). Later, there was a recognition that some of the contiguous districts in the neighbouring Brong Ahafo and Volta regions also shared many characteristics with the three Northern regions. This was referred to as the Northern Savannah Ecological Zone (NSEZ). In November 2017, the bill for the Northern Development Authority (NoDA) was passed and approved by the president in January 2018. The NoDA will address development in the Northern, Upper East and Upper West Regions.*

This human development report, which was conceived of in late 2014, focuses on the broader NSEZ. The hope is that it will prove useful in the new context as well and facilitate joint planning in contiguous districts of Brong Ahafo and Volta regions to tackle common challenges where necessary.

It should be noted that disaggregated data is not always available for the northern parts of Brong Ahafo and the Volta. The sources and notes for the tables indicate the scope of the data used.

CHAPTER 1: Introduction and Approach

1.1 Background

Human Development for Everyone, and the call to leave no one behind

Human development is about enlarging freedoms so that all human beings can pursue choices that they value.² It implies ensuring the expansion of capabilities for people to be able to lead the kind of life they value and enhancing their functioning in such areas as health and life expectancy as well as education, among others. Ensuring voice, participation and a governance framework which ensures the protection of rights and focuses on human security is critical in this regard. Practically, the measure of human development encompasses a focus on a long and healthy life, knowledge (education and skills) and a decent standard of living and poverty is analyzed in multidimensional and not just monetary terms.

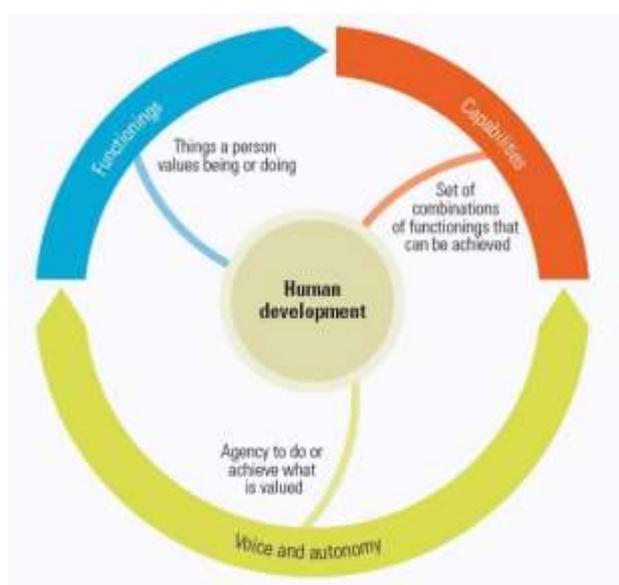


FIGURE 1.1: ANALYTICS OF HUMAN DEVELOPMENT

Source: UNDP (2016)

provides a framework for examining social, economic and political trends and illuminates the interplay among factors that can result in disadvantage for individuals, groups, or geographical regions in different contexts.

This supra-regional human development report applies the human development lens to Northern Ghana (NG-HDR), historically the most marginalized area in Ghana. The first regional report, in 2013, which was for the Western Region (WR-HDR), explored human development outcomes against a backdrop of significant natural resources.

² The capabilities approach is central to human development. Linked to this are issues of individual choice but also social norms and deprivations that can undermine capabilities, entitlements and outcomes- e.g., for women, minorities etc. – as well as the need to recognize that progress implicitly needs to be broad-based.

Progress at national level with rising disparities at sub-national levels

Ghana achieved Lower Middle-Income Country (LMIC) status in 2010. On the back of significant growth rates and investments in social and economic development, it also achieved many of the Millennium Development Goals (MDGs), including the goal of halving poverty ahead of the target year of 2015. However, as with many other countries, progress has occurred against a [backdrop of socio-economic disparities at sub-national levels, and worryingly, Ghana's historical North-South development gap has widened over time.](#)

The *Directive Principles of State Policy* of Ghana's 1992 Constitution enjoins the Government to pursue policies that would lead to the development of a 'just and free society' that ensures maximum welfare and happiness of all citizens. Article 35, Clause 5 of the Directive Principles of State Policy specifies that "The State shall actively promote the integration of the peoples of Ghana and prohibit discrimination and prejudice on the grounds of place of origin, circumstance, ethnic origin, gender or religion, creed or other beliefs" (pp. 35–36). Further, article 36, Clause 2, Section (d) of these Principles specifies that the State shall as a matter of principle undertake "even and balanced development of all regions and every part of each region of Ghana, and, in particular, improving the conditions of life in the rural areas, and generally, redressing any imbalance in development between the rural and urban areas."

Ghana's medium-term development framework, the GSGDA II (2014-17) encompassed an explicit emphasis on tackling the growing inequality in socio-economic and spatial development through focus areas related to promoting human development, productivity and employment creation, as well as by modalities such as special development zones to reduce spatial development disparities across the country. The President's *Coordinated Programme of Economic and Social Development Policies (2017-2024): An Agenda for Jobs: Creating Prosperity and Equal Opportunity for All* also underscores that "measures will be introduced to ensure fair and balanced allocation of national resources across ecological zones, gender, income and socio-economic groups, including PWDs.."

North-South disparities need to be addressed

Northern Ghana has been subject to shifting boundaries. In the colonial period, the North was the Northern Territories.³ In 1960, this was separated into the Northern and Upper Region. In 1983, the Upper Region was apportioned into Upper East and Upper West Regions and the North encompassed the three Northern regions - Northern Region, Upper East and Upper West. Later, there was a recognition that some of the contiguous districts in the neighbouring Brong Ahafo and Volta regions also shared many characteristics with the three Northern regions and could benefit from being planned jointly and this area was referred to as the Northern Savannah Ecological Zone (NSEZ).⁴

³ See Wikipedia entry for the [Gold Coast](#). From 1902-1960, the old Northern Territory was a British protectorate. In 1960 it was separated into the Northern and Upper Region. In 1983, the Upper Region was apportioned into Upper East and Upper West Regions.

⁴ The Northern Savannah Ecological Zone comprises the Guinea and Sudan Savannahs. There is a difference in the boundaries (used by GSS) for the ecological zone and the administrative boundaries (based on the inclusion

This report, which was conceived in 2014, takes its scope the Northern Savannah Ecological Zone (NSEZ). As the bulk of the NSEZ is encompassed by the Northern, Upper East and Upper West regions, it should prove useful for the work of the Northern Development Authority which was created in 2018. It should also assist with cross- regional and district planning in the contiguous districts in Brong Ahafo and Volta on common development issues.⁵

1.2 Overview of the drivers of regional disparities and underdevelopment in the North

UNDP Ghana's Human Development Report 2007, *Towards a More Inclusive Society*⁶, accurately highlighted spatial patterns of inequality and the potentially mutually reinforcing nature of social, economic and environmental factors underpinning such exclusion:

From the point of view of interregional differences and the intra-regional disparities, spatial differences are important drivers of social exclusion in Ghana. Indeed, the importance of geographical disparities in understanding social exclusion is partly captured in what are described as *spatial poverty traps focusing on physical remoteness and isolation*...Historically the North / South divide in the supply of goods and services coupled with a harsh economic environment has positioned Northern Ghana to be more prone to experiences of exclusion. Uneven *distribution of basic infrastructure* as well as remoteness from centres of trade work together to isolate some parts of the country... In the same vein, rural-urban differences also reflect social exclusion in terms of differential provision of basic social services and job opportunities...The bulk of investment in industry and manufacturing in Ghana continues to be directed at the 3 major Southern cities of Accra-Tema Metropolis, Kumasi and Takoradi.

The roots of the relative underdevelopment of the NSEZ broadly lie in its **historical legacies**, and, to some extent in **geography**, the impacts of which have been compounded by **economies of spatial agglomeration**.

Historically, colonial authorities in Ghana invested in areas where they had immediate extractive interests. Ensuring a steady supply of cheap labour was a priority for the smooth functioning of colonial mines, the railways and the plantations. If labour could not be sourced locally, having specific labour outmigration areas, including specific regions remain practically under-developed (via limited investments in infrastructure, schools, health facilities, agricultural production or other economic activities) could be effective.

Geographically, the zone has agro-ecological climatic conditions (extreme weather patterns, intense dust and heat conditions during some parts of the year and creeping desertification) which make for environmental and socio-economic vulnerabilities and distress migration. The impact of these will be heightened by climate change if no action is taken. At the same time, it has significant agricultural potential which can be sustainably tapped into.

Economies of spatial agglomeration The North is still predominantly rural as opposed to the historically more developed urban settlements in the South, which are also closer to the coast. This effectively reinforces the pattern of the South drawing more private sector investment.⁷

of contiguous districts in Brong Ahafo and the Volta) referred to in the SADA Act. See annex 1.

⁵ The Northern Development Authority, Coastal Development Authority and a Middle Belt Development Authority were created in 2018.

⁶ See UNDP (2007)

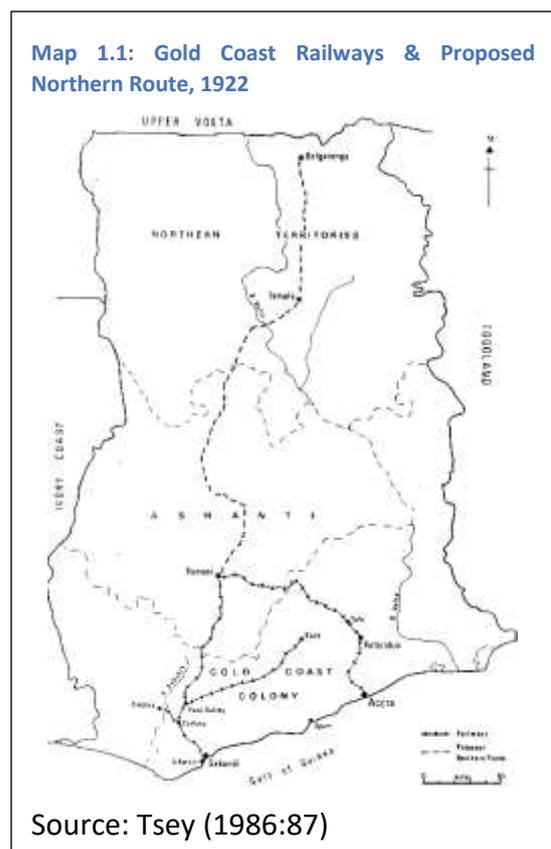
⁷ See Ghana Country notes for the African Economic Outlook (AEO, 2015 and 2016) for analysis.

More importantly, the drivers of the socio-economic disparities within the North are shown to be mutually reinforcing, necessitating a broad-based strategy for inclusive and sustainable socio-economic transformation. This would encompass a focus on infrastructure, human capital and related investments amongst others. Given poor road connectivity, low levels of urbanization, limited public facilities, markets and related infrastructure, it is hard to attract private investment or to sustain the provision of social services, such as healthcare and education, which are critical for enhancing human development outcomes. Likewise, in the absence of investments to enhance people’s capabilities and opportunities, investments in transformational sectors of the economy would likely result in only low skill and insecure livelihoods for the zone’s inhabitants, reinforcing the vicious cycle under way.

1.3 The Colonial Legacy of Northern Underdevelopment

An enduring myth is that the region possesses no significant resources worthy of development and that the area lags behind the rest of the country because of constraints arising from the harsh physical environment (Songsore and Denkabe, 1995). However, the current under-development of the North can, be attributed, to no small extent, to the legacy of the colonial regime that effectively kept it underdeveloped. Political economy considerations, i.e., the imperative to secure cheap labour for colonial railways, mines and plantations were critical.

There was recognition by the forward-looking Governor Guggisberg that the North had great potential to produce groundnuts, shea butter and rice for trade with Southern markets and for export.⁸ Guggisberg also saw the need for a railway to facilitate this trade (Songsore and Denkabe, 1995, pp. 14–15). However, the proposed railway was never built. See Map 1.1 for proposed northern railway route.



There were also labour shortages in the South and the government, the mining companies and indigenous cocoa farmers came to regard the North as “a means of securing cheap labour reserve for the South”. Governor Guggisberg wrote: *“To encourage agricultural production in the Northern Territories by constructing a railway before the development of communications in the South would result in the greater part of this labour being lost. For the above reasons, I have deliberately sacrificed, for the moment, the development of the agricultural products of the North...the continued development of the colony and Ashanti was incompatible with the simultaneous development of the Northern Territories.”* (Tsey, 1986 p.94).

⁸Tsey (1986: 87) writes that the main commodities of interest to British commerce and industry were cotton, groundnuts and shea-butter but that serious consideration would only be given to these in the post-war years.

While labour was the key imperative, there were also other reasons. British capitalists lobbied to focus railway development on serving the gold mines which needed heavy machinery, large quantities of firewood and workers from other regions. The railway was also intended to quickly convey troops. (Jedwab et.al, 2012).

The colonial administration's active labour policies included the initial use of forced and indentured labour to promote the outward migration of labour to the South (Thomas, 1973). They effectively obstructed potential educational advancement through the missionary schools as was the case in other parts of the country. The general neglect of infrastructure development in education, health and transport sectors helped to 'push labour' from the zone. In the sphere of education to enhance people's opportunities, one Chief Commissioner of the Colonial State put it well when he declared that only "a few crumbs from this feast of instruction" resulting from the educational activities of the Colonial Government and the various missions in the South "might well be spared for the children of this Dependency" (Bening, 1971; 1990; Songsore and Denkabe, 1995).

On the eve of independence, there was almost a complete absence of an educated, trained and skilled human resource in the Northern Territories. The first Training College (for men only) opened in Tamale in 1944. A government secondary school and a technical institute were also opened in Tamale in 1951 to cater for the needs of the whole of Northern Ghana. The first Catholic Mission Secondary School opened at Wiaga, near Sandema in 1953. The North got its first and second graduates in 1951 and 1960 respectively (Bening, 1990, p.233).

The contribution of the then Protectorate of the Northern Savannah to the development of the rest of the Gold Coast was vividly summarized by Governor Guggisberg when he declared that: "every man of the Northern Territories is worth his weight in gold-for the mines, for private enterprise and for the development of those schemes the completion of which are necessary to secure progress and development" (Bening, 1971, p.142, Ladouceur, 1979). The question to remember is whose progress and development Guggisberg was focusing on.

The overall combination of extractive policies pursued by the colonial government meant the effective subordination of Northern development to the needs of colonial capital located in the mining and timber industries, and, later on, to the cocoa interests in Southern Ghana. Evidence shows that Northern labour, after periods of work in the mines and cocoa farms, returned home richer in little else except experience; and some of those who worked in the mines went back with silicosis or silico-tuberculosis and venereal diseases (Greenstreet, 1972). By the end of the colonial era the Northern Territories were the most backward in terms of income per capita and access to measures to address basic needs. (Songsore, 1992, p.157).

1.4 The North-South Human Development Gap Post-Independence

The state's developmental project pursued in the early post-independence period by the Nkrumah regime had positive impacts on development in the Northern Savannah Ecological Zone (NSEZ). This was the result of an aggressive policy of social inclusion through massive investment in healthcare and education which are critical for the expansion of people's capabilities and opportunities.

The provision of free compulsory basic education fed into the tertiary education sector with science and technology as the anchor. Healthcare services were also extended to remote regions of the country and basic infrastructure was modernized. Social sector investments in schools, hospitals and agro-industrial projects contributed to an expansion of people's capabilities and opportunities in the zone.

However, the development gap remained. In 1960, the Greater Accra Region was estimated to have a gross value added per capita of 176 Ghana pounds. This was more than double the figure for the second highest score of 68 Ghana pounds, a position held by Ashanti and Western regions, while Northern Ghana had the lowest per capita value added, i.e., 30 Ghana pounds (Songsore, 2006; 1979).

Chronic and deepening poverty appeared to be embedded in the North except for a brief period of self-reliance when the state effectively turned inwards. Though the state faced severe crisis, the period ushered in the 'golden age' for the North given the benefits of 'Operation Feed Yourself' and 'Operation Feed Your Industries'. This turned out to be a period of economic boom in rice production with southern capital moving into the zone to invest in the then lucrative rice industry. Maize (especially in the Savannah transition zone of Brong Ahafo) and industrial crops such as jute for the bast fibre industry, cotton for the textile industry and shea nuts for exports all received a boost. Jobs were available for the young, particularly in the rice industry, such that the *kayayei*⁹ phenomenon was largely absent.

While there was an agriculture boom of sorts in the zone, the country suffered from a structural crisis which led to the collapse of the economy. Paradoxically, this was at a time when commodity prices were buoyant. The antecedents to the collapse lay in structural features of the inherited colonial economy and the inability of the post-colonial regimes to fundamentally transform the economy (Songsore, 2006, Stein, 2003) within the anticipated time frame. The resulting fiscal and foreign exchange imbalances, and lack of assistance forthcoming from any quarter, resulted in the state having to turn to the IMF and the World Bank for assistance. This led to the implementation of the Economic Recovery Programme (ERP) and Structural Adjustment Programmes (SAPs) from 1983 to 2000.

While the programmes led to macroeconomic recovery and GDP growth, which averaged 5%, it did not lead to structural transformation of the economy. Growth was 'lopsided' as major segments of the real economy, including the food-crop sub-sector (which accounted for over 60% of agricultural GDP), and the manufacturing industry continued to suffer. This was likely because excessive liberalization and the withdrawal of state support for the food crops sector. Significant declines were posted in the rice, cotton and poultry sectors while chronic seasonal hunger stalked the North (Shepherd and Gyima-Boadi, 2004; Shepherd *et al.*, 2005). The impacts on manufacturing also varied over time.¹⁰ Overall, the trends did not point to an economy about to generate wealth on a generalized scale, let alone one able to distribute it. The gap between the North and South widened (NDPC, 2005, p.17; Songsore, 2006).

⁹ Kayayei are migrant female head porters (Awumbila *et al.*, 2008; Awumbila, 2008; Awumbila, *et al.* 2014).

¹⁰ According to Lall (1995), "The Bank study shows that the average growth rate of manufacturing, negative in the early 1980s rose to 4.5% per annum over 1987–91—a healthy response... But these average data are misleading... These growth figures are in the shape of an inverted-U, with a long taper at the end".

It is also clear that macroeconomic policy and economic sectors do not exist only in abstract economic space, but also within the national territorial space. (Songsore, 2006, p.18). Although all regions and social strata (but more especially those at the bottom of the income scale in the poorer North) were adversely affected by the economic crisis of the late 1970s and 1980s, the burdens of structural adjustment and its benefits were unevenly shared between regions, economic sectors and social groups. While the economic sectors and social groups of least developed regions effectively bore the weight of structural adjustment, some economic sectors and powerful social groups of the developed regions reaped the benefits accruing from the SAPs (Songsore, 2011a, 2006, p.18). Further, the economic reform programmes negotiated with the World Bank and International Monetary Fund required restraint in the growth of public expenditures. (Oduro, 2005, p.99). The initial emphasis on cost recovery in the provision of social services thus worsened the inequities in access to social services within and across regions. Even in the era of the Poverty Reduction Strategy Papers (PRSPs), when poverty reduction was a priority for debt relief, evidence suggests that although the three Northern regions were the poorest in the country, for a time, they received the lowest number of projects and programmes from the Heavily Indebted Poor Country (HIPC) funds that were provided to Ghana through the IMF (SEND Ghana, 2006).

The NSEZ, with its relatively limited infrastructure was not able to attract much Foreign Direct Investment without some focused attention. Between 1994 and 1999, only 1% of all private capital flows coming through the Ghana Investment Promotion Centre (US\$1.5 billion) went to Northern Ghana, whereas the Greater Accra Metropolitan Area alone attracted 79% (Songsore, 2011a, 2006). *For the period 2005 to 2011, out of a total of approximately US\$21 billion of inflows, the three regions of Northern Ghana attracted a mere 1.7%, whereas Greater Accra accounted for almost 46%, and the Western and Ashanti regions accounted close to 34% and 15% of the total respectively as the economies of agglomeration continued to favour the more developed regions.*

Without any significant manufacturing, and with no comparative advantage in preferred cash crops such as cocoa¹¹ which were being supported to bring in foreign exchange from exports, the economy of the North could not share proportionately in the growth that occurred post-SAPs (*ibid.*, 2011a; 2006; ODI and CEPA, 2005). The liberalization of rice and cotton imports and the removal of agricultural input subsidies for smallholders were also be seen to have led to the collapse of the once vibrant rice and cotton industries in the area.

More recent patterns of structural transformation of the economy also appear to have unintentionally reinforced some of these trends. E.g., while key commodities such as cocoa, gold and oil constitute a small proportion of Ghana's GDP (e.g., between 2006-15, the share of cocoa fluctuated between 3 to 1.9%; and oil went from 6.7% to 4% of GDP between 2011-2015)¹², these commodities play an oversized role in exports – i.e., gold, cocoa and oil account for over three quarters of Ghana's merchandise exports – and could also be seen to benefit disproportionately in terms of priority assigned to the products/focus areas.

¹¹ Cocoa benefitted because it was an important export cash crop. It's not clear why there was no support for cotton, also a cash crop. This would have had economic benefits for the North, as was the case in Burkina Faso.

¹² See GSS (2016)

Even as the labour-intensive cash crops, such as cocoa, appear to have played an important role in reducing poverty in Ghana¹³ and in mitigating increases in the rural gini (measure of inequality) in the recent past,¹⁴ there is a need for a much more broad-based investment in agriculture and in non-cocoa crops to address rising rural poverty and to take advantage of varied agricultural potential of different parts of the country.¹⁵

Using public expenditure and agricultural production data on Ghana, for the period 1970-2012, Benin (2016) assesses the returns to public spending in the agricultural sector. He notes that while the share of expenditures on the cocoa subsector as a share of the subsector's agricultural value-added was 40% per year compared to only 3.2 % for the non-cocoa subsector,¹⁶ the returns to expenditure in the non-cocoa subsector were estimated to be much higher at 124% compared to 28% for cocoa. It appears that not only are the overall productivity of and returns to total agricultural expenditure likely to be improved by adding new resources or reallocating some of the resources intended for the cocoa sector to the non-cocoa crops and livestock subsectors, but the poverty and equity impacts are likely to be increased given the significant spatial dimensions of poverty and inequality and the fact that most of the poor are engaged in food crops and livestock.¹⁷

Moreover, Ghana is currently a net agricultural importer of primary foods and agro-processing products. Some of these could be produced competitively locally and contribute to reducing the balance of payments deficit.¹⁸ Similar to the policies of Operation Feed Yourself, the recent focus on 'Planting for Food and Jobs' are being underscored as potentially having broad-based economic and social benefits especially for the North (should resources to be directed at scale towards inclusive productivity enhancing investments). As there are usually refrains from local agro-processors about inadequate supplies, this focus is also likely to be welcome this regard.¹⁹

In the North, agricultural livelihoods are mostly subsistence in nature although commercial agriculture is increasing in some areas. Productivity is constrained by a reliance on rain (typically once a year though increasingly unpredictable in terms of amount and timing). Increased irrigation, cost-effective access to mechanization services and inputs are needed.

¹³ Breisinger et.al (2007) cite data from Wodon et.al. (2007) to underscore that Ghana's cocoa farmers fared better than the agriculture-dependent population as a whole.

¹⁴ See Cornia (2016 and Molini (2016).

¹⁵ Breisinger et.al (2007 and 2008)'s and Molini (2010) suggest the role of cocoa in poverty reduction is likely to decrease over time for a number of reasons, not least given some of the challenges faced by the cocoa sector. Molini et.al (2016) notes that while Ghana is the third largest producer in the world (about 14.5 % of the world market), average yields are much lower; i.e., 431.0 kg/hectare for Ghana compared to 595.7 and 576.0 kg/hectare for Cote d'Ivoire and Indonesia.

¹⁶ Benin (2016) also notes that the growth rates of expenditure were also higher - agricultural expenditure on the cocoa grew at an average rate of 3.7%/annum compared with -0.4% for the non-cocoa subsector.

¹⁷ Cocoa is mostly grown in parts of the western and central regions. Data from GLSS5 (2005/6) indicated that only 19% of rural households were growing cocoa.

¹⁸ See Government of Ghana (2017) Budget Statement and Economic Policy, para 162 for various measures.

¹⁹ See Kolavalli et. al (2012) for snapshot of issues for different value chains for tomato paste factories.

Transport infrastructure is also critical as there are significant gaps. Molini et al. (2015) note that the incidence of poverty appears to be correlated with proximity to roads (measured in terms of hours). The south and west of the country, where poverty is below 20% in most districts, have the best road networks; and, in contrast, in the North, where the average distance to the nearest road is greater, the poverty rates are significantly higher.

There is scope for small and large-scale agriculture and processing activities to have synergies and the policy agenda needs to explicitly explore how agricultural modernization and commercialization can be undertaken to avoid adverse impacts on equity and access to land by the poor. The work of Gatune (2016) is useful in underscoring the issue of inclusive and gender-equity enhancing agricultural value chains. He points to the importance of looking at innovations in services which can play a key role in enhancing farm level production and also highlights the potential of gender friendly processing technologies.

Finance is a major constraint for the transformation agenda. Oil revenues (oil has been produced in commercial quantities from 2011) were expected to provide some resources for diversification of the economy with knock-on implications for spatial equity. However, in recent years, given Ghana's macroeconomic challenges, it appears that resources, including from oil, have been spread 'too thin' to have significant equity and transformational impacts.²⁰ Given the relatively low oil prices, the likelihood of significant resources being available for productivity-enhancing investments in the foreseeable future is questionable.²¹

It should be noted that Ghana's constrained macro fundamentals have not only had implications for equity and diversification-enhancing public investments but have also contributed to raising the cost of capital for the local private sector. This is even more pronounced for the North given that the perceived risks are higher for investments there as infrastructure is less well developed and business and financial services less well articulated. Commercial banks also have a low footprint in the North. There is a clear imperative to consider long term developmental financing and to scale up inclusive finance for the socio-economic transformation which is critical for ensuring human development in the North.

²⁰ See Christian Aid (2014). It offers a pessimistic assessment of the taxation of natural resources on the basis of analyses of Ghana, Kenya, Malawi, Nigeria, Sierra Leone, South Africa, Zambia and Zimbabwe.

²¹ See Bank of Ghana (2016). Ghana's Petroleum Revenue Management Act (PRMA), 2011 indicates that up to 70% of the benchmark revenue can be invested into the economy via the government's annual budget (Annual Budget Funding Amount, ABFA). Oil revenues have constituted roughly about 4% of total government revenues. The balance goes to two Petroleum Funds. The latest report from Bank of Ghana reveals that since inception, about 43% of benchmark revenues were allocated to the ABFA. Various civil society and think-tanks (ACEP, KITE, ISODEC, PIAC (2016) have called attention to inefficiencies in allocation, resources being spread too thin to have impact, the apparent lack of adherence in allocation to priority areas and the lack of clarity in what constitutes capacity building. E.g., capacity building funds have been allocated to social interventions including the capitation grant, the school feeding grant, examination subsidies and the progressively free senior high school policy in the educational sector. These are important from the point of view of social equity. However, ESID (2016) raises questions about regional equity in allocations amongst other issues - "expenditure patterns show that the poorer and more deprived Northern regions continue to be marginalized".

1.5 Snapshot of Human Development in the North

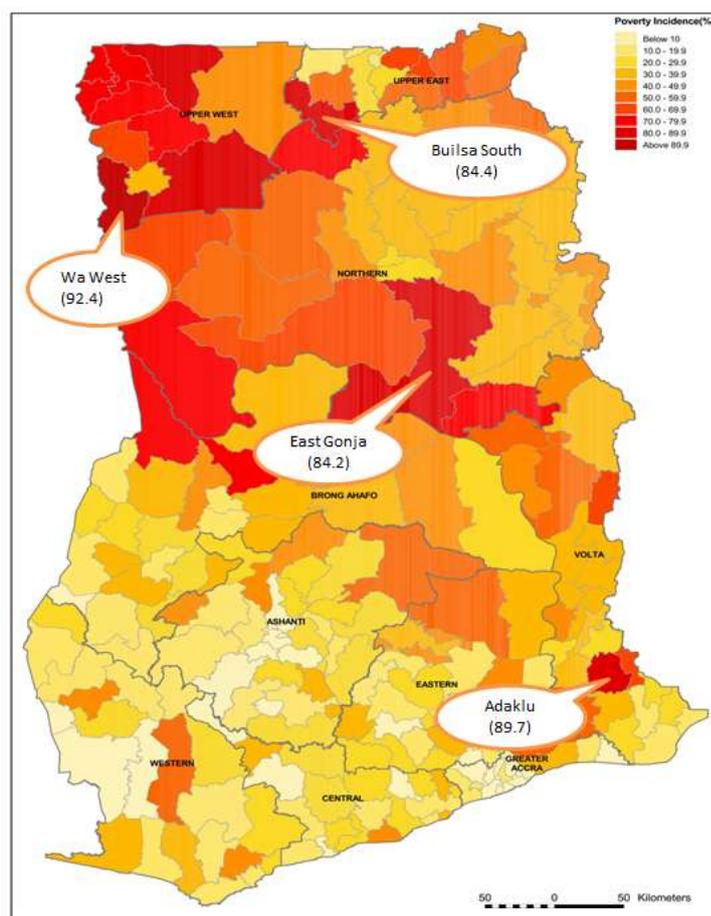


FIGURE 1.2: PROPORTION OF POPULATION BELOW THE POVERTY LINE (%) (2012/13)

Source: GSS (2015) Poverty Mapping Report

lower in urban areas and as some areas have urbanized faster. Inequality increased in both the Northern and the Upper West regions over the period from 2005/06 to 2012/13, while it fell in Greater Accra, the most developed region.

Food security and nutritional indicators are particularly poor in Northern Ghana. The *World Food Programme Report* (2012, p.61) found that more than 680,000 people, or 3 out of every 100 households, was either severely or moderately food insecure. *The poor nutritional status of children in the North was about double the national average.* The UNDP *Africa Human Development Report 2012* view that a food secure continent requires transformative change that will be more effective if accompanied by shift of resources, capacities and decisions to smallholder farmers, poor communities and women, as well as social protection aimed at addressing the most immediate needs of the poor and vulnerable is *a propos* for the North.

However, even as almost all of Ghana's regions (including the Northern regions) experienced significant poverty reduction between 2005/6 and 2012/13, the gap between urban and rural areas, and between the historically more marginalized and more rural North and more urbanized South, increased. Rural poverty in Ghana is now estimated to be as much as four times as high as urban poverty compared to being twice as high in the 1990s (Cooke et. al, 2016).

Even as there are areas with significant levels of poverty in other regions (including Greater Accra), the three Northern regions have long had the highest poverty headcount ratios, exceeding the national average by large margins. The Upper West Region recorded the highest incidence of poverty for the country²². Disparities have also increased within the zone, particularly as poverty tends to be

²² Ghana Statistical Service 2015, Ghana Poverty Mapping Report

The region also faces significant challenges in terms of health outcomes. See Figure 1.3. The three Northern regions and the Central Region, the four most deprived regions in the country, have mortality rates above the national average.

People living in the NSEZ face significant constraints in access to health facilities and care. Ghana's *Health Sector Medium term plan 2014-17* found that: The Upper West Region had 11 times fewer doctors per capita compared to Greater Accra.

The Greater Accra Region (GAR) had the highest number of doctors per capita (1 doctor per 3,540 inhabitants) and was home to 50% of all Ghana's doctors; and another 20% were in the Ashanti Region. At the end of 2012, 25 government hospitals were without doctors, of which 8 were in the Northern Region. As compared to a national doctor population ratio target of 1:9043, the Upper East and Upper West and Northern Region had doctor population ratios of 1:32,285, 1:36,048, and 1:23,759 respectively. (See MoH, 2015). Further, the entire NSEZ was found to have just 6% of the specialist health professionals whilst the southern half of the country had 94%. UNICEF²³ notes that while on average 68% of women deliver with a skilled birth attendant, in the Northern Region just 37% of women have access to a skilled delivery. **The Northern Region appears to suffer the most from the sparsely scattered nature of health facilities, though it has the largest population and land area in the NSEZ.**

The poor state of infrastructure, low levels of urbanization and facilities (particularly housing, good schools and markets) makes it challenging to retain health and education sector staff. LUSPA (Previously TCPD, 2015) underscored the challenges for service delivery arising from the dispersed nature of the population and small settlement sizes. The minimum population threshold required to provide services, e.g., population of around 150 for the provision of primary school, is typically not reached. The ratio of junior high schools to primary schools was much lower than the national average (42% compared to 62%). For the NR it was 28% and for the UWR it was 43%. Children in these regions often must travel long distances to access junior high school education since more than half the primary schools do not have junior high schools attached to them. **The impact on the learning for children having to attend schools in some of the most impoverished and hard-to-reach areas of the country is evident. For all grades and subjects, the percentage of children from one of the three Northern regions who met the cut-point for proficiency was half that reaching proficiency in the other regions of the country. These outcomes significantly undermine people's capabilities and choices.**

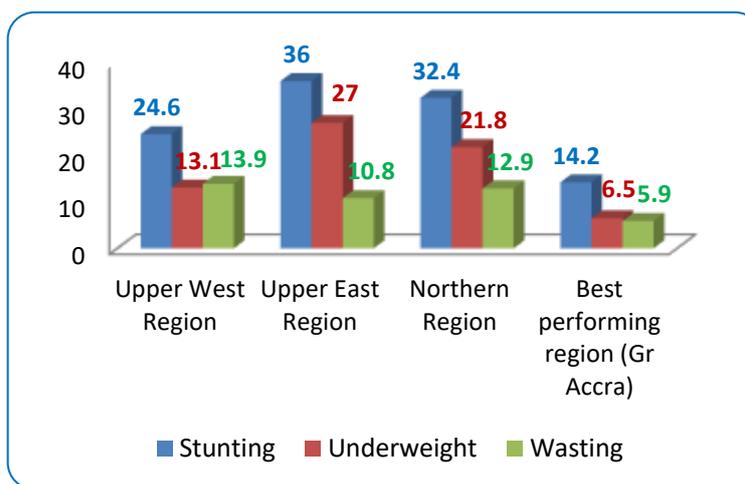


FIGURE 1.3 NUTRITIONAL STATUS OF CHILDREN 2008 (%)

Source: UNDP (2012a, p.21)

²³ UNICEF Ghana (2013) "Advocating for Development that leaves no Child Behind".

Further, economic opportunities are very limited. More than 70% of the population of Northern Ghana depends on unimodal rain-fed agriculture for their food, income and livelihoods. The over-dependence on rainfall, poor feeder road connectivity from farms to market centres, and poor soil fertility coupled with limited access to inputs results in low agricultural productivity and incomes. Climate change is adding to the drivers of high levels of poverty and vulnerability in the zone. Seasonal outmigration and hunger are high. For a period of 7-8 months in the year, a majority of the agricultural population in the North has no alternative or complementary means of securing their livelihoods, as infrastructure to support off season agricultural activities is underdeveloped or non-existent. Recent Ghana Living Standards Surveys point to poverty becoming inter-generational.

The high levels of poverty also drive the significant use of low efficiency biomass energy and unsustainable use of natural resources. According to Ghana's Energy Commission (2012), the Northern Region had the highest proportion of households (90.5%) using charcoal. While, on average, a household in Ghana consumed 434.4kg of charcoal/annum, those in the Northern Region consumed an average of 510.1kg of charcoal/annum. Further, illegal mining, charcoal burning and bush fires are undermining forest cover gains made over the last twenty-years.

1.6 The Application of a Regional Human Developmental Lens to address Imbalances

The regions in the North share common development challenges which lend themselves to a regional human development approach and joint planning. As per Article 12 of the National Development Planning Commission (NDPC) Act 480, 1994, the region was classified as a Joint Development Planning Area (JDPA).²⁴

The just concluded GSGDA II (2014-17) mainstreamed a focus on tackling spatial disparities through: infrastructure, modernisation of agriculture and structural transformation of the economy, the human settlements development policy which encompasses spatial/land use planning and management; urban development and management; housing/shelter; slum upgrading and prevention; disaster prevention; institutional arrangements; and rural development and management.²⁵

A number of specific initiatives focused on the North have also been put forward. A bill to establish a Northern Ghana Development Fund (NGDF) to provide resources to support accelerated economic growth and sustainable development in the North was put before Parliament in 2008. In 2010, a special development authority known as Savannah Accelerated Development Authority (SADA) (Republic of Ghana, 2010, p.28; Songsore, 2011b) was established by an act of Parliament.²⁶

²⁴ A JDPA is "a contiguous area with special physical and socio-economic characteristics necessitating it being considered a single unit for the purpose of development planning".

²⁵ See AEO 2015 Ghana Country Note

²⁶ In 2008, President John Agyekum Kufuor announced the establishment of a special initiative for Sustainable Development in Northern Ghana accompanied by a Northern Ghana Development Fund (NGDF). The proposed initiative was reinforced and expanded by President John Atta Mills to include the contiguous districts of the Brong Ahafo and Volta Regions that shared similar ecological and social conditions and the seed fund was enlarged; a special delivery vehicle, the Savannah Accelerated Development Authority (SADA), was proposed.

The Act positioned SADA as an independent and autonomous statutory corporation with an extensive mandate to address the problem of relative underdevelopment by providing “a framework for the comprehensive and long-term development of the Northern Savannah Ecological Zone” (NSEZ). Article 2 detailed the Authority’s objectives as follows: (a) To provide strategic planning guidance to government as regards the implementation and review of an accelerated development strategy for the Northern Savannah Ecological Zone; (b) To mobilise human, financial and other resources for the implementation of the accelerated development strategy; (c) To co-ordinate existing and future development and related policies affecting the Northern Savannah Ecological Zone with a view to ensuring coherence in policy-making and implementation.

The early phase of SADA (2010-14) saw its fair set of challenges. The 2013 audit report raised questions regarding the prudent use of public resources and the perceived misplaced focus on direct project implementation.²⁷ In response to these concerns, the SADA board was reconstituted and a new CEO was appointed in late 2014. The new board and management put in place measures to strengthen the institution, ensure accountability and rebuild trust.²⁸ The work of the Authority was refocused on coordinating, catalyzing and facilitating development planning. A forward-looking regional masterplan, city plans (Tamale and Buipe) and agricultural transformation were drafted, investment opportunities were identified and partnerships for development were undertaken.

Following the elections in December 2016, the new government proposed the creation of 3 development authorities, including a Northern Development Authority for the UWR, UER and NR. The Act for the Northern Development Authority was passed in January 2018²⁹ and a new CEO and three deputy CEOs were appointed in April 2018 and the board for the Northern Development Authority was sworn in on 11 June 2018.³⁰

1.7 Objective of this Report

While the development gap between the North and the South has effectively been the starting point for much of the analysis of the North, and tackling spatial and socio-economic disparities remains important, it is important to highlight that the focus of the report is to contribute to enabling the people to attain their development potential and to promote a transformation agenda that is equitable. This the report tries to do from a Human Development perspective. The question that has been posed in many discussions is why is the North rich in potential and resources poor? The report applies a transformational lens to this issue to identify how the intersecting challenges can be addressed.

²⁷ See [reference](#) in the press to report of independent auditors from the University for Development Studies (UDS) that an average of 85 % of SADA sponsored trees planted survived, suggesting that in some instances there was more sound and fury than might have been warranted.

²⁸ For example, see SADA Annual Reports: [2015](#) and [2016](#)

²⁹ See [Northern Development Authority act, 2017](#)

³⁰ See [President Akufo Addo Appoints Chief Executive Officers and Deputy Chief Executive Officers of the Development Authorities](#) (April 2018) see [President Akufo-Addo Swears-In Development Authority And Zongo Development Fund Boards](#) (June 2018)

The report underscores the importance of investing in **the expansion of people’s capabilities and opportunities** and ensuring that **‘no one is left behind’**; measuring progress through a set of comprehensive measures, including tracking human development outcomes; and undertaking integrated and dynamic planning to complement more local initiatives to ensure coherence and sustainability. The report stresses the importance of ensuring sustainable livelihoods while moving towards strengthening capabilities and skills and capabilities for economic transformation. Skill deficits, due to disparities in equitable access to education, undermine the potential for local people to benefit from emerging economic opportunities.

Given the importance of agriculture, and the largely subsistence nature of production in the zone, the report focuses on identifying how to proactively promote inclusive and gender-equity enhancing agricultural development. It notes that out-grower schemes and large scale commercial agriculture come with their own set of structural vulnerabilities for the poor. The policy agenda thus needs to explicitly consider how agricultural modernization can be undertaken so as not to adversely impact equity and access to land by the poor.

At the heart of the human development approach is the recognition of interlinkages between social and economic phenomena and the importance of sustainability. The report focuses on these issues and also explores how initiatives such as the *one village one dam, one district one factory* can not only create multiplier effects and local development opportunities but help make the transformation processes and local development more resilient.³¹

The metrics by which progress is measured by the human development approach are more holistic. Regular monitoring across human development indicators can help identify actions to prevent mal-development and a widening of disparities within the zone; point to how synergies and tradeoffs between social, economic and environmental policies and initiatives can be addressed; and facilitate discussion on whether the purported benefits of the various initiatives are in line with people’s aspirations and whether most people benefit. The basic concerns of human development and the impacts of inequality as reflected in indices such as UNDP’s Human Development Index (**HDI**) and the inequality adjusted HDI and the **GDI** (the ratio of the female to the male HDI which reflects gender inequalities in achievement in the HDI) and measures of Social Exclusion take on added importance. Sub-national measures of the HDI have played an important role in promoting the adoption of measures to tackle sub-national socio-economic disparities.

Critical to all of this is ensuing **voice** and **empowerment**. Tackling traditional norms and practices is particularly important to ensure that social, political economic inclusion does not take place on unequal terms for women and vulnerable groups or communities.

³¹ The poor do not automatically benefit from emerging opportunities and risk being left further behind. The role of social protection as a social safety net and economic stimulus is critical in areas which are at significant distances from current and future dynamic centres of growth, and which are under-served by public services and affordable transportation. When social protection programmes are aligned with productive policies targeted or benefitting the poor, the benefits – through multiplier impacts unleashed by spending and demand for local products - can be significant. See Devereux (2009) who points to potential positive synergies between social cash transfers and agricultural policy, with the former equipping poor to better benefit from the latter. Complementary interventions are needed to help alleviate asset constraints and agricultural and market risks.

1.8 Towards Socio-Economic Transformation for Enhanced Human Development

Conventionally, transformation has often been viewed as involving a political transition or as focused on economic transformation. However, such attempts are likely to fall short if explicit regard to the *holistic or total character* of societal transformation as well as the *specific contexts* in which the concrete transformation takes place (Kollmorgen, 2010, p.4) are not paid heed to. The basic elements of a transformative development agenda for enhanced human development in the North are sketched out in Figure 1.4.

The first building block concerns transformation of the prevailing conditions of production through investment in productive and transportation infrastructure and services. Given the significant deficits in this regard, without investment at scale, it is difficult to conceive of choices and opportunities for people in the zone being enhanced. However, **given the subsistence nature of the economy and the very high levels of hunger and malnutrition in the zone, productive investments need to be complemented by social policy and the promotion of productive inclusion** (through a focus on capabilities, skills, protections and opportunities).



FIGURE 1.4 TOWARDS AN INTEGRATED APPROACH TO SUSTAINABLE AND INCLUSIVE HUMAN DEVELOPMENT

Source: Author's own construction

In particular, there needs to be a focus on small farmers to ensure income and food security in the context of the agricultural transformation. Agriculture and livestock need to be linked to industry through agro-processing and services to diversify the productive base of the zone's economy; and natural resources need to be managed sustainably.

People's capabilities need to be enhanced through an investment in social sectors to ensure adequate provision of services and opportunities. "Although, in the long term, the basic needs of the community can only be sustained by a viable economic base, the inadequacy of social services and general infrastructure in the rural areas is so great that it is itself a constraint on the development of these productive forces" (Songsore and Denkabe, 1995, p.119).

Improving quality and access to these services is itself an important component of the transformational human development agenda. In the absence of such investments and an explicit focus on increasing capabilities, economic transformation will likely increase inequities within the zone.

Sustainable natural resource use and sustainable livelihoods are mutually reinforcing. Addressing poverty and diversifying livelihood opportunities can mitigate the overwhelming pressures that drive unsustainable use of land, mineral and forest resources (for charcoal production but also for farming). In recent years, illegal small mining (popularly known as *galamsey*) has emerged as a coping strategy with adverse implications for the environment, the economy and people. There is a need to support diversification of livelihoods combined with a promotion of sustainable approaches to artisanal mining, charcoal production, etc.

Measures tackle land degradation, deforestation and other unsustainable agricultural practices, can form the basis of sustainable livelihoods. Further, both mitigation and adaptation measures are needed to promote sustainable agriculture, forestry and resilience for livelihoods in the face of climate change.

It is also necessary to proactively address the emerging tensions around competing uses of land and water and to mitigate conflicts over this issue. While there is a clear need to focus on irrigation initiatives (local and regional) to address the over-dependence on a single (increasingly variable) rainy season, integrated water management is also key. Measures range from integrated flood management for the entire river basin to promoting the sustainable use of underground and above ground water resources.

Enhanced human development and socio-economic transformation is not possible without **inclusive** and **good governance arrangements** that are responsive to people's aspirations, that are well-resourced to ensure effective implementation, and that enable government to be proactive in addressing the drivers of conflict and emerging threats to human security.

The transformation agenda calls for **change in mindsets, policy and practical experimentation**, the promotion of **social and economic entrepreneurship** and shifts in ways of doing things. This cannot be underscored enough. It needs to build on **indigenous knowledge** and **local cultures**, particularly as regards sustainability; and **animation and social mobilization** among non-state actors such as CSOs and NGOs is needed to strengthen the collective voice of civil society in the transformation processes at local and regional levels.

The developmental roles of the **state** and the **global community** are also of pivotal importance for poverty reduction and transformative development in the context of the historical legacy of under-development of the zone, pervasive market failures and the shift to *Ghana beyond Aid*. Innovative development cooperation, partnerships and financing are needed to underpin transformation as well as to crowd-in investment in the North. Agglomeration economies appear to effectively favour private investment the South.

An integrated approach would facilitate achievement of these objectives through addressing synergies and inter-linked constraints. As Sachs (2012) puts it, it is "our hope that through public leadership, community participation, cutting-edge technologies, and private investments, the region will slash poverty, hunger and disease and begin to achieve high and sustained growth" (p.1); and one may add, transformative human development as well!

1.9 Structure of the Report

These building blocks are elaborated in the various chapters of the report. **Chapter 2**, which follows this overview, is a foundational chapter. It presents the demographic profile, human development and related poverty indices, and an analysis of drivers of low human development in the zone. **Chapter 3** focuses on the structure of production and jobs with a view to unpacking the factors behind the limited choices and opportunities. **Chapter 4** analyzes the state of the environment and natural resource management, explores the intersection with deep poverty, and discusses emerging threats and options. **Chapter 5** focuses on transformational changes in infrastructure and productive facilities which are needed to enhance investment, people's choices and to strengthen their capabilities through promoting improved services. **Chapter 6** focuses on governance and institutions as well as prevailing and emerging threats and conflicts. The report concludes with **Chapter 7** which focuses on policy issues that need to be addressed going forward as well as concrete recommendations for consideration regarding enhancing human development outcomes in the zone.

That said, issues are treated in a holistic fashion. For example, migration features in chapters 2, 3 and 4. Issues related to land use are addressed in the context of management of natural resources and climate change (chapter 4) as well as a governance matter (chapter 6). Gender equity concerns, for example, are also mainstreamed across the various chapters.

1.10 Data for the report

The report draws on and synthesizes various reports and analyses. A NGHDR field survey was commissioned in 2014. Details are in the appendix 2. In addition, data was drawn on from various sources. It should be noted that while disaggregated data continues to be a challenge for the zone, considerable headway was made through the comprehensive mapping and analyses put together by the regional planning authority (SADA, precursor of the Northern Development Authority) for the regional planning exercise that has been underway the past few years.

Further, to the extent official national data sources are used, particularly survey data, there are often limitations regarding timeliness and frequency data collection. For example, the Ghana Living Standards Survey (GLSS), which is the basis for poverty figures, is undertaken every 5 years. To address issues of disaggregated data, the report relies on innovations where possible. For example, it makes use of poverty maps developed by Ghana Statistical Service through the application of the Small Area Estimation technique.

Sources for selected areas are as follows.

- **Poverty:** GSS, latest figures 2012/13; new figures are expected in 2018.
- **Employment and structure of the economy:** SADA, LUSPA, other reports, NGHDRS
- **Education:** GES and MoE, latest figures 2016
- **Health:** MoH reports, latest 2015
- **Spatial analysis:** LUSPA (previously TCPD), reports from SADA and others
- **Infrastructure, Irrigation etc.** SADA, other reports, studies

Chapter 2: Demographic Profile and the State of Human Development

2.1 Introduction: Implications of the Demographic transition for Human Development

Before undertaking an analysis of the measures and drivers of human development in the zone, it is important to consider the demographic and settlement profile. This has significant implications for ensuring good human development outcomes and the patterns underscore the importance of transformation, and proactively planning and financing timely investments to deliver services and strengthen capabilities.

Like many other countries which are still experiencing a demographic transition, Ghana has a very young population, particularly in the North. The fertility rates and average household size in the Northern Savannah Zone were found to be much higher than the national average. Children under 10 years in the zone comprised close to a third of the zone's population (26.5%) This has major implications for planning the provision of services (e.g., educational facilities and quality education as well as healthcare for mothers and children) and investments in the very young so that they get a good head-start (early childhood development).

The economy also needs to generate job opportunities for the large numbers of people joining the labour force. This is already a challenge for the zone, as evidenced by the significant levels of out-migration of young people leaving seasonally and otherwise in search of jobs. Even though the zone has larger family sizes than the national average, given the high rates of out migration, the zone has a lower share per land area of the total national population, with some districts losing significant numbers to out-migration.

The economic dependency ratio (i.e. the ratio of total economically inactive population to the employed population) for the NSZ was 81.4, which was higher than the national ratio (69.7). This leaves room for the phenomenon of child labour, children dropping out of school to work and the continued employment by the elderly (aged over 64 years) which is not visible in the age dependency ratio.

Fostering socio-economic transformation could help to address the demographic transition and distress out-migration patterns by improving wellbeing and security and enhancing the creation of economic opportunities in the zone.

2.2 Demographic Characteristics

Most of Ghana's population is housed in the southern and coastal parts of the country. Data derived from the 2010 Population and Housing Census indicates that the total population of the NSEZ was 5,826,516. While the zone accounted for almost a quarter (23.7%) of the total population of Ghana (24,568,823), it encompassed over 50.4% of the landmass. In comparison, Greater Accra and Ashanti, with 1% and 10 % of the land areas, housed 16% and 19% of the total population of Ghana respectively.³²

³² See LUSPA (previously TCPD) (2015) Spatial Development Framework for the Northern Savannah Ecological Zone (2015-2035) Volume I.

The majority of the zone’s population lives in the Northern Region (42.6%) which is also the fastest growing region in the country. The region accounted for 11% of the national population in 2010, and by 2035 it is expected to account for over 23% of the national population and almost half of the zone’s population (47%).³³ See Figure 2.1.

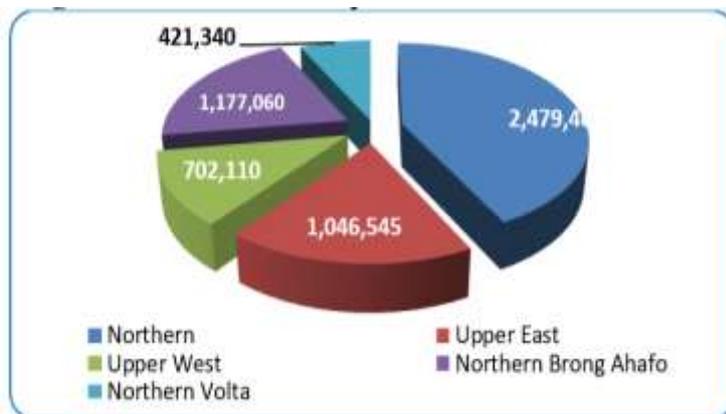


FIGURE 2.1 DISTRIBUTION OF POPULATION WITHIN THE NSEZ

Source: Ghana Statistical Service (GSS, 2012).

2.2.1 Age and Sex Structure

In 2010, 75.3% of Ghana’s population was under the age of 35, and those under 10 years comprised 26.5% of the population. While Greater Accra had 21.6% of its population below 10 years, the figure for the Northern Region was 32.9%. Similarly, while Greater Accra had 31.3% of its population below 15 years of age, for the Northern Region it was 44.8%, for Upper East it was 41.5% and for the Upper West 41.7%.³⁴ For the age groups 10–14 years and 15–19 years, there were more males than females in the zone. See age pyramid in figure 2.2.

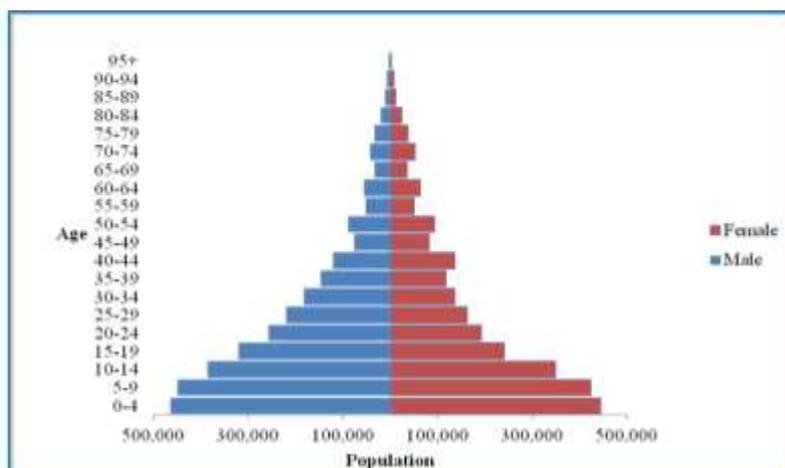


FIGURE 2.2 AGE-SEX STRUCTURE FOR THE NSEZ

Source: GSS (2012) Population and Housing Census (PHC)

³³ LUSPA (previously TCPD, 2015) NDSF Vol II, page 25.

³⁴ According to the 1992 Constitution of Ghana (Republic of Ghana, 1992), a child is a person below the age of 18 years. For demographic purposes, however, the population is often classified into children (less than 15 years), working population (15-64 years) and older persons (above 64). The GSS (2013) PHC Monograph on Children, Adolescents and Young People in Ghana takes children to be in 0-9 age group or less than 10 years.

This may be due to the influence of two phenomena. The first is the practice among some ethnic groups of sending female children to live with paternal aunts and where these aunts lived outside the NSEZ it would contribute to reducing the ratio of girls to boys. The second is the migration from some parts of the zone of young girls to the southern part of the country for employment as porters (kayayei) in the commercial centres. Overall, however, there were slightly more females (51.2% of the population). This was the case in all the regions except for the Volta Region where there were slightly more males (50.7%) than females (49.3%). The Upper East Region had the highest proportion of females i.e., (51.6%), followed by Upper West (51.4%), Northern (50.4%) and Brong Ahafo (50.3%).

2.2.2 Distribution of Households, Size and Composition

The number of households in NSEZ was 923,049 (GSS, 2012). This is equivalent to 16.9% of the number of households in Ghana. The bulk of the zone's households (34.5%) were in the Northern Region, 19.2% in the Upper East Region, 8.3% in the Volta Region, 26.0% in Brong Ahafo Region and 11.7% of households in the Upper West Region.

The average household comprised 6.1 persons, significantly higher than the national average of 4.4 persons. The region with the highest average household size is the Northern Region (7.7) while Brong Ahafo Region has the lowest average household size (5.0). The Upper East Region, the Upper West Region and the Volta Region registered average household sizes of 5.9, 6.3 and 5.4 persons respectively. See Appendix 3 for details. Possible reasons for the large household sizes in the Northern Region are high fertility, polygyny and the common practice of extended family members living together.

Statistics from the 2010 Population and Housing Census reveal that men constituted a very high proportion of household heads (75.3%) compared to women (24.7%) in the NSEZ.³⁵ Among the regions, the proportion of male-headed households ranged from a high of 85.0% in the Northern Region to a low of 65% in the Brong Ahafo Region. Except in the Northern Region, at least one out of five households in the Zone was headed by females.

The traditional nuclear family made up about a quarter of households in the zone, ranging from about 28% of households in the Northern Region to 22% in the Volta Region. Extended family households comprised the largest share of households in the Northern Region (42%), Upper West Region (34%) and the Upper East Region (31%). Some members of these households include people who are not relatives of the household head. Single parent households constituted about 22% of all households in the zone —a significant proportion. This type of household was more likely to be found in the Brong Ahafo Region (21%) and Volta Region (27%).

2.2.3 Marriage and Fertility

Marital status is an important factor influencing population growth. Information on marital status is also useful for the planning of housing development as well as understanding the problems of dependency and the supply of labour.

³⁵ According to the GSS (2012), the head of the household is defined as the person who is responsible for the daily welfare of all members of the household, including access to food, clothing, and housing.

Evidence from the 2010 Population and Housing Census indicates that the differences in Total Fertility Rate (TFR) among the regions in the NSEZ was not significant.³⁶ The zonal average (3.51), however, surpassed the national average (3.28). The plausible reasons for the higher-than-national average fertility rates in the NSEZ include lack of adequate exposure to contraceptive use, low levels of educational attainment, early entry into marriage and high incidence of teenage pregnancy and investment in children as insurance in the context of high infant and child mortality. See Appendix 3 for details.

2.2.4 Age and Economic Dependency Ratios

Dependency ratios provide a measure of the extent of the population which is dependent (not working) for age or economic reasons. Figure 2.3 presents a picture of the extent of the population most likely to be economically dependent as well as those dependent because of age compared to the group most likely to be economically active in the NSEZ.

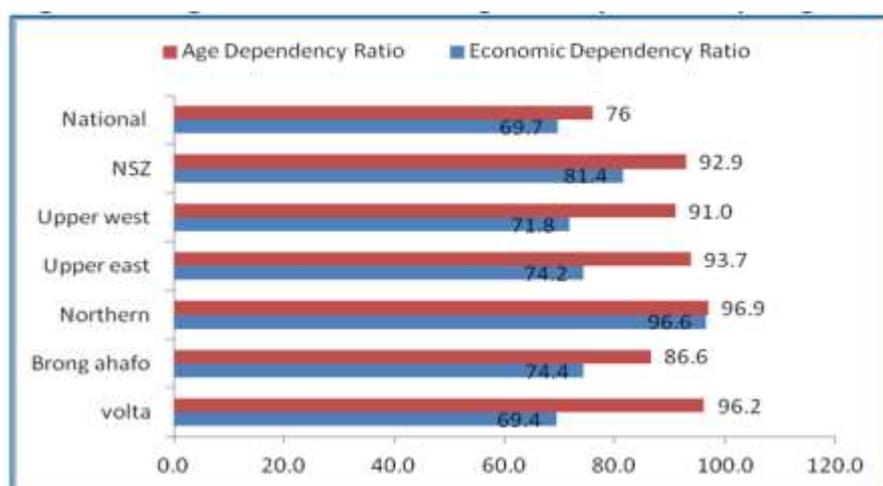


FIGURE 2.3 AGE AND ECONOMIC DEPENDENCY RATIOS BY REGION

Source: Ghana Statistical Service, 2010 Population and Housing Census

In 2010, the age dependency ratio³⁷ for the NSEZ was 92.9 (Ghana PHC, 2010). This suggests that, on average, every working person in the NSEZ effectively needed to take care of one other person. The zonal ratio was above the national ratio (76.0), where there were a lower number of dependents. The Brong Ahafo region had the lowest total age dependency ratio (86.6) while the Northern Region registered the highest dependency ratio (96.6). The dependency ratios for the Upper East Region and the Volta Region exceeded the average for the NSEZ recording the following ratios: 93.7 and 96.2 respectively.

The high dependency ratio observed for these regions likely also reflects the significant out-

³⁶ The total fertility rate (TFR) is the average number of live births among 1,000 women exposed throughout their childbearing years (15–49 years) to the schedule of a given set of age specific fertility rates, assuming no women died during the childbearing years. In other words, it is the average number of children a woman will have given birth to by the end of her reproductive years if current fertility rates prevailed.

³⁷ The age dependency ratio is a measure of the dependent population (persons aged less than 15 years and those above 64 years) relative to the working population (i.e. the population aged 15–64 years). The larger this ratio, the heavier the potential economic burden the working population has to bear.

migration of working age (e.g. those within age groups from 15–64 years old) people to the South in search of jobs, leaving behind a large number of children and older people, who are considered to be dependents. It should be noted that the age dependency ratio effectively assumes that all persons aged 0–14 years or 65 years and above do not work or cannot work and are, therefore, dependent on others. It also assumes that all persons aged 15–64 years are working and therefore not dependent on others. Thus, there is the tendency to ignore the fact that there are many economically independent older persons as well as economically dependent unemployed adults. Hence, it is useful to consider the economic dependency ratio. The economic dependency ratio, i.e. the ratio of total economically inactive population to the employed population is lower than the age dependency (Figure 2.3) ratio. Like the age dependency ratio, the figure shows that the economic dependency ratio in the NSEZ (81.4) is higher than the national average (69.7). This is likely to be driven by the phenomenon of child labour, children dropping out of school to work, and continued employment by the elderly (over 64 years). The Northern region recorded the highest economic dependency ratio (96.6 %), almost the same as the age dependency ratio. The dependency ratios are useful as crude indicators of potential levels of economic, physical and social support needed by persons in these broad age groups.

2.2.5 Out-Migration

The findings of the Ghana LUSPA (previously TCPD)’s Spatial Development Framework (SDF) Report for the NSEZ (2015) buttress the above reflections and point to significant levels of out migration from the three northern and the Volta Region. In 2010, life-time out migrants from Upper West Region represented 37% of that region’s population, while for Volta and Upper East it was close to a third (32% and 31% respectively) and for the Northern Region it was under a fifth (17%). When coupled with low levels of in-migration, the trend implies that many parts of the zone experience net out migration, mostly to Southern Ghana (Table 2.1).

Table 2.1 Summary of Inter-regional migration

	total population '000	in-migration '000	out-migration '000	net-migration '000	% in-migration	% out-migration	% net migration
Western	2,376	562	279	282	24	12	12
Central	2,202	374	612	-238	17	28	-11
G. Accra	4,010	1,598	323	1,275	40	8	32
Volta	2,118	146	682	-536	7	32	-25
Eastern	2,633	418	750	-332	16	28	-13
Ashanti	4,780	854	614	240	18	13	5
Brong Ahafo	2,311	458	340	118	20	15	5
Northern	2,479	101	433	-333	4	17	-13
Upper East	1,047	61	329	-268	6	31	-26
Upper West	692	43	253	-209	6	37	-30

Source: LUSPA (previously TCPD) 2015, Vol I, p. 20

The combined phenomena of high fertility rates, relatively limited levels of investment in

enhancing human capabilities and capacities, and the limited economic opportunities that are reflected in these high rates of out-migration – including by the very young - are significant issues that need to be tackled by the transformation agenda for the zone.

2.2.6 Ethnic and Religious Profile

The zone is ethnically diverse. See table 2.3.

Table 2.2 The Ethnic Profile of the Northern Savannah (%)

Ethnic	Brong Ahafo	Volta	Northern	Upper East	Upper West	NSEZ	Ghana
Akan	48.6	5.1	3.1	2.3	1.4	12.7	47.5
Ga-Dangbe	1.1	4.0	0.3	0.1	0.1	0.7	7.4
Ewe	3.8	22.3	1.7	0.3	0.4	3.2	13.9
Guan	7.1	19.0	8.6	0.3	0.8	6.6	3.7
Gurma	9.8	41.0	27.3	4.7	1.2	17.4	5.7
Mole-Dagbani	20.6	0.9	52.7	74.7	73.0	48.5	16.6
Grusi	5.6	0.2	3.7	8.6	20.6	6.7	2.5
Mande	1.7	0.2	0.5	5.6	0.3	1.6	1.1
Others	1.7	7.1	2.1	3.4	2.1	2.6	1.4

Source: GSS (2012), 2010 Population and Housing Census

In contrast to the national profile, the Mole-Dagbani dominates the population of NSEZ accounting for 49% of the total. Whilst the Akan account for about 48% of the national population, they make up about 13% of the population in the zone. The ethnic profiles of the Northern, Upper East and Upper West regions are quite different from that of the transition zones of Brong Ahafo and Volta regions. The Mole-Dagbani ethnic group dominate the Northern, Upper East and Upper West regions and comprise almost 75% of the population of the Upper East Region, 73% of the Upper West Region and 53% of the Northern Region. Not unexpectedly, there is a higher concentration of the Mole-Dagbani in the Northern, Upper East and Upper West than in the Volta, Brong Ahafo or the country as whole, because they are indigenes of these three regions. The Akan are single largest ethnic group in the Brong Ahafo (48%) whilst the Gurma are the single largest group in the Volta (41%). The ethnic profile of these two regions is more diverse than the remaining three regions. No single ethnic group accounts for more than 50% of the population in the zone.

Christianity and Islam are the two dominant faiths in Ghana. It is believed Christianity was introduced to Ghana in the form of Catholicism and thrived in the coastal cities of Elmina and Cape Coast in the latter part of the 15th century. Calvinism was later introduced by the Dutch and Anglicanism and Methodism by the British.

By the late 19th century, all the different Christian sects had established strongholds in various parts of Southern Ghana. Islam arrived in Ghana decades earlier than Christianity and it is believed that the Asante Kingdom was at a point under Muslim influence before the arrival of Christian missionaries. Islam was introduced into the Northern territories of Ghana by Dyula Muslims in the mid-15th century (Sanneh, 1997). The Dyula Muslims were mainly Wangara, Yarse and Hausa merchants who came to Northern Ghana mainly for trade, some of whom later moved southwards upon the invitation of chiefs in Bono and Asante to engage in the gold trade (Sarbah, 2010). In the early 20th century, a relatively new sect of Islam, the Ahmadiyya Muslim Missions arrived in the Central Region of Ghana. The traditional religion is the oldest religion in Ghana. Its practice over the years has waned largely due to the influence of Christianity and Islam.

Table 2.3 The Religious Profile of the Northern Savannah (%), 2010

Religion	Brong Ahafo	Volta	Northern	Upper East	Upper West	NSEZ	Ghana
No Religion	7.2	7.7	2.7	2.8	3.5	4.3	5.3
Christianity	61.1	41.6	21.0	41.7	44.3	39.0	71.2
Islam	19.3	4.3	60.0	27.1	38.1	40.4	17.6
Traditional	3.6	17.0	16.0	27.9	13.9	15.8	5.2
Others	0.5	0.6	0.4	0.6	0.3	0.5	0.8

Source: GSS (2012)

The religious profile of the zone is different from the national profile. While the majority of Ghanaians adhere to the Christian faith, in NSEZ an almost equal proportion of the population is Christian or Muslim. In the Northern Region, Islam dominates (60%) while in the Brong Ahafo Region, Christianity dominates. Except for Brong Ahafo, there is also a strong presence of believers in the traditional religions. In the Upper East Region there is an almost equal proportion of adherents to Islam and to traditional religions (27% and 28% respectively). The proportion of the population that are adherents to traditional religions, in all but the Brong Ahafo region, is larger than the national average by a wide margin. See Table 2.3.

2.3 Human Development: Indices and Analysis of Drivers

Human development is a process of enlarging people's choices (UNDP 1990, p. 10). At the heart of the human development approach is the recognition of the interlinkages between social and economic phenomena, the importance of the equity and empowerment dimensions³⁸ as well as sustainability. Human development involves improving the life chances of individuals irrespective of their socio-economic status and geographical location. This section provides a quick overview of the main measures of human development followed by the presentation of estimates for the zone and an analysis of drivers.

³⁸ The capabilities approach is central to human development. Linked to this are issues of individual choice but also social norms and deprivations that can undermine capabilities, entitlements and outcomes- e.g., for women, minorities etc. – as well as the need to recognize that progress implicitly needs to be broad-based.

2.3.1 Measures of Progress in Human Development

Traditional measures used in monitoring progress in human development are limited in scope to facilitate measurability and comparison across countries, but several innovations have been introduced over time. The **Human Development Index (HDI)** is the most commonly used measure. It is a composite index which draws on achievements in three aspects of human development: health, education and living standards. Since 1990, the HDI has had three dimensions: a long and healthy life, knowledge, and a decent standard of living.

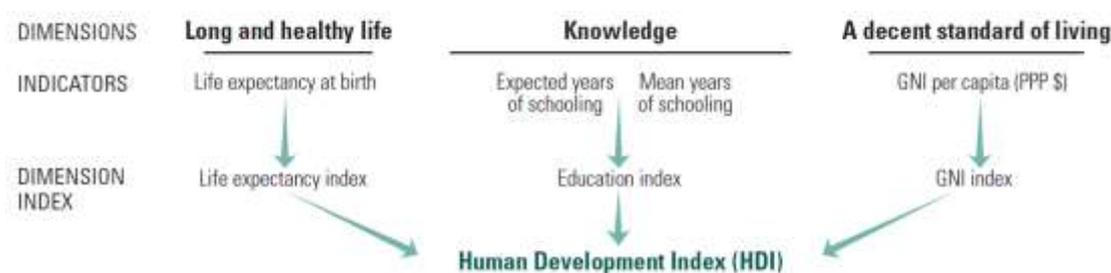


FIGURE 2.4 HDI DIMENSIONS AND INDICATORS

Source: UNDP (2016) [see Technical Notes p.1]

Table 2.4 Global Goalposts for the Human Development Index

Dimension	Indicator	Maximum	Minimum
Health	Life Expectancy (years)	85	20.0
Education	Mean years of schooling	15	0
	Expected years of schooling	18	0
Standard of Living	Per capita income (PPP\$)	75,000	100

Source: UNDP (2015), Training material for producing national human development reports.

The indicators used to inform each dimension have, however, changed over time and new measures have been proposed (See Appendix 1). The HDI was introduced as an alternative to conventional measures of economic development such as income per capita and the rate of economic growth. While income has the potential to expand people’s choices, it is also an imperfect guide to the human development successes of a given country or region. It should be noted that the HDI is not a comprehensive measure of human development and that it shares all the limitations of composite measures but keeping it simple has helped to ensure wide-spread use.³⁹

As a summary measure of (average) human development, the HDI, typically calculated at the national level. See table 2.6 for Ghana. Disaggregation of the HDI are also being undertaken in terms of regions, gender, race/ethnicity to unmask disparities. It should be noted that there are complexities in estimating the disaggregated HDI because of data issues. E.g., GNI per capita and life expectancy at birth) are often not available sub-nationally and need to be estimated, including through use of proxies.⁴⁰

³⁹ Since 1990 additional dimensions have been proposed, including political freedom, the environment, safety from violence, work, cultural liberty, and so on (see Alkire, 2010)

⁴⁰ There are two main steps involved in computing the HDI. The first step is to create the separate indices for each of the three dimensions. These dimension indices (one for long and healthy life, one for knowledge and

Table 2.5 Components of HDI for Ghana for various years

	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2011 PPP\$)	HDI value
1990	56.8	7.6	4.9	1,897	0.455
1995	57.5	7.7	5.7	2,035	0.473
2000	57.0	8.0	6.1	2,228	0.485
2005	58.7	8.7	6.4	2,574	0.510
2010	60.6	10.9	6.8	3,036	0.554
2011	60.8	11.2	6.8	3,324	0.563
2012	61.0	11.5	6.8	3,472	0.570
2013	61.2	11.7	6.9	3,725	0.576
2014	61.4	11.4	6.9	3,724	0.575
2015	61.5	11.5	6.9	3,839	0.579

Source: UNDP Human Development Report Office 2016

Table 2.6 Components of HDI for the Northern Savannah (2014)

	Life expectancy at birth (years)	Mean years of schooling for ages 25 and above	Expected years of schooling (years)	GNI per capita (PPP US\$ 2011)	Life expectancy index	Education Index	GNI Index	Human Development Index (HDI) value
NSEZ		2.3	11.4	104	0.678	0.396	0.006	0.116
Ghana	61.4	6.9	11.4	3724				0.575

Source: Estimates by GSS for NSEZ⁴¹; for Ghana, Global 2015 HDR

Keeping these provisos in mind, as per the various indices (life expectancy, mean year of schooling, expected years of schooling and income), [the HDI for the NSEZ zone is computed as 0.116, far below that for Ghana \(0.575\) as a whole in 2014](#). The index reflects significant disparities in terms of education, as well as the quality of livelihoods which underpin incomes earned, as compared to the national average. The factors underlying the differentials for education (mean years of schooling was 2.3 years for the zone as opposed to 6.9 for Ghana) and for income levels (GNI/capita of \$104 as opposed to \$3724 in 2011 PPP terms for 2014).

[The estimate for the zone is technically not as robust as the national HDI estimate and is presented largely for illustrative purposes to facilitate discussion on the drivers of low human development](#). The significant differential from the national level points to how deprived and less developed the NSEZ is. Subsequent sections in this and other chapters delve into the depth of deprivation across the components of the HDI. Given the importance of livelihoods and the drivers of extreme poverty in the zone, chapter 3 explores this issue in greater detail.

one for decent standard of living) are then used to calculate the HDI. For each of the three dimension indices, the zone's achievements are normalized to a score between 0 and 1 using minimum and maximum values. The second step involves taking the geometric mean of the normalized indices which measured achievements in each dimension to compute the overall HDI.

⁴¹ (1) Life expectancy at birth is the average of the life expectancy of male and females in the NSEZ. (2) Mean years of schooling derived from the average of median years of schooling for the 4 regions in the NSEZ from the Ghana Demographic and Health Survey 2014. Volta (5.6 years), Northern (0.5 years), Upper East (2.1 years) and Upper West (1.0 years). (3) Expected years of schooling is derived by using as proxy the figure published for Ghana by UNDESA for 2014; (4) GNI per capita is estimated as a proportion of the Ghana's GNI per capita of US\$3724 PPP (2014 at 2011 PPP) as published in the 2015 global HDR. This proportion represents the share of total household expenditure of the NSEZ to the National Household Expenditure computed from the Ghana Living Standards Survey round 6 (2012/2013).

2.3.2 Poverty Indices and Analysis

Underlying the low HDI, particularly via the channel of per capita income, is the deep and pervasive poverty in the zone. Both **monetary and multidimensional poverty** are considered.

2.3.2.1 Monetary Poverty

Ghana was on track to reach the target of halving poverty well before the target year of 2015. Despite progress at the national level, GLSS (2012/2013), data suggests that poverty was more than double the national average (24.2%) in the in the Upper East, Upper West and Northern Regions in 2013. The Northern, Upper East and Upper West regions have the highest poverty headcount ratios. See Figures 2.5 and 2.6. The incidence of poverty declined in all five areas (NR, UER, UWR, BA and Volta) of the zone, though it still remains very high.

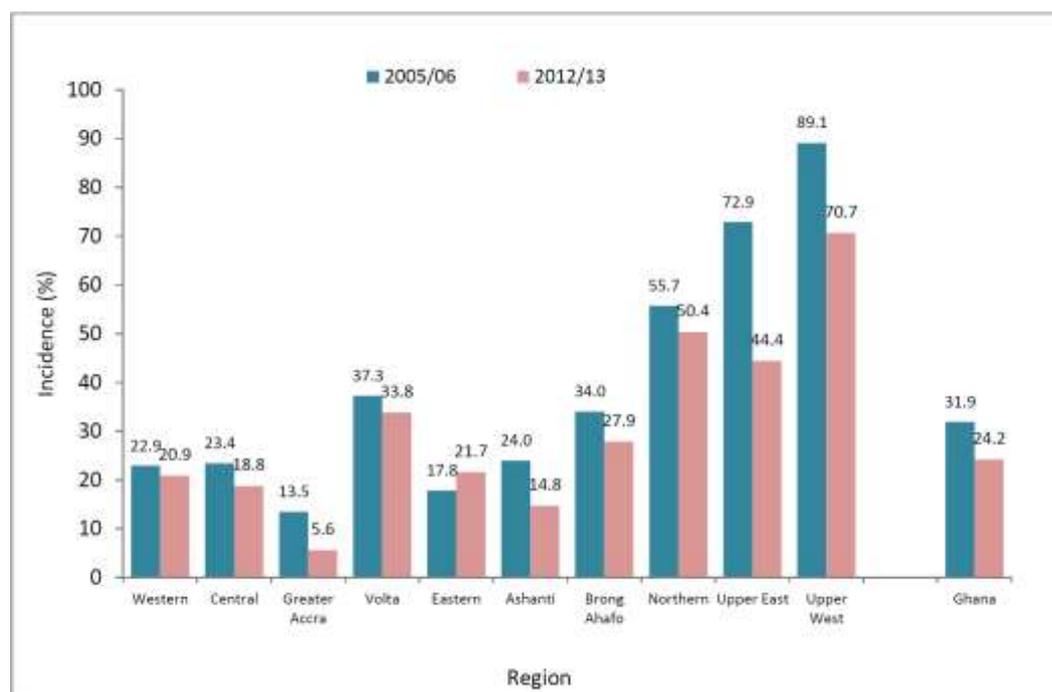


FIGURE 2.5 POVERTY INCIDENCE BY REGION (POVERTY LINE=GH¢1,314)

Source: GSS (2014) Poverty Profile in Ghana (all of BA & Volta regions are included)

Table 2.7 Poverty incidence & poverty gap by region (%), 2005/06 -2012/13

Region	Poverty incidence (P ₀)	Contri- bution to total poverty (C ₀)	Poverty gap (P ₁)	Contri- bution to total poverty gap (C ₁)	Poverty incidence (P ₀)	Contri- bution to total poverty (C ₀)	Poverty gap (P ₁)	Contri- bution to total poverty gap
2012/13					2005/06			
Western	20.9	7.9	5.7	6.8	22.9	7.3	5.4	5.0
Central	18.8	6.9	5.6	6.4	23.4	6.4	5.6	4.4
Greater Accra	5.6	3.8	1.6	3.5	13.5	5.9	3.7	4.7
Volta	33.8	12.1	9.8	11.0	37.3	8.7	9.2	6.2
Eastern	21.7	9.3	5.8	7.8	17.8	7.5	4.2	5.2
Ashanti	14.8	12.0	3.5	9.0	24.0	12.6	6.4	9.8
Brong Ahafo	27.9	11.4	7.4	9.4	34.0	9.8	9.5	7.9
Northern	50.4	20.8	19.3	24.9	55.7	21.0	23.0	25.2
Upper East	44.4	7.4	17.2	9.0	72.9	10.9	35.3	15.3
Upper West	70.7	8.4	33.2	12.3	89.1	10.0	50.7	16.4
All Ghana	24.2	100.0	7.8	100.0	31.9	100.0	11.0	100.0

Source: GSS (2014) Poverty Profile in Ghana (all BA & Volta regions are included)

The zone remains the largest contributor to national poverty, although the share of the 3 northern regions has fallen.⁴² See table 2.7. It should be noted, however, that the UER recorded the largest drop in extreme poverty incidence in the zone, and the country over the period 2005/6-2012/13. See Figure 2.6

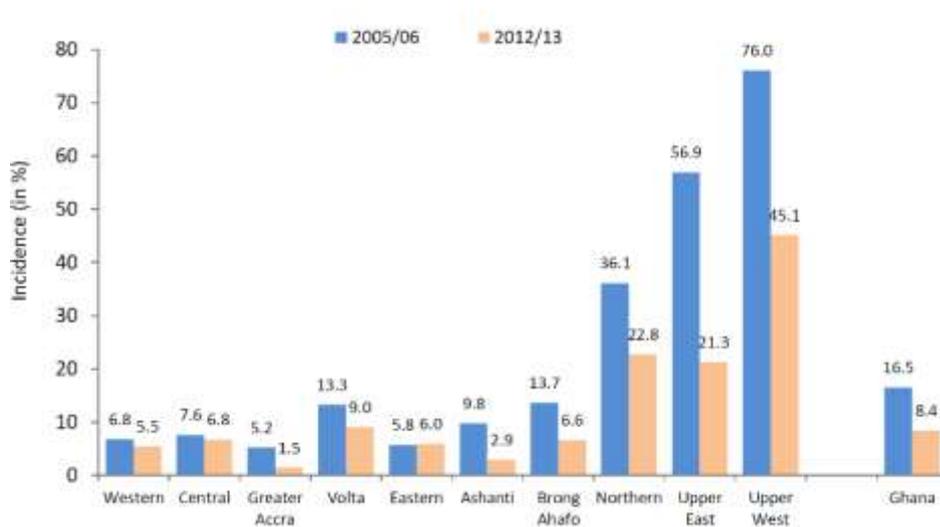
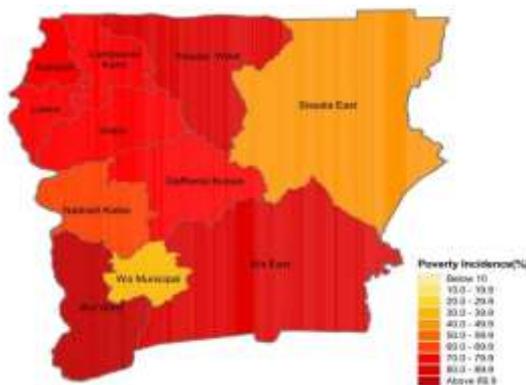


FIGURE 2.6 EXTREME POVERTY INCIDENCE BY REGION (POVERTY LINE = GH¢792.05)

Source: GSS (2014) Poverty Profile in Ghana (whole of BA & Volta regions included)

Map 2.1 Spatial Variation of Poverty Incidence by District in UWR

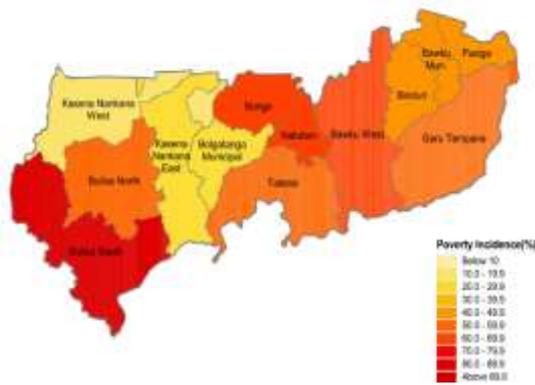


Source: GSS (2015) Poverty Mapping Report

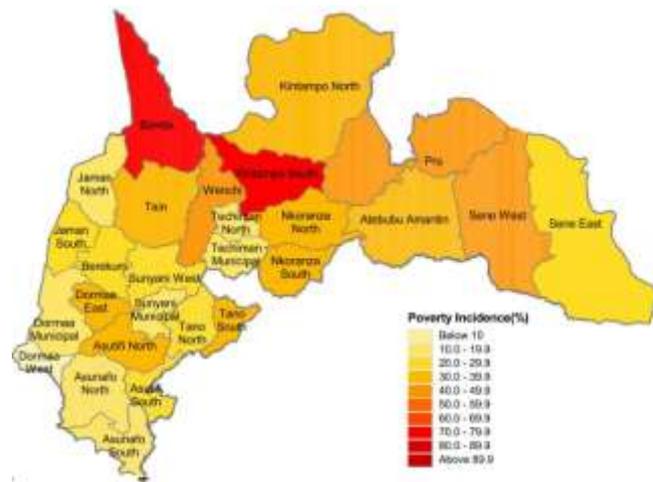
The incidence of poverty varies quite significantly within Ghana’s regions, and within the NSEZ. From the perspective of the SDGs and the imperative to **leave no-one behind**, it is important to go to the lowest level of dis-aggregation in terms of data collected on a systematic basis, i.e., **districts**. The UWR (see map 2.1) recorded the highest poverty incidence in the country, and within the UWR, incidence was highest in Wa West (92.4%) followed by Wa East (83.8%) and Sissala West (81.2%) districts. In the case of the UER (see map 2.2), the highest poverty incidence was observed in Builsa South District (84.4%) whereas Kassena Nankana West District (13.1%) had the lowest poverty incidence in the region.

⁴² The headcount index (P0) is also called the poverty incidence. This measures the *proportion of the population* that is poor. It effectively assumes that all poor households are in the same situation. The poverty gap index (P1) measures the *intensity* of poverty in a country, which is the average ratio of the gap to which individuals fall below the poverty line (for non-poor the gap is counted as zero). Ghana uses consumption-based measures. Extreme poverty is defined by a household’s total consumption expenditure falling below that required to meet the minimum calorie requirement (2,900 calories per adult equivalent per day). Additional expenditure on non-food items is added to the extreme poverty line to produce the absolute poverty line. Two nutritionally-based poverty lines are derived from this procedure: (i) A lower poverty line of 792.05 Ghana cedis per adult per year. (ii) An upper poverty line of 1314.00 Ghana cedis per adult per year.

Map 2.2 Spatial Variation of Poverty Incidence by District in UER



Map 2.3 Spatial Variation of Poverty Incidence by District in BA District in UER



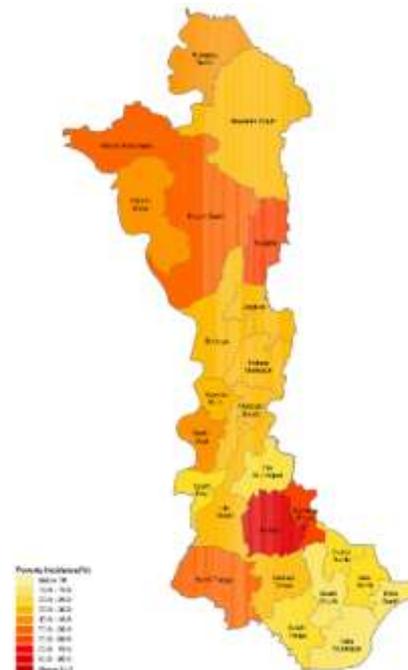
Source: GSS (2015) Poverty Mapping Report

For the Northern Region (see map 2.4), which has the third highest poverty headcount in Ghana, the incidence of poverty was highest in East Gonja (84.2%), followed by Bole (79.4%) and Kpandai (76.9%) districts.

Map 2.4 Spatial Variation of Poverty Incidence by District in NR



Map 2.5 Spatial Variation of Poverty Incidence by District in Volta



Source: GSS (2015) Poverty Mapping Report

In comparison, the most urbanized Tamale Metropolis had the lowest poverty incidence (24.6 %). The incidence of poverty was lower in the other regional capitals as well. The clearly lower levels of poverty in urban as opposed to rural areas is evident in Figure 2.7.

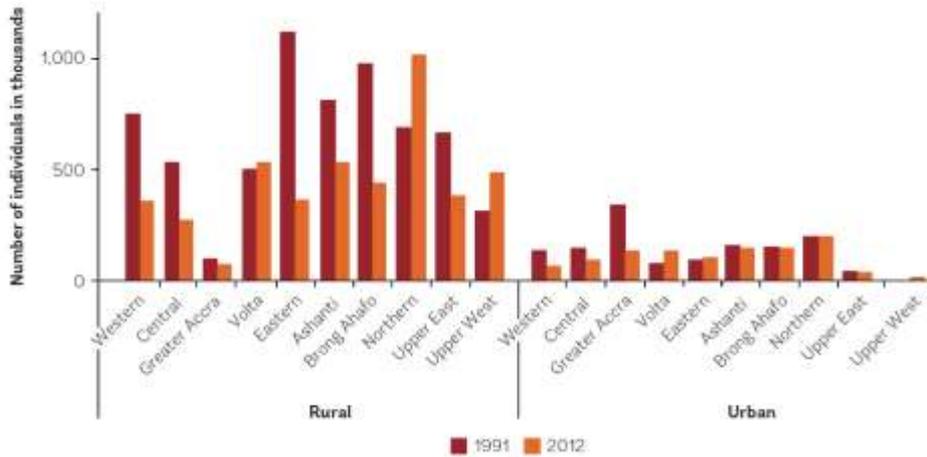


FIGURE 2.7 THE POOR IN RURAL AND URBAN AREAS, BY REGION (1991–2012)

Source: Molini et.al. (2016); calculations based on analysis of data from GLSS 3-6

Given the importance of urbanization and agglomeration of population for service provision and opportunities for poverty reduction, it is critical to focus on facilitating sustainable urbanization not just in the regional capitals but also in 2nd and 3rd tier cities. The Spatial Development Framework for the NSEZ underscores the importance of articulating a strategy for a ‘spatially efficient and functional settlement network aimed at addressing socio-economic developmental challenges of the zone’. The draft concept plan for the NSEZ proposes a structure in this regard. See figure 2.8

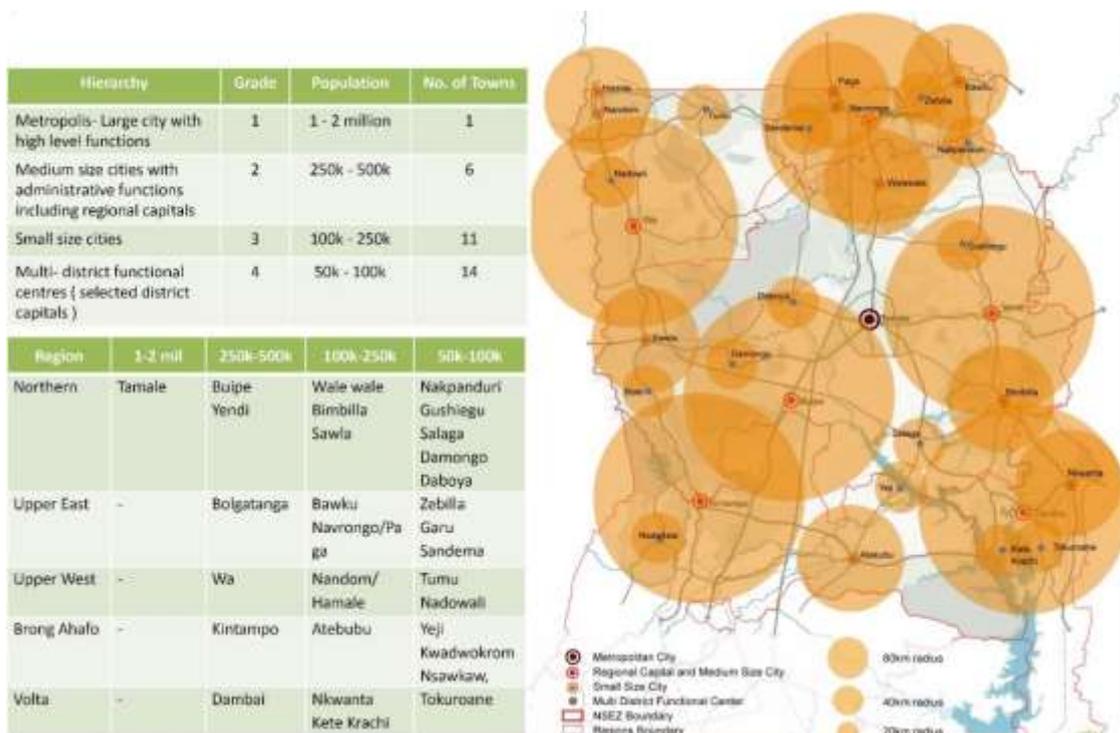


FIGURE 2.8 PROPOSED URBAN CENTRES HIERARCHY

Source: SADA (draft concept plan for NSEZ)

Appropriate levels of health, educational and other social amenities are to be outlined for each city tier. Separately, but related to the challenge of supporting broad-based urbanization the Northern Region, to the extent that significant tracks of uninhabited arable land are available, it may be possible to undertake agricultural modernization at scale and identify sites for population to concentrate for better access to services. In the more compact districts of the UWR, where poverty is both high and deep for a significant share of the population, it is possible to have a cost-effective concentrated focus on poverty reduction. Geographical targeting of social protection can also be undertaken in areas of deep poverty if it's not already.⁴³ Ensuring that minimum needs can be met allows for the poor to effectively engage in productive activities.

2.3.2.2 Multidimensional Poverty

In Ghana, consumption expenditure related to basic calorie and non-food items are used to calculate the poverty line and the incidence of poverty which were discussed in the previous section. However, identifying and counting the poor based on consumption expenditure alone makes for several shortcomings. Firstly, it includes consumption expenditures that can be welfare-reducing. A household that spends large amounts of money on health and funerals that add to total consumption expenditure that places it above the poverty line will be classified as non-poor even though these expenditures may result in burdensome debt. Further, poverty is not always perceived or conceptualized solely in terms of consumption expenditure or income. See Box 2.1 for perceptions of poverty from focus group discussions.

Box 2.1 Some Perspectives on Criteria to Identify a Poor Person

Location	Men	Women
UER	<p>A very poor person:</p> <ul style="list-style-type: none"> Is someone who has no place to sleep Has no wife, children and property and is looked down upon by others. Has no farm Begs for money <p>A poor person:</p> <ul style="list-style-type: none"> Does not eat regularly Is weak and cannot work Has land but does not have the financial resources or labour to cultivate it. 	<p>A very poor person:</p> <ul style="list-style-type: none"> Has no sandals or shoes to wear. Has no seed to plant with the onset of the rains; Has no bullocks or donkeys to plough the fields like others <p>A poor person:</p> <ul style="list-style-type: none"> Eats twice a day but not to satisfaction
UWR	<ul style="list-style-type: none"> A very poor person cannot work to fend for him/herself. 	
NR	<p>A very poor person:</p> <ul style="list-style-type: none"> Is someone who has no one to turn to for help in times of need <p>A poor person:</p> <ul style="list-style-type: none"> Occasionally finds it difficult to make ends meet. Has no reserves for emergencies 	<p>A very poor person:</p> <ul style="list-style-type: none"> Has no food or shelter. <p>A poor person:</p> <ul style="list-style-type: none"> Has no assets but has just enough to eat.

Source: NGHDR Focus Group Discussions (2014)

⁴³ This would be aimed at specific geographic areas associated with high levels of poverty; while regionally targeted programmes are easier/likely to be more cost effective to administer, they can also encourage migration into targeted regions. It's important to have good national household registries for effective targeting.

Participants in the NG-HDR Survey were asked to discuss the characteristics of the poor and the chronic poor. Poverty was found to be characterized not only by insufficient food consumption and clothing but also by the lack of physical and financial assets, inadequate or non-existent supportive social networks and exclusion. The lack of assets such as land and livestock and ill health were highlighted in focus group discussions as the characteristics of the chronic poor across the zone.

In this regard, poverty is, in fact, multidimensional and can be viewed as having both income and non-income dimensions. Objective and subjective measures of poverty have been developed to capture the multi-dimensionality of poverty. Two measures of multidimensional poverty - the subjective poverty and an objective measure of poverty – that move beyond the income-based measures of poverty are looked at next.

2.3.2.3 Subjective Poverty

Subjective poverty is the individual’s perception of his or her poverty status or that of the household s/he is a member of. The perception of poverty status is influenced by income and non-income variables (e.g. health, education, employment and family status). The individual or household’s status relative to a reference group, past income levels and expected future income all play a role in influencing the perception of current poverty or well-being status. Subjective poverty or well-being, therefore, includes both income and non-income dimensions of a person or household’s status.

Respondents in the NG-HDR household survey (one woman and one man from each household) were asked to choose one out of five options that described the poverty status of their household. See Figures 2.9 and 2.10.

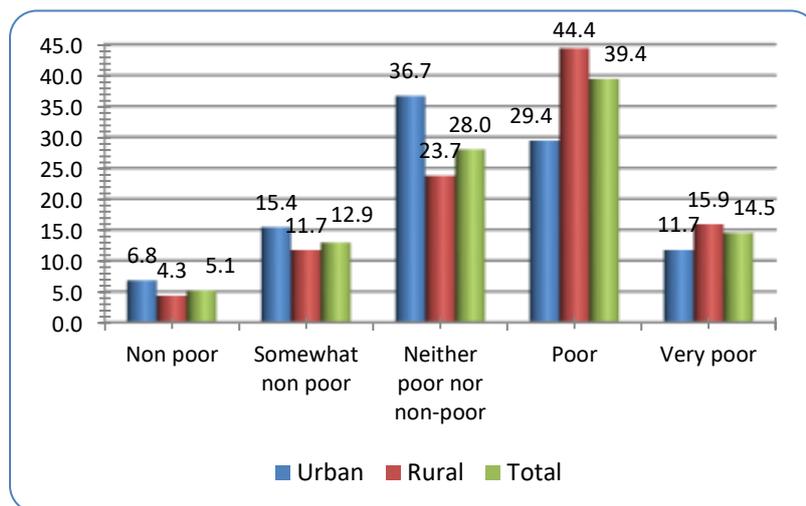


FIGURE 2.9 INCIDENCE OF SUBJECTIVE POVERTY BY LOCATION (%), 2014

Source: NGHDR Field Survey, 2014

The incidence of subjective poverty (poor and very poor) was higher among rural households than urban households. Almost 54% of household respondents perceived their households to be either poor (39%) or very poor (15%).

In spite of significant gains in income poverty, subjective poverty (sum of poor and very poor) was highest in the Upper East Region (59.1%). It was lowest for Brong Ahafo (approx. 47%). Respondents in the Upper East Region were much more likely to rank their households among the very poor as well (Table 2.8).

Table 2.8 Subjective Poverty of Households in the Northern Savannah (%), 2014

Region	Non poor	Some-what non poor	Neither poor nor non-poor	Poor	Very poor	Total
Volta	7.7	4.6	37.9	39.7	10.2	100.0
Brong Ahafo	3.4	10.6	39.3	34.4	12.3	100.0
Northern	3.9	9.9	27.6	44.0	14.6	100.0
Upper East	6.9	19.9	14.1	37.0	22.1	100.0
Upper West	8.7	24.2	18.8	39.3	9.0	100.0
Total	5.1	12.9	28.0	39.4	14.5	100.0

Sources: NGHDR Field Survey, 2014

Women respondents were more likely to describe their households as subjectively poor (57% compared to male respondents (51%). In the UER and NR, the incidence of subjective poverty among women was 62% and 62% respectively, suggestive of the difficult circumstances prevailing for women in these regions. Although a lower proportion of urban women considered their households to be poor, both urban and rural women were more likely than their male counterparts to categorize their households as poor. See figure 2.10 and Table 2.9.

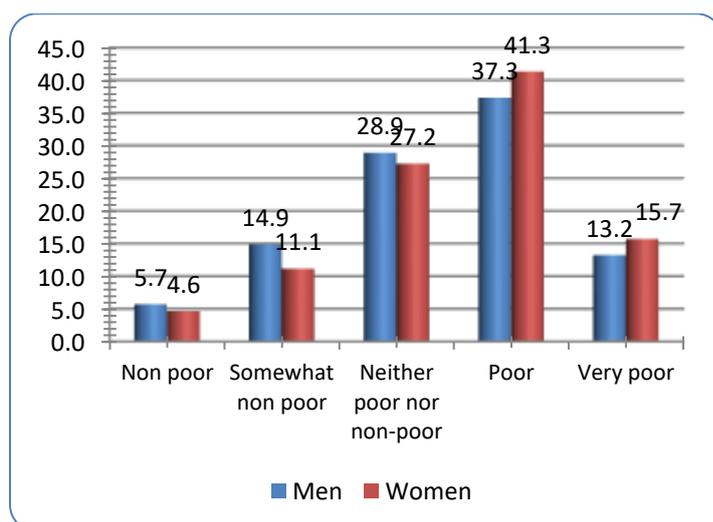


FIGURE 2.10 INCIDENCE OF SUBJECTIVE POVERTY BY SEX OF RESPONDENT (%), 2014

Source: NGHDR Field Survey, 2014.

It is interesting to note that the incidence of subjective poverty was higher than the poverty headcount based on consumption expenditure in all but the UWR. This may be because the surveys were conducted in different years. It may also be because the measure of poverty, based solely on consumption expenditure, does not take into account the non-income dimensions of poverty.

Table 2.9 Subjective Poverty of Households by Region, Locality and Sex (%), 2014

Region	Non poor	Some-what non poor	Neither poor nor non-poor	Poor	Very poor	Total
Male Respondents						
Volta	7.8	6.9	41.5	35.0	8.8	100.0
Brong Ahafo	4.2	11.6	39.1	33.0	12.2	100.0
Northern	4.0	11.5	29.4	42.9	12.3	100.0
Upper East	8.2	25.0	11.9	32.5	22.4	100.0
Upper West	9.3	24.5	21.8	37.7	6.7	100.0
Urban	7.4	18.6	37.0	26.2	10.9	100.0
Rural	4.9	13.2	25.2	42.5	14.3	100.0
Total	5.7	14.9	28.9	37.3	13.2	100.0
Female Respondents						
Volta	7.5	2.1	33.9	44.7	11.8	100.0
Brong Ahafo	2.7	9.8	39.5	35.7	12.4	100.0
Northern	3.9	8.3	25.8	45.1	16.8	100.0
Upper East	5.7	15.5	16.0	40.9	21.9	100.0
Upper West	8.2	23.9	16.0	40.7	11.2	100.0
Urban	6.3	12.7	36.4	32.1	12.4	100.0
Rural	3.8	10.3	22.3	46.2	17.4	100.0
Total	4.6	11.1	27.2	41.3	15.7	100.0

Sources: NGHDR Field Survey, 2014

2.3.2.4 Multidimensional Poverty

The multidimensional poverty index (MPI) developed by Alkire and Foster (2007) captures three dimensions of poverty, i.e., health, education and the standard of living in one index. The health and education dimensions are each captured by two indicators, and six indicators are used to capture the standard of living dimension.⁴⁴

The MPI is the product of the incidence and the average intensity of poverty. The latter provides information on the proportion of dimensions in which the households are deprived. A household is identified as 'multidimensionally poor' if, and only if, it is deprived in some combination of indicators whose weighted sum exceeds 30% of deprivations (Alkire and Santos 2010).

See Figure 2.11 for the incidence of multidimensional poverty in the zone. The incidence of multidimensional poverty ranges from 46% in the Volta Region to over 70% in the Northern Region. The incidence of multidimensional poverty is 59.2% in the zone.

⁴⁴ See the Technical Appendix in this report for discussion on how the MPI is constructed.

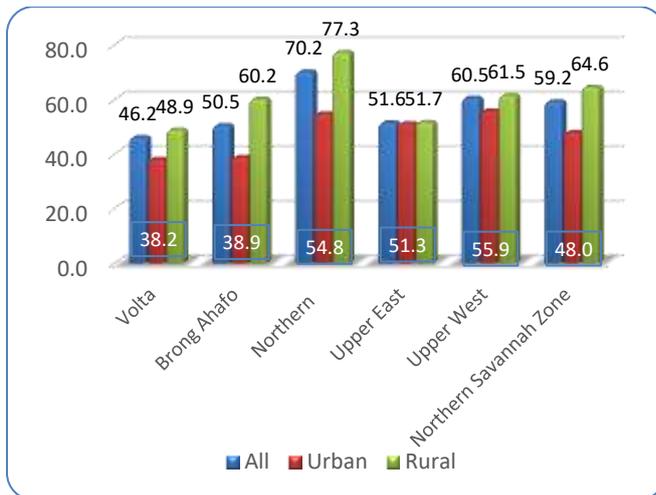


FIGURE 2.11 MULTIDIMENSIONAL POVERTY INCIDENCE (%)

Source: NGHDR Field Survey, 2014

The urban multidimensional poverty headcount is higher than the rural incidence except in the Upper East Region where the incidences are the same. With regard to child school attendance, child mortality and nutrition, the incidence of deprivation was higher among the urban population in the Upper East Region.

In the NR and UWR, which have substantially higher levels of multidimensional poverty, relative to subjective poverty, a household's poverty status relative to other households appear to influence the extent to which the respondent perceives the household to be poor. A respondent living in a community that does not have electricity or drinking water from an improved source, but where members own assets may consider his/her household to be non-poor compared to similar households that do not have such assets.

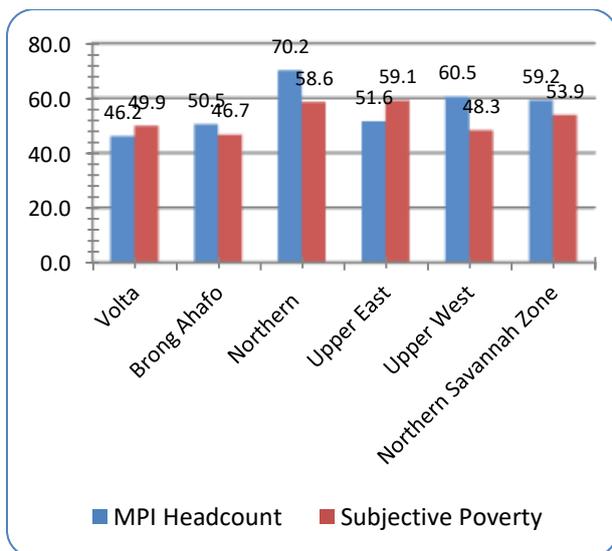


FIGURE 2.12 SUBJECTIVE & MULTIDIMENSIONAL POVERTY HEADCOUNTS

Source: NGHDR Field Survey, 2014

It should be noted that the Northern Region is the region with the third highest level of inequality and the Upper West Region has the highest poverty incidence in the country.

The intensity of deprivation provides information on the share of indicators in which a poor person is deprived. The average of this proportion ranges between 30.6% for the Volta to 36.9% in the Upper West Region (Figure 2.13). The difference between urban and rural households in the Volta and Brong Ahafo virtually disappears when the focus is on the intensity of multidimensional poverty. In the Northern and Upper West regions, the intensity of multidimensional poverty is greater among rural households whilst in the Upper East Region it is greater in urban households.

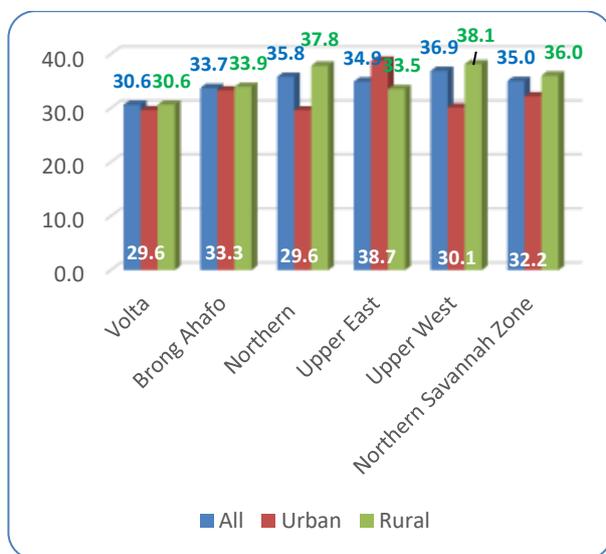


FIGURE 2.13 INTENSITY OF DEPRIVATION IN THE NSEZ

Source: NGHDR Field Survey, 2014.

The MPI headcount is higher than the poverty headcount using consumption expenditure. The MPI ranges from 0.14 in the Volta to 0.25 in the Northern Region (Figure 2.14).

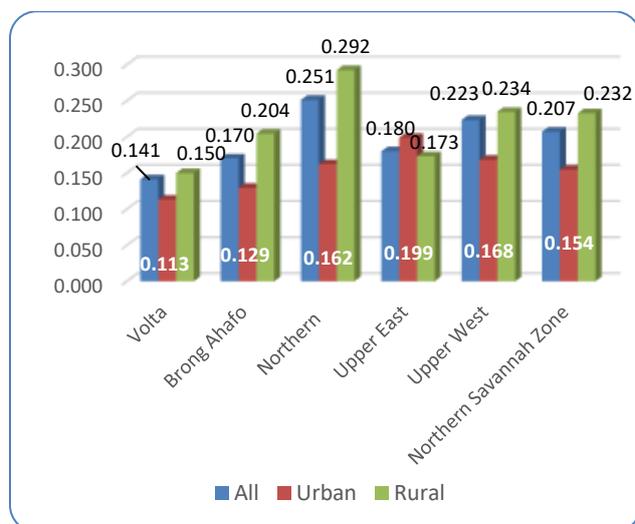


FIGURE 2.14 MULTIDIMENSIONAL POVERTY INDEX

Source: NGHDR Field Survey, 2014.

This is to be expected since the MPI contains information on several dimensions of deprivation and poverty.

As the MPI is the product of the headcount and average intensity of poverty, the poverty index increases when the number of poor remains unchanged but the intensity of poverty increases. Except for the Upper East Region, the rural MPI in the NSEZ exceeds the urban MPI. Even though the rural and urban incidence of multidimensional poverty is almost the same in the Upper East Region, the MPI among urban households is higher than the rural MPI because the intensity of deprivation is greater among the urban poor.

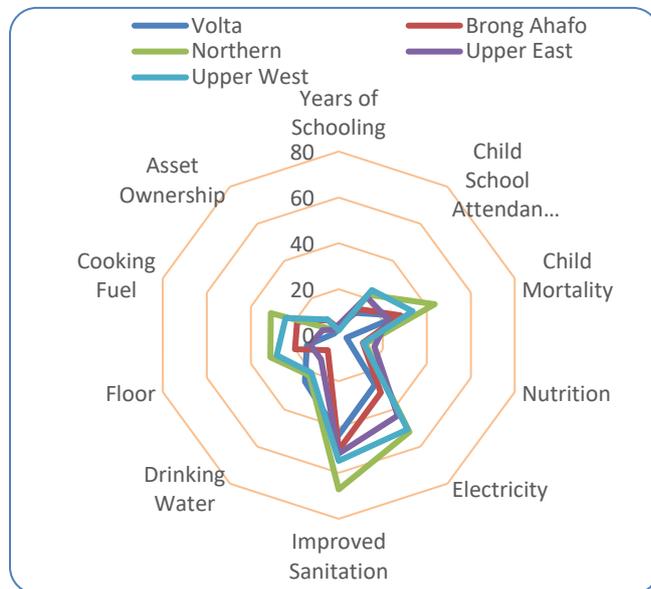


FIGURE 2.15 INCIDENCE OF DEPRIVATIONS AMONG THE MULTIDIMENSIONAL POOR

Source: NGHDR Field Survey, 2014.

Areas of high incidence of deprivation (figure 2.15) are also looked at. The incidence of deprivation with respect to improved sanitation was high, standing at 67% in the Northern Region but it was relatively low at 43% in the Volta Region.

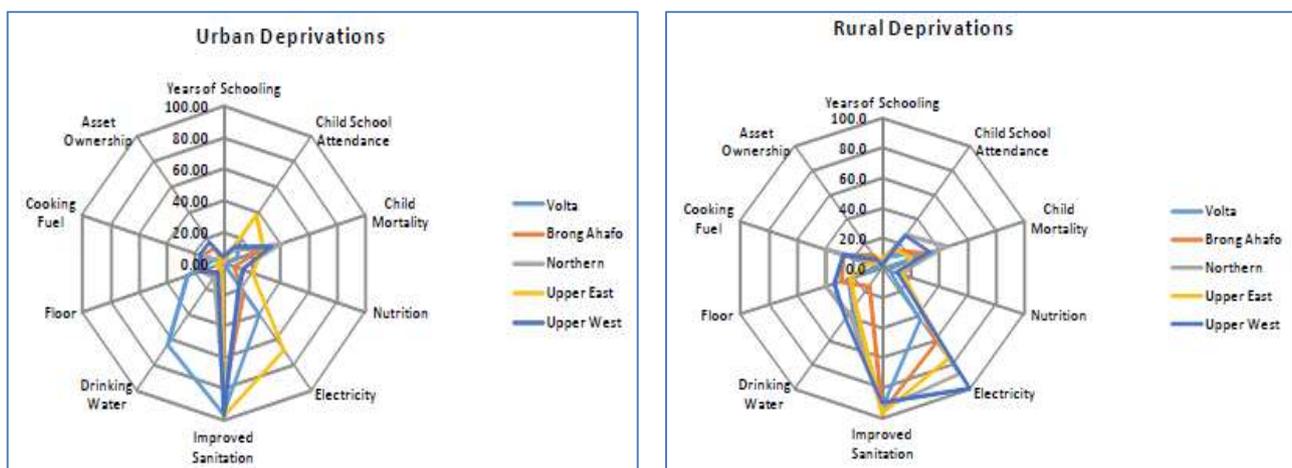


FIGURE 2.16 INCIDENCE OF DEPRIVATIONS AMONG THE MULTIDIMENSIONAL POOR BY LOCATION

Source: NGHDR Field Survey, 2014.

The dimensions with low incidence of deprivation related to education, i.e., years of schooling and child school attendance. The incidence of deprivation with respect to years of schooling was as low as 2% in the Upper West Region, rising to 5% in the Upper East Region.

Figure 2.16 provides information on deprivations for urban and rural communities and for each region. A comparison of the two cluster diagrams reveals that rural communities are not always disadvantaged compared to the urban along all dimensions. For example, child school attendance deprivation was higher among urban households in the Volta and Northern regions than it was among the rural households. Lack of improved sanitation is a deprivation that was experienced by the majority of households, irrespective of their location.

Further, the needs of the different regions and districts in the zone are not the same. For example, urban Volta Region is in desperate need of access to safe drinking water whilst there is less urgency for this in urban areas in the Upper East Region. This is despite the zone having achieved the MDG target for access to drinking water from an improved source. Additionally, a number of caveats are in order.

Although the figures for education deprivation are low this does not suggest that there are no problems with education in the zone. The discussion on education in this chapter underscores the fact that even as school attendance among the current generation is high, the likelihood of not completing 9 years of basic education is also high. Further, the deprivation measures do not capture quality of education and basic skills that a student will obtain after 9 years of education. A review of education has shown that the quality of education in the NSEZ is below the national average and must be addressed immediately if the needed economic transformation is to be achieved.

The multidimensional poverty index and indicators highlight critical areas for the policy agenda in the zone. Top on the list is addressing the lack of access to improved sanitation and electricity and tackling the factors making for significant child mortality. The lack of access to improved sanitation is a deprivation that is endemic in the zone.

Importantly, it cannot be divorced from child mortality, which is another dimension of deprivation which is significant. Poor sanitation exposes households to the risk of morbidity due to diarrhea, malaria and typhoid, for example, which has negative multiplier effects on the well-being of the population such as days lost to work and school attendance. Lack of electricity reduces the production technologies available to industry and services and can contribute to keeping productivity levels lower than they otherwise should be.

The lack of access to electricity also reduces the activities that can be engaged in. It may therefore come as no surprise that the ICT sector, which is heavily reliant on electricity and telecommunications infrastructure, is not well developed in the zone. Further, children living in households with no electricity will have fewer hours to study compared to their colleagues who are not similarly disadvantaged.

2.4 Analysis of Drivers of Human Development

As sketched out earlier in this chapter, the HDI is a composite index which draws on achievements in three aspects of human development: health, education and living standards. Health and Education are discussed in this section. Given its importance, the drivers of living standards – the pattern of production, employment and livelihoods – are treated in significant detail in the next chapter.

2.4.1 Health

Access to healthcare and good health outcomes are key for ensuring the development of human capabilities. The 2012 Ghana Health Service Assessment report identified inadequate facilities, poor staffing in health facilities coupled with a mal-distribution or inappropriate mix of relevant health staff at the health facilities, as being the key challenges for healthcare delivery in the North. This section reviews health infrastructure in the entire NSEZ and considers access to quality healthcare, as well as public health concerns such as infant and child mortality rates, maternal mortality and HIV/AIDS prevalence rates.

2.4.1.1 Health Infrastructure and Quality

Ghana has made considerable progress in healthcare delivery but it faces critical bottlenecks in the area of health infrastructure, particularly hospitals, in the northern part of the country.

Table 2.10: Health Facilities by Type and Ownership, 2015

Region	CHPS	Clinic	District Hospital	Health Centre	Hospital	Midwife / Maternity	Mines	Polyclinic	Psychiatric Hospital
Asbanti	906	116	25	141	94	71	0	0	0
Brong Ahafo	423	107	18	83	13	41	0	4	0
Central	219	67	12	64	15	35	0	2	1
Eastern	477	112	14	84	16	25	0	2	0
Greater Accra	176	277	6	20	70	86	0	12	2
Northern	185	57	15	83	12	9	0	4	0
Upper East	233	48	6	44	1	2	0	0	0
Upper West	176	15	3	68	6	5	0	5	0
Volta	273	39	17	146	11	16	0	2	0
Western	267	144	18	59	20	36	3	1	0
National	3335	982	134	792	258	326	3	32	3

Source: Ministry of Health, Facts and Figures (2015)

In addition, a major challenge facing quality healthcare delivery in the NSEZ are the low doctor and nurse to population ratios. While these have mostly improved (sometimes there is considerable variation year to year), the doctor to population ratios of *more than* 1:20,000 for UWR, UER, and NR was more than half the national average of 1:9043 and close to 10 times lower that of Greater Accra (Table 2.11).

Table 2.11 Total number of doctors 2009 to 2014 and Doctor/Population ratio for 2014

Region	2009	2010	2011	2012	2013	2014	Doctor/Population Ratio 2014
Brong Ahafo*	134	99	154	154	148	145	1:17455
Volta*	73	64	91	91	111	114	1:20,510
Upper East	29	33	27	27	40	34	1:32,285
Upper West	14	25	18	18	19	21	1:36,048
Northern	46	134	117	117	131	117	1:23,759
Greater Accra	839	935	1085	1085	1356	1651	1:2744
Ghana	2033	2325	2477	2477	2730	3016	1:9043

Source: Ministry of Health Facts and Figures (MoH, 2015).

The number of doctors recruited at Tamale Teaching Hospital in the Northern Region, the main teaching hospital for the zone, do not currently satisfy the demand. Recruitments for the zone at the national level were equally low: only 26 in 2010 & 6 in 2012. Even when recruitments appear to be high, in practice, doctors often refuse to accept postings to the North – likely on account of poor infrastructure, accommodation and facilities. A recent Ghana Health Service report (GHS, 2012) states that of the twenty-five government Hospitals that were without doctors eight of them were found in the Northern Region. Recruitment based on available vacancies tied to salary approvals from Ministry of Finance is beginning to improve the situation. Decentralizing medical doctor training should also improve doctor distribution from their concentration in teaching hospitals. These calls, in particular, for improving accommodation facilities for trainee doctors in district and regional hospitals.

With respect to other health professionals, see Table 2.12.

Table 2.12 Total Number of Nurses 2009 to 2014 and Nurse/Population Ratio for 2014

Region	2009	2010	2011	2012	2013	2014	Nurse/Population Ratio 2014
Brong Ahafo*	2283	1826	672	720	815	2993	1:1,132
Volta*	2421	1914	659	712	785	3237	1:925
Upper East	1262	1112	424	505	604	2256	1:669
Upper West	895	803	259	288	311	1397	1:813
Northern	1708	1716	785	9005	1067	4438	1:1,255
Greater Accra	4897	4793	2941	3336	3508	7722	1:764
Ghana	24,974	22,507	9777	11,125	2308	40,859	1:959

Source: MoH (2015).

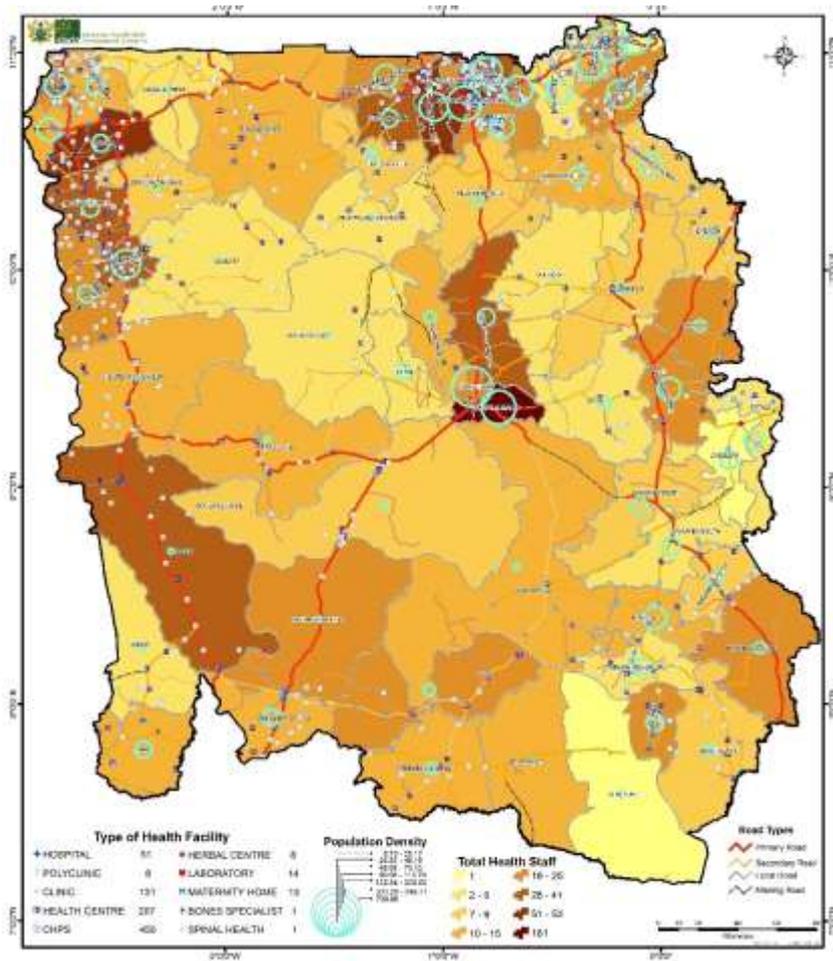
*Note: Data was not readily available for the individual districts of Northern Brong Ahafo and Northern Volta Regions. Thus, the number of nurses is for the entire Brong Ahafo Region and Volta Region.

The poorest staffed region is also the Northern Region: one nurse to 1,255 people compared to the national average of one nurse to 959 people. On the other hand, the UER, which is more compact compared to the larger NR, had the highest nurse to population ratio – i.e, 1:669, which is better than the national average. The purported reason for this is because the Upper East region is known to be strictly implementing the policy of retaining nurses that are trained in the region. This initiative is worthy of emulation by the other regions in the Zone. In addition, MoH’s 2014 holistic assessment report attributes the UER’s commendable performance to the decision to equip CHPS clinics with facilities to offer substantial OPD services, the posting of midwives to CHPS clinics to perform deliveries. The CHPS clinics provide a substantial part of the OPD services in the Region.

The distance to a healthcare facility by the people in the NSEZ is also much longer compared to their counterparts in the South. The Northern Region appears to suffer the most on account of the sparsely scattered nature of its population and the relative paucity of health facilities, even as it has the largest population and the largest land area in the zone. See Map 2.6.

The CHPS strategy, which seeks to provide health services through partnerships between the health programme, community leaders and social groups, was introduced in 2003 to bridge the equity gap for communities in rural areas which are further away from health facilities than their urban counterparts.

Map 2.6 Distribution of Health Facilities and Health Staff in Northern Savannah



Source: SADA

**Note: Data was not readily available for the individual districts of Northern Brong Ahafo and Northern Volta Regions.*

More than 70% of all Ghanaians lived over 8 kilometres from the nearest healthcare provider (Phillips J., 2002). The problem is worse in parts of the NSEZ where there are widely dispersed communities, coupled with inadequate road and transport facilities. By 2012 there were 2,226 functional CHPS, of which the NSEZ played host to just about 647 although it encompasses over 50% of Ghana's landmass.

In addition to the CHPS, the community health worker (CHW) initiative, which is now a flagship initiative for the country, was successfully piloted in the West Mamprusi and Builsa Districts in the context of the Millennium Villages Project MVP).⁴⁵ There is an imperative and an opportunity to scale up both.

⁴⁵ The Millennium Village (MVP) project, supported by DFID, was designed to accelerate progress towards achieving the MDGs. It was implemented by the Millennium Promise Alliance (MPA) with technical support from Earth Institute at Columbia University and in collaboration with SADA. At the core of the MVP are synergistic integrated community-based investments that aim to meet basic needs to facilitate sustainable take-off.

Community Health Workers (CHWs) are trained to provide basic healthcare information and services to community members through regular household visits. They are supervised by designated Community Health Nurses (in the zone, it was effective to use retired nurses) who stay at the nearest health facility in the community.

2.4.1.2 Health Indicators

Whereas Ghana has made some progress as regards health indicators such as maternal and childhood mortality, as well as HIV/AIDS, and malaria infections, equity concerns remain. There is a wide gap between the highest and lowest performing regions, as well as along spatial, gender, and socio-economic dimensions.

Child Mortality

Census data indicates that the national average for under-five mortality rate had declined significantly from 167 per 1000 live births in 2000 to 90 per 1000 live births by 2010. Infant mortality declined from 90 to 59 deaths per 1000 live births over the same period.

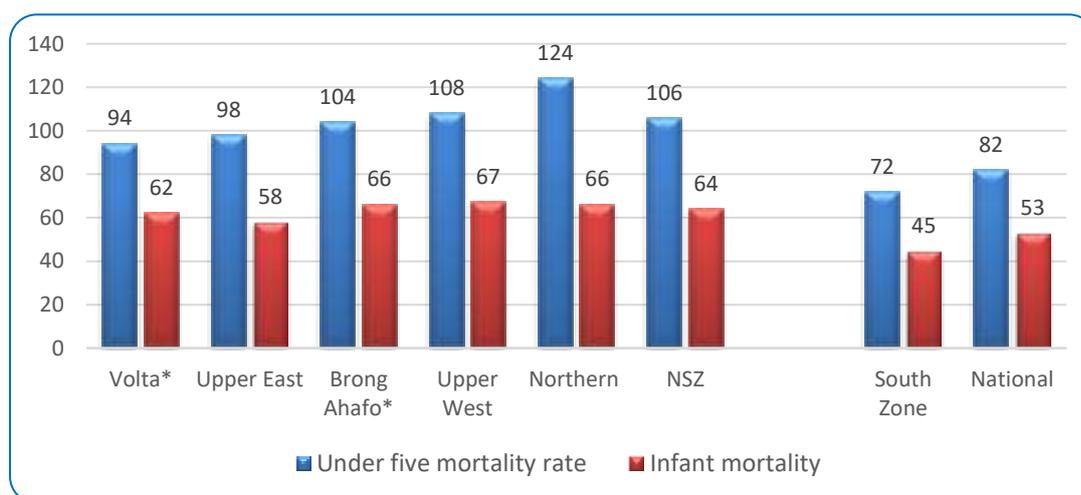


FIGURE 2.17 INFANT AND UNDER-FIVE MORTALITY RATES BY REGION, GHANA, 2011

Source: MICS (2011).

While the rates have declined in the NSEZ, they remain high. The average under-five mortality rate within the zone (106 deaths per 1000 live births) was much higher than the national average (82 per thousand live births). The Northern region recorded the highest incidence of under-five mortality followed by the Upper West Region which had 124 deaths per 1000 and 108 deaths per 1000 live births respectively. The pattern was similar for infant mortality (Figure 2.17). Malaria was identified as a leading cause for under five and infant mortality.

Maternal Mortality

Between 1990 and 2013, the maternal mortality ratio fell significantly from 760 to 380 maternal deaths per 100,000 live births though this was still well short of the MDG target. For Ghana, the Institutional Maternal Mortality ratio (IMMR)⁴⁶ dropped from 164 maternal deaths per 100,000 live births in 2010 to 144 by 2014. There are significant regional variations.

⁴⁶ IMMR is measure of the number of maternal deaths for every 100,000 deliveries in health facilities/institutions.

The majority of deaths occur in the communities among those who do not use facilities during deliveries and abortions. Not only is facilitating access to skilled care, especially deliveries and post-natal care, important but also outreach to communities.

Table 2.13 Trend in Institutional Maternal Mortality Ratio by Region, 2010-2014

	AR	BAR	CR	ER	GAR	NR	UER	UWR	VR	WR	Ghana
2010	152	142	149	192	207	140	138	158	219	137	164
2011	197	127	124	207	242	171	127	160	201	101	174
2012	77	167	113	173	205	212	136	146	174	132	152
2013	125	138	122	200	198	174	108	193	161	153	155
2014	115	134	105	175	185	108	139	161	179	149	144

Source: DHIMS (2015).

Further, improvement in quality of skilled care is needed as IMMRs are high. See table 2.13 for regional trends. Ante- and post-natal care during pregnancy and childbirth is also critical. Data from the NG-HDR survey (Table 2.14) indicates that about 87% of pregnant women accessed antenatal care at least once while 65% received post-natal care.

Table 2.14 Antenatal and Postnatal Care by region, 2014

Ante- & Post-Natal Care	Volta	Brong Ahafo	Northern	Upper East	Upper West	Pooled
Ever Pregnant (12–50yrs)	69.9	69.2	62.6	53.9	65.1	63.1
Antenatal Care	90.9	87.0	78.4	100.0	100.0	87.0
Delivery by Skilled Birth Attendants (SBA)	34.3	67.1	51.0	92.4	85.9	65.6
Postnatal Care	79.6	90.3	55.1	80.6	87.5	74.9
Delivery at home	58.6	32.9	58.5	7.6	14.1	36.0
Delivery at Hospital/Clinic/CHPS	34.3	67.1	41.5	92.4	85.9	63.2
Live births	43.1	84.9	68.5	81.8	93.7	74.2

Source: NGHDR Survey, 2014.

However, only 65.6% received skilled birth attendance or supervised delivery from health professionals such as doctors, midwives, nurses, etc. Although the majority (63.3%) of births occur in hospitals, clinics or CHPS, a significant proportion (36%) of deliveries take place at home. Table 2.14 further indicates that 74.2% of all the pregnancies resulted in live births, while the remaining (25.8%) resulted in stillbirth, miscarriage or others.

The worst performing region appears to be the Volta Region, and followed by the Northern Region. The Volta Region recorded the lowest incidence of child births attended by skilled birth attendants (34.3%) and delivery at a Hospital/Clinic/CHPS (34.6%), but also the lowest figures for live births (43%).

The Upper East and Upper West regions recorded 100% antenatal care attendance and scored over 80% in all the other indicators. Recorded pregnancies in the Upper East and the Upper West regions resulted in 82% and 94% live births respectively. The results are consistent with the Ministry of Health annual health assessment report according to which the Volta and Northern regions, came out as the worst performing while the Upper East was the region of excellence with regard to supervised delivery and others (Refer to Box 2.2).

Box 2.2 Regional Performance in Supervised Delivery

In almost all regions, supervised deliveries were more than 50% of the total except for the Volta Region at 46.5% and Northern Region at 49.9%. The Upper East Region continued to improve its supervised delivery coverage over the years. It will be beneficial to look to Upper East Region for best practices in supervised delivery coverage. Although the Volta Region showed an improvement in supervised delivery, it was consistently the lowest performer with regards to supervised delivery over the past three years. There may be various reasons for this performance which came up in the joint monitoring visit report to the region in 2011. Among the issues were inadequate infrastructure, ageing and inadequate numbers of midwives and the fact that Volta Region is one of the regions with very few maternal and child health interventions outside the regular budget provided by the Ministry of Health. The region should, over the coming years, receive special attention and support to catch up with the other regions

Source: (MOH, 2012)

Residing in a rural or urban area also appears to have some influence on health outcomes. Outcomes are influenced by the living and environmental conditions of the locality, the behavioural patterns of the people in the particular locality, and access to appropriate health services (Figure 2.18). The chances that a pregnant woman in a rural area will not receive antenatal care (86%), SBA (61.5%), postnatal (69%) or will not deliver in hospital/clinic/CHPs are higher than for her urban counterparts. Therefore, live births in urban areas (78.8%) are about six percentage points higher than in rural areas (72%).

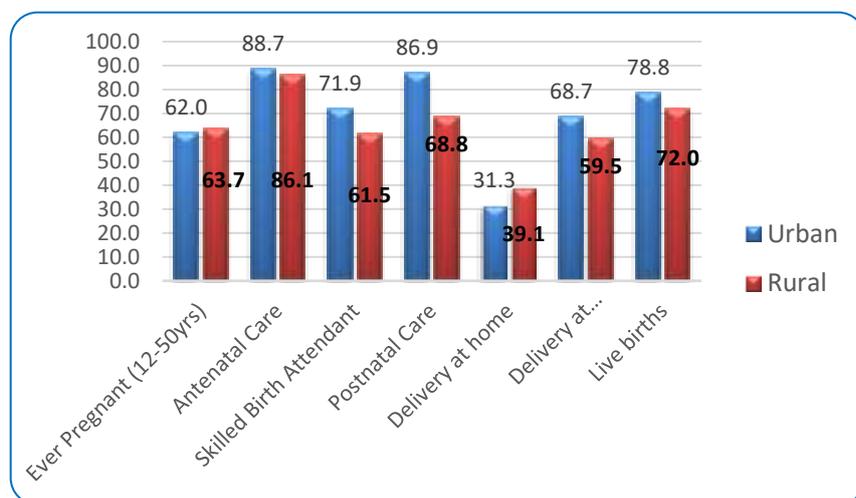


FIGURE 2.18 ANTENATAL AND POST-NATAL CARE IN THE NSEZ BY RESIDENCE, 2014

Source: NGHDR Survey, 2014

Nutrition

Adequate nutrition is critical to child development because the period from birth to two years of age is important for optimal growth, health, and development. Unfortunately, this period is often marked by growth faltering, micronutrient deficiencies, and common childhood illnesses such as diarrhea and acute respiratory infections (ARI). A woman's nutritional status has important implications for her health as well as the health of her children. Malnutrition in women results in reduced productivity, an increased susceptibility to infections, slow recovery from illness, and heightened risks of adverse pregnancy outcomes.

As in other developing countries, evidence suggests that, in Ghana, a significant percentage of all deaths that occur before the age of five can be linked, directly and indirectly to under-nutrition.⁴⁷ 12,000 children in Ghana are estimated to die every year because of under-weight related ailments due to malnutrition (GHS, 2012). Further, under-nutrition contributes to about half of all child deaths beyond early infancy while one out of every thirteen children in Ghana die before their fifth birthday mostly because of under-nutrition.⁴⁸

Stunting reflects malnutrition, wasting reflects acute malnutrition and being underweight reflects chronic or acute malnutrition or a combination of the two. The level of stunting is higher in the rural areas (22%) than in the urban areas (15%) in Ghana. Stunting prevalence was the highest in Northern region (33%) and the lowest in the Greater Accra region (10%). Stunting decreases as the mother's level of education and wealth quintile increase. Wasting levels ranged from a low of 3 % among children in Volta to 9 % among children in Upper East. There was no clear correlation between other background characteristics such as mother's education or wealth and wasting levels.

Table 2.15 Proportion of Stunted and Underweight Children, 2014

Region	Proportion of children less than 5 years who are Stunted (%)			Proportion of children less than 5 years who are underweight (%)		
	Total	Boys	Girls	Total	Boys	Girls
Volta	11.3	5.7	18.5	9.7	2.9	18.5
Brong Ahafo	17.3	17.3	17.3	17.8	16.3	19.8
Northern	20.1	17.5	22.6	20.3	24.7	15.9
Upper East	18.9	20.0	18.1	25.0	21.7	27.8
Upper West	14.5	20.0	7.7	18.8	18.5	19.2
All	18.0	17.2	18.7	19.5	19.9	19.2

Source: NGHDR Field Survey, 2014.

The proportion of underweight children ranged from 17.8% in the Brong Ahafo region to 20.3% in the Northern region. (Figures are for 2014, also see GDHS, 2015). In the zone, about 19% of all children less than five years were found to be underweight while 18% were stunted. The Northern Region has the highest number of underweight and stunted children, whereas the lowest incidence of underweight and stunted children was recorded in the Volta Region. Table 2.15 further shows that on average, for the NSEZ region, girls (18.7%) were slightly more likely to be stunted than boys (17.2%) although the proportions were lower for UER and UWR. Boys (19.9%) were slightly more likely to be underweight than girls (19.2%) except in the NR.

⁴⁷ For Ghana, the figure that is often cited is 40%. See MICS (2011), Ghana Health Service (2006) Nutrition and Malaria Control for Child Survival Project. More generally see WHO here

⁴⁸ Under-nutrition indicators: LOW BIRTH WEIGHT- Baby weighs less than 2.500 Kg at birth; UNDERWEIGHT Child - Weighs too little for his/her age; STUNTING Child - Height is too short for his/her age; WASTING Child - Is too thin for his/her height.

The first breast milk contains colostrum, which is highly nutritious and has antibodies that protect the newborns from diseases. The proportion of women initiating breastfeeding within an hour of birth was found to be highest in the Upper West region (60%). Early initiation of breastfeeding was below 50% in the Brong Ahafo, Volta, and Northern regions. (See MICS 2011). UNICEF and WHO recommend that children be exclusively breastfed during the first 6 months of life and that children be given solid or semi-solid complementary foods in addition to continued breastfeeding from 6 months until age 24 months or more when the child is fully weaned. Exclusive breastfeeding is recommended because breast milk is uncontaminated and contains all the nutrients necessary in the first few months of life.

The percentage of breastfed children who are fed from three or more food groups the minimum number of times a day ranged from 24% in the Northern Region to 72% in the Volta Region. There is very little difference in feeding practices by urban-rural residence. Among regions, the percentage of children who are fed appropriately was highest in the Volta Region (70%) and lowest in Northern Region (22%).

Iron is essential for cognitive development. Low iron intake can also contribute to anemia. Consumption of vitamin 'A' foods is highest among children in the Upper East region (86%) and lowest in the Northern region (77%). Consumption of iron-rich foods ranged from 67% in the Upper West region to 83% in the Greater Accra region. The proportion of children receiving vitamin A supplements was highest in the Upper East (67%), Upper West (66%), and Ashanti (65%) regions and lowest in the Northern region (41%).

A regional comparison showed that the Upper West, Northern, and Upper East regions had the lowest proportion of overweight or obese women (13%, 14%, and 15%, respectively); while the Greater Accra region has the highest proportion (45%). At the regional level, the percentage of women drinking milk is highest in the Greater Accra region (37%) and lowest in the Upper West and Volta regions (8% and 9%, respectively).

Consumption of fruits on a daily basis is substantially lower among women in the Upper West and Eastern regions (15% and 16%, respectively) and among men in the Upper East and Volta regions (7% and 14%, respectively). Consumption of vegetables on a daily basis is very low among women in the Volta region (7%) and among men in the Eastern region (10%).

The main modalities for acquiring food are cash purchase, own production, fishing/hunting/gathering, or via getting food on credit or as gifts. Of these, cash purchases and own production are the two major sources. Own production or access to key food groups through livelihood activities can provide for some resilience. Consider, for example, the significant numbers of fisherfolks and agro-pastoralist households, who although are categorized to be in the two poorest wealth quintiles, have access to some fish or livestock, perhaps more than some of the other livelihood groups (Table 2.16).

On the other hand, the livelihood activities of these groups may be adversely impacted by extreme weather conditions or other factors. The WFP (2012) survey highlighted the seasonal difficulties for households in accessing enough food, with the gravest difficulties often occurring during the peak of the lean season in June/July. Significant numbers of farmers face challenges in getting food prices or storing marketable surpluses during the harvest season and face high prices when they try to purchase food during the lean season.

Table 2.16 Livelihood groups and dietary diversity (days eaten)

Livelihood Group	Cereals, Tuber & Root Crops	Meat and Fish	Pulses	Vegetables	Oil	Fruits	Sugar	Milk or other Dairy
Regular Employment	6.9	5.6	1.9	4.6	3.8	3.1	4.6	2.0
Fishermen	7.0	6.2	1.9	3.7	3.6	3.3	4.1	0.7
Traders	6.9	4.5	2.0	4.3	3.4	2.7	4.4	1.2
Food Processors	7.0	4.2	1.7	4.0	4.1	2.6	3.7	1.0
Agriculturalist	6.9	4.3	1.7	4.1	3.5	3.0	3.5	0.7
Artisans	6.9	4.2	1.7	3.8	3.4	2.1	3.8	0.8
Agro-pastoralist	6.9	3.7	1.9	3.7	3.8	2.4	2.4	0.5
Unskilled Labour	6.9	3.1	1.8	4.1	3.5	2.5	2.8	0.6

Source: WFP (2012) Ghana CFSVA with a focus on Northern Ghana

HIV and AIDS

The National HIV Prevalence rate was 1.3% in 2013 with the regional HIV prevalence rates, ranging from 3.7% in the Eastern region, the site with the then highest prevalence, to 0.8% in the Northern and Upper West Regions which had the lowest prevalence rates. The Volta, Upper East and Brong Ahafo regions recorded rates of 1.2%, 1.7 per cent and 1.7 %, respectively. By 2016, the pattern had changed. According to the 2016 HIV Sentinel Survey Report, the Volta and Brong Ahafo Regions topped the list in terms of the HIV prevalence rate (2.7% as compared to the national HIV prevalence of 2.4%) whereas the Northern Region continued to have the lowest prevalence rate, (0.7%); the Upper West had 2.5%, and Upper East 1.7%.⁴⁹

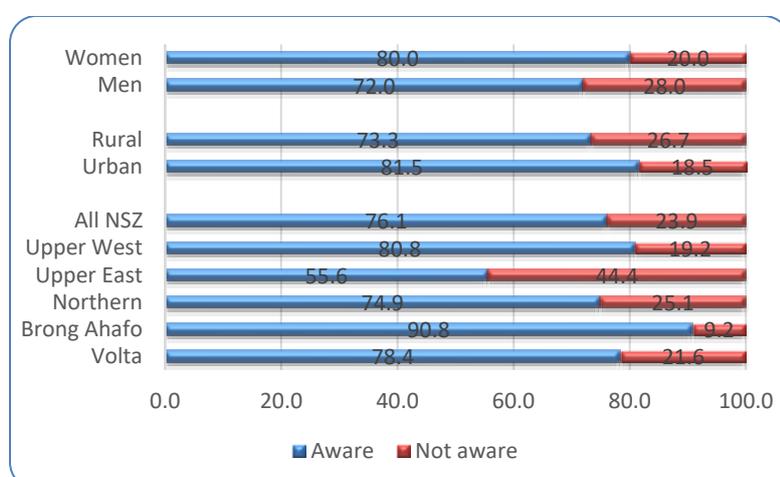


FIGURE 2.19 PROPORTION OF PEOPLE AWARE OF HIV/AIDS BY REGION, RESIDENCE & SEX

Source: NGHDR Field Survey, 2014.

⁴⁹ Ghana Aids Commission

The awareness of HIV prevention among the general public and populations at high risk of infection within the NSEZ is relatively low. Data from the 2014 NGHDR Field Survey indicated that close to a quarter (24%) of all people within the survey sample had not heard about the HIV/AIDS pandemic (Figure 2.19). Since knowledge of the disease has the potential to change behavior, this revelation is quite worrying, particularly after so many years of public education by the government through the National AIDS Control Commission and by other stakeholders. Rural residents (73.3%) were less likely to be informed about HIV than urban dwellers (81.5%). Further, women (80%) were slightly better informed than men (72%).

2.4.2 Education

“In the Northern regions, pupils have only 35 per cent of the trained teachers they need; about 30 per cent of children have no school nearby; 20 per cent will not enter school; only two thirds of the entrants reach the end of primary; and of those who finish primary, less than one third pass the final exit examination. For instance, in mathematics, the secondary school pass rate is 86% for boys in Greater Accra, but only 16% for girls in Northern region. The regions with lower overall pass rates have the highest levels of gender inequality.”
- Blampied et.al. (2018)

Education is a key for breaking the intergenerational cycle of poverty. The quality of education, not just enrolment, is critical for improved human development outcomes and socio-economic transformation in the zone. This sub-section provides a brief overview of educational resources and facilities, as well as progress where the quality of education is assessed by literacy among school-going children and performance in examinations.

From the outset, when assessing outcomes, it should be noted that, the NSEZ has a high percentage of predominantly rural districts, many of which are also very poor. The *2014 Technical Report for the NEA* noted that despite overall gains in enrolment, irregular attendance and late entry into primary school posed serious problems for children from impoverished homes and those in rural areas. Further, the distribution of resources, particularly trained teachers, is noted to favour urban and more well to do districts and thus to play an important role in driving the inequities observed in learning outcomes.

Since 1999, roughly a third of Ghana’s districts have been classified as deprived. The majority of ‘deprived’ districts are in the three Northern regions. As could be expected, performance among pupils attending schools in the deprived districts was much lower than that of pupils attending schools in not-deprived districts, and these differences were statistically significant. The *Ghana 2016 National Education Assessment: Report of Findings* found that the gap between rural and urban performance for both P4 and P6 English was particularly large.

The results presented here underscore the impact that attending schools in the most impoverished and hard-to-reach areas of the country can have on student’s learning and point to the importance of drawing lessons on what works, urgently implementing measures, incentives and formulas to channel more resources, and facilitating greater retention of trained teachers amongst other things.⁵⁰ Given the largely rural nature of the zone and the challenges in ensuring provision of basic school materials and teaching staff, it is also important to explore innovations for enhancing the learning environment.

⁵⁰ See Blampied et.al (forthcoming) for a detailed analysis and ‘stocktake’ of the health and education sectors.

Improvements in the learning environment to enhance learning outcomes in terms of requisite numeracy, literacy, and analytical skills as well as digital literacy are needed. These competencies are increasingly important for the current job market. In the zone, interestingly, there is an exploration of the use of information and communication technologies (ICTs) in education to improve learning experience and outcomes as well as to build ICT capabilities.⁵¹ However, detailed information is not available on the scale and scope of innovations being implemented to improve educational delivery and quality, hence it is not covered here.

2.4.2.1 Physical Facilities & Resources

In 2016/2017, there were a total of 8708 Kindergartens, 8,802 Primary Schools and 5,097 Junior High Schools (JHS) in the NSEZ⁵² representing 37.5% of total schools in the country for both Kindergarten and Primary levels of education and 32% of total Junior Secondary Schools (JHS) in the country. Most of schools in the NSEZ were public facilities, with private owned schools constituting just 23% of Kindergartens, 22% of Primary and 20% of JHS. In 2016/17, the Brong-Ahafo Region had the highest private sector participation in the provision of Kindergarten, Primary and Junior High School education (36.2%, 36.8% and 43% respectively) in the NSEZ, while the Upper West Region had the lowest presence of private providers of education (2.2%, 3.4%, 3.5% respectively). The number of schools at the Junior High School relative to the number of Primary Schools in the Northern Region was close to half that prevailing at the national level, pointing to a significant challenge in this regard. In the Northern and Upper West regions, children typically have to travel longer distances to access Junior High School education since more than half of the Primary Schools do not have Junior High Schools attached to them. When children must travel long distances to attend school, it increases the likelihood of truancy, being late for class, The attendant difficulties affect the learning process and the likelihood of dropping out of school altogether.

Critical facilities (toilets, urinals, water and electricity) are a challenge for schools in the zone, mimicking the narrative as it pertains to the country as whole. Overall 38% of public schools in the country had access to water in 2016/17, 46% had access to electricity, while 56% and 59% had access to toilets and urinals respectively. The situation in private owned schools was better in comparison to the public schools. However, it is worth noting that private schools in the Northern and Upper-East regions are extremely challenged with regard all the basic facilities (i.e. toilets, urinals, water and electricity) and fall far below the national averages for toilets (79%), urinals (76%), water (76%) and electricity (69%). Given that access to electricity is also a requirement for e-learning and ICT, students in the NSEZ are disadvantaged as all schools fall below the national average, except for public schools in the Volta region which have 55% of access to electricity (about 9% more than the national average 46%). The situation at public schools in the Northern and Upper West regions is dire as a meagre 27% and 28% respectively have access to electricity.

⁵¹ See *Connect to Learn*, a global education initiative launched in 2010 by the Earth Institute of Columbia University, Millennium Promise and Ericsson. The aim is to scale up access to quality secondary education, in particular for girls, by providing scholarships and bringing ICT to schools in remote, resource-poor parts of the world, over mobile broadband.

⁵² Note that the entirety of Brong Ahafo and Volta regions are covered by the data.

2.4.2.2 Teachers

The national Pupil Teacher Ratios (PTR) for public schools is 30:1 for both Kindergarten and Primary level of education and 14:1 at JHS level of education. PTRs for public schools in the three Northern regions generally exceeded the national averages at all the three levels of basic education, with adverse implications for the quality of education. The Upper West region recorded a lower ratio of 13:1 at the JHS level of education. Public schools in the Northern region seemed to have very high PTRs (51:1) especially at the kindergarten level. Interestingly, for the Volta and Brong-Ahafo regions, PTRs were lower than the national averages at all three levels.

Table 2.17 Educational Resources in the Northern Savannah Zone, 2016/17

	Public Schools						Private Schools					
	Northern	Upper East	Upper West	Volta	Brong-Ahafo	National	Northern	Upper East	Upper West	Volta	Brong-Ahafo	National
Number of Schools												
Kindergarten	2,044	749	638	1,551	1,727	14,432	442	246	69	518	724	8,807
Primary	2,192	740	642	1,550	1,756	14,923	403	238	66	508	707	8,566
JHS	818	498	450	1,090	1,234	10,382	133	112	22	307	433	5,422
Pupil-Teacher Ratio												
Kindergarten	51	37	36	29	24	30	33	28	29	28	29	27
Primary	36	35	31	28	26	30	26	24	21	23	23	22
JHS	18	15	13	13	13	14	11	13	13	11	13	11
Percent Trained Teachers												
Kindergarten	65.50%	56.80%	52.70%	64.80%	54.60%	65.10%	7.20%	7.70%	7.00%	3.60%	4.40%	6.90%
Primary	71.60%	65.40%	61.60%	80.10%	68.40%	76.00%	7.60%	12.80%	16.70%	5.00%	6.30%	10.30%
JHS	85.10%	83.80%	76.70%	87.80%	85.50%	88.00%	16.80%	26.30%	28.10%	12.60%	15.60%	19.30%
Ratio of Seating Places per Pupil												
Kindergarten	0.3	0.4	0.5	0.6	0.5	0.6	0.7	0.8	0.9	0.9	0.9	0.9
Primary	0.5	0.6	0.8	0.7	0.7	0.7	0.8	0.9	1	0.9	0.9	1
JHS	0.8	0.8	1	0.9	0.8	0.9	0.9	0.8	0.8	0.9	0.9	1
Percent of School Facilities												
Toilets	64%	69%	70%	7%	58%	65%	39%	44%	74%	80%	82%	82%
Water	39%	62%	46%	49%	28%	42%	43%	61%	69%	66%	65%	74%
Urinals	69%	70%	75%	77%	62%	67%	51%	56%	82%	85%	79%	81%
Electricity	34%	39%	30%	55%	49%	51%	38%	46%	64%	63%	61%	72%

Source: Ministry of Education, EMIS Data.

At all levels of education, the PTR in the private school system in the zone either exceeded or was equal to the national average of 27:1 at the Kindergarten, 22:1 at the Primary, and 11:1 at the JHS level, except for Upper West Region which recorded a marginally lower PTR (21:1) than the national average (22:1) at the primary level of education. This is likely an indication of a general lack of teachers or capacity to retain teachers in this relatively more rural zone as compared to the national level.

A comparison of data for 2014/2015 and 2016/17, points to an improvement in the provision of teachers, but reveals a similar trend of PTRs exceeding national averages in both public and private schools for the most part, but with some isolated cases especially in the private school sector where the ratios equaled or were below national averages (see table 2.17).

On average, at the national level, the public schools at the basic levels of education can boast of significantly higher percentages of trained teachers than the private schools. The percentage of trained teachers in such schools is 65% as compared to about 7% at Kindergarten, 76% as compared to 10% at Primary and 88% as compared to 19% at JHS. I.e., the proportionate number of trained teachers in private schools are significantly below that in public schools. The percentage of trained teachers in public schools in the NSEZ was lower than the national averages except for the Volta Region where the percentage of trained teachers was higher for primary level of education than the national average. A similar pattern is observed for private schools in the zone with regards to the percentage of trained teachers being lower than national averages at especially the Kindergarten and Primary School levels of education. However, the Upper West and Upper East seem to have performed above the national average at all levels of the basic education at private schools, though at still very low levels. (see table 2.17). Interestingly, an analysis of the 2014/15 and 2016/2017 datasets shows an improvement in the numbers of trained teachers in public schools while the situation in private schools appears to have worsened. Blampied et.al. (2018) underscore that data for 2016 indicate that the pupil-per-trained teacher ratio (PTTR) in the three Northern regions (58:1), Upper East (63:1) and Upper West (60:1) was triple that of some regions in the South – Greater Accra (29:1) and Eastern (26:1) (EMIS).

Various studies point to the challenge of incentivizing teachers to serve in the more rural and deprived districts, as well as ensuring that there is housing for teaching staff (teaching staff quarters should be built at the same time that schools are constructed) and options that otherwise increase retention. It's important to identify and implement measures to increase the extent of training coupled with retention. E.g., an assessment of the 'Untrained Teachers Diploma in Basic Education' (UTDBE) programme found that UTDBE trainees were more willing to stay in remote and rural areas than those on the traditional pre-service training programme. This could be because a significant proportion of UTDBE trainees (72%) originated from the communities in which they taught, and thus likely experienced fewer challenges related to accommodation and integration in the local community.⁵³

2.4.2.3 Gross and Net Enrolment Rates and Gender Parity

At the national level, and in the regions covered here, there is a broad pattern of what is described as 'over-enrolment' at the basic levels and 'under-enrolment' at the higher levels See Blampied et.al. (2018). This trend, however, tends to be more heightened in many parts of the zone. The former is thought to be the result of young children joining school at a later age or repeating grades and the later children dropping out at higher grades.

⁵³ See World Bank (2017) and Blampied et.al. (2018). The World Bank report also noted that the UTDBE trainees also scored better than DBEs in relation to the use of teaching and learning materials and that, the endline study, on which these findings were based, revealed that the UTDBE program was significantly more cost effective relative to the DBE model of training even without allowance for conventional trainees.

When the Net Enrolment Rate (NER) is compared with the Gross Enrolment Rate (GER), the difference between the two highlights the incidence of ‘under-aged’ and ‘over-aged’ enrolment; where the NER is below 100%, the difference with 100% provides a measure of the proportion of children not enrolled at the specified level of education or not enrolled at all. The difference between the GER and NER at lower levels here was very significant.⁵⁴

Table 2.18 Gross and Net Enrolment Rates (%), 2016–2017

Sexes	Girls		Boys		All		Gender Parity Index
	GER	NER	GER	NER	GER	NER	
Kindergarten							
Northern	123	88.4	128.1	90.4	125.6	89.4	0.96
Upper East	137	88	130.4	80.7	133.6	84.2	1.05
Upper West	155.4	102.5	146.1	95.4	150.6	98.9	1.06
Brong-Ahafo	141	86.1	142.2	84.8	141.6	85.5	0.99
Volta	114.6	71.3	112.7	68.2	113.6	69.7	1.02
National	115.5	75.4	115.6	73.7	115.6	74.6	1
Primary							
Northern	111.1	96.3	116.6	100.8	113.9	98.6	0.95
Upper East	133.1	107.7	126.4	101.4	129.6	104.4	1.05
Upper West	135.8	112.8	125.1	103.8	130.2	108.1	1.09
Brong Ahafo	112.3	91.3	112.5	90.7	112.4	91	1
Volta	111.4	91.1	106.5	86.4	108.8	88.6	1.05
National	111.7	91.6	111	90.6	111.4	91.1	1.01
JHS							
Northern	74.2	44.3	82	48.4	78.2	46.4	0.90
Upper East	96.8	55.3	85.3	48.4	90.7	51.7	1.14
Upper West	92.5	52.7	82.1	46.4	87	49.4	1.13
Brong Ahafo	80.1	45.3	85.5	46.6	82.9	45.9	0.94
Volta	77.7	43.6	78.3	43	78	43.3	0.99
National	85.9	50	87.7	49.4	86.8	49.7	0.98

Source: Ministry of Education, EMIS Data.

Kindergarten

Gross Enrolment Rates (GER): In 2016/17, the GER for both boys and girls exceeded 100% in all regions (Table 2.16), significantly higher than national average (except for Volta which was close to it). This likely reflects young children joining KG at a later age given the difficulty and possible safety concerns, of having small children walk long distances to the schools.

⁵⁴ Note: The gross enrolment rate (GER) is the ratio of the number of children enrolled at a particular education level to the population of children in the relevant age-group. The net enrolment rate (NER) is the ratio of the number of children of the relevant age-group for the education level to the population of children of the relevant age-group. The relevant age-groups are (a) kindergarten 4–5 years (b) primary school 6–11 years and (c) JHS 12–14 years. The gender parity index is the ratio of the GER of girls to the GER of boys.

Net Enrolment Rates (NER): In all regions, the Kindergarten NER for both boys and girls exceeded the national average except for the Volta region which recorded NER of 69.7% about 4.9% lower than the national average. In 2013/14, no region recorded 100% NER for either boys or girls. The Upper West region recorded a NER of over 100% for girls.

Gender Parity Index: In 2016/17 gender parity was achieved in all regions with ratios above national Gender Parity Ratio (1) except for the Brong-Ahafo Region and Northern regions which recorded a slightly lower ratio of 0.99 and 0.96 respectively.

Primary

Gross Enrolment Rates (GER): Primary School Gross Enrolment Rates in 2016/17 exceeded 100% in all regions in the NSEZ. This is an improvement on the 2013/14 performance in Primary School enrollment rates especially for the Northern and Brong-Ahafo region which did not record over 100% enrollment rate. The GER across the regions in the zone ranged from 106.5% in the Volta Region to 135.8% in the Upper West Region (Table 2.16). The GER in all regions was higher than the national average (110.4%) except the Volta Region (108.8%) where the GER was lower than the national average (111.4%).

Net Enrolment Rates (NER): Net Enrolment Rates were again considerably lower than GERs. Overall net enrolment rates ranged from 86.6% in the Volta Region to 108.1% in the Upper West Region. The overall NER for boys and girls exceeded the national averages except for the Volta region which appears to be performing below the national average and with significant gaps in Net Enrolment. The lowest NER was among boys and girls in the Volta Region at 86.4% and 91.1% respectively. For 2017/17, the NSEZ, except the Volta (90.2%) and Northern regions (88.6%), recorded higher NERs than the national NER (91%). Similarly, all regions of the NSEZ recorded equal or higher NER than the national NER except Brong-Ahafo, Northern and Volta regions in the 2013/14 dataset. There was improvement in primary school NER in the Brong-Ahafo region, which moved from an NER below national average to an NER above that.

Gender Parity Index: Gender parity was achieved in all regions except for the Northern region where there was a marginal difference of 0.05 points. Upper West Region recorded a gender parity of 1.09, the highest for the NSEZ. A comparison with the 2015/16 statistics shows an improvement in Gender Parity across regions, but for the Northern Region which has decreased from 0.99 in 2015/2016 to 0.95 in 2016/2017.

Junior High School

Gross Enrolment Rates (GER): GER across the regions in the zone ranged from 78% and 78.2% in the Volta and Northern regions respectively, which were the worst performing rates for the NSEZ to 90.7% and 87% for the Upper East and Upper west regions respectively which had GER higher than the national average. The 2016/17 performance for all the regions is an improvement on the 2013/14 and 2015/16 performance. However, the Volta region experienced a slack in its performance - an 82.6% GER in 2015/16 compared to 78% GER in 2016/17. Efforts at attaining high enrolment especially for the Volta region must be intensified.

Net Enrolment Rates (NER): Net enrolment rates were again considerably lower than GERs. Overall net enrolment rates ranged from 43.3% in the Volta to 51.7% in the Upper East Region.

The national NER (49.7%) was higher than NER in all regions of the zone except the Upper East Region that recorded 51.7% NER. The 2013/14 data presented similar results showing NER in all regions of the NSEZ as lower than the national average however, slight improvement was seen in 2014/15.

Gender Parity Index: Gender Parity was only achieved in the Upper East (1.14) and Upper West Regions (1.13). Even though Volta Region did not achieve Gender Parity, it outperformed the national average gender parity of 0.98 as it inched closer to parity at 0.99 GPI. The Northern and Brong-Ahafo regions marginally missed parity at 0.90 and 0.94 GPIs respectively. The 2015/16 dataset showed similar results of gender parity achieved in only the UER and UWR. The 2016/2017 performance is an improvement in gender parity for all the regions except the Northern Region which maintained the 2014/15 rating of 0.90 GPI.

2.4.2.4 Educational Outcomes

Three indicators are used to measure educational outcomes for the NSEZ. The first is the proportion of students aged 13 to 18 years who can read or write in English.⁵⁵ The second is performance in the Basic Education Certificate Examination (BECE), the main examination that determines admission into secondary or vocational schools in Ghana, which is written after three years of junior high school education. The third is the performance of students in the National Education Assessment (NEA) Tests for English and mathematics administered to students in primary 3/4 and primary 6 in the ten administrative regions.

About 76% of students aged 13–18 years were able to read or write in English (Table 2.19). Girls (83%) were more likely than boys (71%) to have basic English literacy competencies across the zone, except in the Volta Region where girls didn't perform as well (40.6% for boys compared to 37.5% for girls). When we control for the possibility of late entry into school and consider students in primary 5 through to JHS we find that a higher proportion (80%) can read or write in English and the proportion of girls who can do so (82%) is higher than that of boys (78%). In two of the regions, i.e. Volta and Upper East, boys are more likely to read and write in English than girls.

Students in urban schools are more likely to acquire this competency than students in rural schools where students would likely perform better in local languages.⁵⁶ In the Volta Region, rural students were particularly disadvantaged. The performance of students in the Upper West Region stands out above the other regions.

⁵⁵ It is assumed that after 5 years of primary education, a student should be able to read or write simple sentences in English. This is not to deny the priority that should be assigned to literacy in relevant Ghanaian mother tongues.

⁵⁶ Ghana is implementing various programs with partners to enhance inclusion and equity. E.g., the Ghana Complementary Basic Education (CBE) Program is a GoG programme, which with funding from DFID and USAID, aims to provide over 200,000 out of school children between the ages of 8-14 years access to quality education by employing flexible learning approaches (e.g. mother tongue classes in basic literacy and numeracy before learners transition to the formal school system).

Table 2.19 Percentage of Students who can read or write in English, 2014

	All	Boys	Girls	Urban	Rural
Students 13–18 years					
Volta	39.6	40.6	37.5	71.4	34.2
Brong Ahafo	76.9	74.3	81.4	90.4	65.6
Northern	79.2	72.6	86.7	92.6	71.9
Upper East	77.9	73.2	83.1	86.2	75.8
Upper West	81.7	75.0	88.1	70.0	83.3
NSEZ	76.1	70.6	82.6	89.3	70.4
National ¹	94.8	94.8	94.9	97.1	92.3
Primary 5 to JHS3					
Volta	43.5	46.4	38.9	100.0	40.9
Brong Ahafo	78.3	73.0	87.0	92.9	65.6
Northern	81.6	78.9	84.6	89.8	77.2
Upper East	81.1	84.4	76.7	84.2	80.2
Upper West	87.5	86.3	88.9	84.6	88.0
NSEZ	79.5	77.9	81.5	89.5	75.3

Source: NGHDR Survey, 2014 and 2010 Population and Housing Census. Notes: ¹ for 2010.

BECE results for 2015 also underscore the challenges for the 3 Northern regions where 40-54% scored below average.

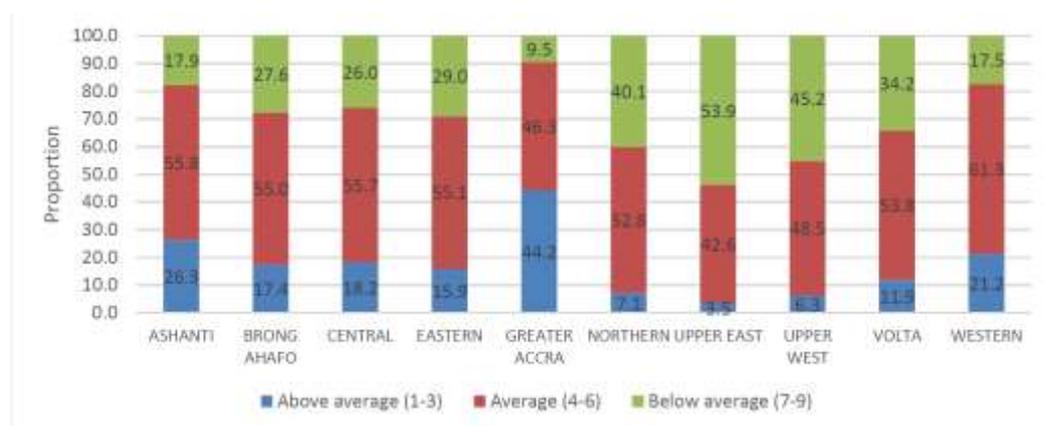


FIGURE 2.20 BECE RESULTS BY REGION, 2015

Source: MoE Education Sector Performance Report 2016

With regard to the performance of students in the National Education Assessment (NEA) Tests for English and mathematics, the results are presented for the 2013 and 2016 NEAs. The results for the 2 years are not comparable as regards P3, as this was changed to P4 for 2016. See Tables 2.20 and 2.21. As evident from the two sets of results, the performance of students in all three Northern regions was significantly poorer in comparison to the other regions of the country. In 2013, more than half the students scored below minimum competencies for P3 and P6 maths and P3 English, with around 10% or less being proficient at P3 level and at 3-7% being proficient at P6 level maths. By 2016, proficiency had improved at the P6 maths level. P3 and P4 results are not comparable. While for P6 mathematics, performance for both the NR and UWR had improved, it was still very low, while the UER saw very significant progress. For 2016, for P6 Mathematics, the percentage of students in Greater Accra demonstrating proficiency was more than four times greater than those for the 3 regions of the North, for P6 English it was more than 3 times greater.

Table 2.20 Percentage of students achieving minimum competency and proficiency levels in NEA (2013)

Competency level, by grade and subject	Regions									
	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western
P3 maths										
Below minimum competency	39.4	39.4	44.6	40.8	24.8	62.2	52.7	57.1	43.5	45.0
Minimum competency	37.4	37.3	35.4	34.9	31.3	28.0	37.1	32.5	35.0	38.8
Proficiency	23.2	23.2	20.0	24.3	43.9	9.8	10.2	10.4	21.5	16.2
P3 English										
Below minimum competency	39.6	36.8	38.9	38.0	20.4	62.1	60.8	58.9	40.6	47.9
Minimum competency	31.2	33.5	33.5	31.0	22.5	24.0	28.4	28.8	32.5	31.0
Proficiency	29.2	29.6	27.6	31.0	57.1	13.8	10.8	12.3	26.9	21.0
P6 maths										
Below minimum competency	34.8	35.8	48.4	37.3	17.9	58.9	50.0	46.1	37.3	44.5
Minimum competency	54.8	53.6	44.5	50.2	57.1	38.3	44.4	47.6	51.8	46.9
Proficiency	10.4	10.6	7.1	12.5	24.9	2.8	5.6	6.4	10.9	8.6
P6 English										
Below minimum competency	29.1	31.0	37.7	30.0	7.2	48.2	45.1	40.1	26.5	37.8
Minimum competency	34.0	28.7	33.4	29.7	15.1	35.8	32.2	35.6	27.5	31.1
Proficiency	36.9	40.2	28.9	40.3	77.7	16.0	22.7	24.3	45.9	31.1

Source: Ministry of Education (2014) NEA 2013

Table 2.21 Percentage of students achieving minimum competency and proficiency levels in NEA (2016)

Proficiency level by grade and subject	Regions									
	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western
P4 Mathematics										
Below Minimum Competency	42.9	47.2	49.7	43.2	18.0	61.0	58.5	71.5	44.2	46.2
Minimum Competency	33.9	32.8	35.1	36.6	35.2	26.6	28.4	23.5	32.3	34.2
Proficiency	23.3	20.0	15.2	20.2	46.8	12.4	13.2	5.0	23.4	19.5
P4 English										
Below Minimum Competency	26.2	36.9	28.6	28.8	5.7	34.7	50.4	56.1	29.7	31.1
Minimum Competency	34.6	33.3	39.6	36.3	19.7	37.5	33.1	33.1	33.8	35.5
Proficiency	39.2	29.8	31.8	35.0	74.6	27.8	16.5	10.8	36.5	33.4
P6 Mathematics										
Below Minimum Competency	25.3	31.5	28.8	30.3	11.7	46.4	32.1	48.5	29.2	30.5
Minimum Competency	48.0	46.6	48.8	47.2	39.9	43.0	47.7	41.1	45.1	48.8
Proficiency	26.7	21.9	22.4	22.5	48.3	10.7	20.2	10.5	25.7	20.7
P6 English										
Below Minimum Competency	24.4	34.6	28.7	28.3	5.1	40.0	44.1	46.2	29.6	31.9
Minimum Competency	36.6	35.6	37.8	36.1	16.3	37.2	33.8	39.7	33.0	37.2
Proficiency	39.0	29.8	33.5	35.6	78.6	22.8	22.1	14.1	37.4	30.9

Source: Ministry of Education (2014) NEA 2016

Understanding the Determinants: Rural -Urban Disparities and Deprived Districts

The NSEZ has a high percentage of predominantly rural districts and no doubt this is a factor underpinning the disparity in educational outcomes. The 2014 Technical Report for the NEA noted that in spite of overall gains in enrolment, irregular attendance and late entry into primary school posed serious problems for children from impoverished homes and those in rural areas.⁵⁷ Further, the distribution of resources, particularly trained teachers, is noted to favour urban and more well to do districts and thus to play an important role in driving the inequities observed in learning outcomes. The *Ghana 2016 National Education Assessment: Report of Findings* notes that the gap between rural and urban performance for both P4 and P6 English was particularly large. While more than half the pupils in P4 and P6 (54% and 56% respectively) in urban areas achieved proficiency, less than 27% in rural areas (24% for P6 and 26% for P4) did so. Further, just 14% of P4 pupils and 18% of P6 pupils from rural areas achieved proficiency in mathematics.

Since 1999, roughly a third of Ghana's districts have been classified as *deprived*, based on various education outcome and resource indicators, including GER in primary, gender parity, seats and core textbooks per pupil, share of schools needing major repairs, Basic Education Certificate Examination (BECE) pass rates in both English and mathematics, per pupil expenditure in primary, pupil-teacher ratio in primary, and the share of qualified primary teachers.⁵⁸ [The majority of 'deprived' districts are in one of the three Northern regions.](#)

As could be expected, performance among pupils attending schools in the deprived districts was much lower than that of pupils attending schools in not-deprived districts, and these differences were statistically significant. In 2016, for all grades and subjects, the proportion of pupils from deprived districts achieving proficiency was half that of pupils from non-deprived districts. The differential was particularly large for English: the percentage of children attending schools in deprived districts that reached or exceeded the cut-off for proficiency was 17%, in comparison to 41% for those in the non-deprived districts.

[It also appears that despite an increase in educational expenditures and concerted assistance to deprived districts, analysis points to disparities in education resources across urban/rural and poor/wealthy lines being exacerbated rather than attenuated.](#) Blampied et.al. (2018) and Etsey et.al. (2009) provide some useful learning, analysis and proposals in this regard.

2.4.2.5 Adult Literacy

The average literacy rate in English of the population in the NSEZ aged 15 years and above was low at 36%. It ranged from approximately 28 % in the Volta Region to 41% in the Brong Ahafo. While only about 11% of the population over 60 years were literate in English, this proportion increased to 58% in the 19–24-year age group and 64% among the 15–18 year olds. The pattern was the same across the zone, except for the Volta where the proportion of 15–18 year olds who could read and write was lower than 19–24 year olds.

⁵⁷ See Ministry of Education (2014). Data from 2011 is cited to demonstrate the scale of the problem. Attendance (as measured by net attendance ratio [NAR]) was, on the average, only 73% in 2011, suggesting children were not in school over 25% of the time.

⁵⁸ See Ministry of Education (Ghana Education Service National Education Assessment Unit) 2016

The negative relationship between literacy and age largely reflects the increase in school attendance over time. Literacy rates of less than 90% among the 15–18 age-group also raises concern about the quality of education in the zone.

Table 2.22 Adult Literacy Rate in English, 2014

Regions	15–18 years	19–24 years	25–44 years	45–60 years	Over 60 years	Pooled
Volta	35.7	44.1	22.3	13.9	16.7	27.7
Brong Ahafo	70.5	59.1	33.5	27.8	16.9	40.5
Northern	60.5	55.4	25.7	19.6	11.3	34.7
Upper East	70.6	67.4	32.9	16.4	5.6	38.8
Upper West	80.0	63.8	27.6	17.6	7.8	33.4
All	63.9	58.0	28.0	19.3	10.7	35.9

Source: NGHDR Survey (2014)

Men (43%) were more likely to be literate in English than women (30%). The proportion of literate women and men in the population increases when going from the older to the younger generation. A significant gender gap is present among the older generations, but virtually disappears among the 15–18 age-group. About 50% of the adult urban population is literate compared to 30% of the rural population. The urban-rural gap in adult literacy rates persists among the population aged 15–18 years and is larger than among the population aged 60 years and above (18 percentage point difference versus 13 percentage point difference). This suggests the quality gap between urban and rural education has not been successfully addressed.

2.4.2.6 Apprenticeship and Skills Training

The National Youth Policy identifies access to quality education and inadequate or inappropriate training for the job market as one of the several challenges facing the youth (Ministry of Youth and Sports, 2010) and a key driver of youth unemployment and underemployment. Skills training in Ghana is provided through formal institutions such as private and public schools and vocational training institutes and through the informal apprenticeship system (Bortei-Doku Aryeetey *et al.*, 2011). In 2009 the Northern Region had a minimum of 27 public and private technical and vocational (TVET) institutions while the Upper East and Upper West regions each had a minimum of 16.⁵⁹ The majority of the TVET institutions in the three regions are co-educational. All the institutions in the Upper East and Upper West regions, for which the Ministry of Education has information, are either women only institutions or co-educational. In the Northern Region 18 out of the 27 institutions are also either women only or co-educational. Figure 2.21 presents the results of the NGHDR Field Survey for youth that have either completed or are currently enrolled in a vocational or technical institute in the zone. Just about 4% of the youth in the NSEZ are estimated to have undergone formal skills training.

⁵⁹ The data of the Ministry of Education is based on the results of a census of vocational and technical institutions. Since not all institutions return the forms these numbers are considered as the minimum.

The relatively high incidence of youth who received or are receiving formal vocational or technical education in the Upper East and Upper West regions is notable given the high incidence of poverty in these regions.

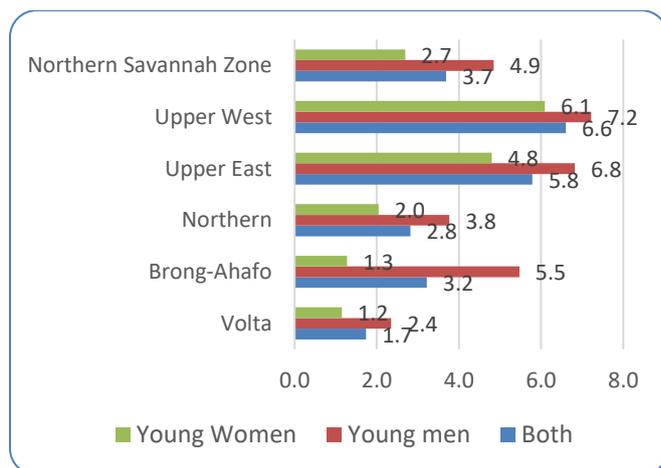


FIGURE 2.21 PERCENTAGE OF YOUTH WHO HAVE COMPLETED OR ARE CURRENTLY ENROLLED IN TVET/TERTIARY INSTITUTIONS, 2014

Source: NGHDR Survey (2014)

Young women are less likely to be or have ever been enrolled in a vocational or technical institution. This is not surprising since girls are often compelled to drop out of school at an earlier stage than boys. About 11% of the youth in the zone are either acquiring or have acquired some skills through informal apprenticeship training (Figure 2.30). In contrast to participation in formal skills training, young women (13%) are more likely than young men (9%) to have had apprenticeship training. Young women in the Volta, Brong Ahafo and Upper East regions were more likely to have had some skills training compared to those in the Northern and Upper West regions.

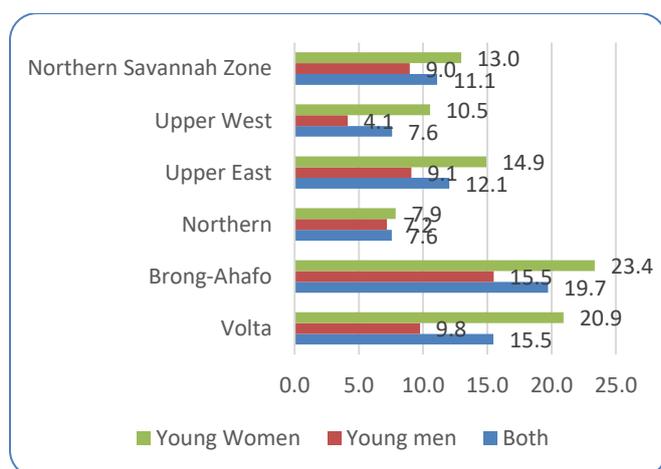


FIGURE 2.22 PERCENTAGE OF YOUTH WHO ARE OR HAVE BEEN APPRENTICES, 2014

Source: NGHDR Survey (2014)

The academic qualification requirements are likely to be a barrier for entry into formal apprenticeship schemes for young girls (given their higher dropout rates).

This could explain why they are more likely to be found in the informal training schemes.⁶⁰ In contrast to participation in formal skills training, young women (13%) are more likely than young men (9%) to have apprenticeship training. Young women in the Volta, Brong Ahafo and Upper East regions were more likely to have had some skills training compared to those in the Northern and Upper West regions. Academic qualification requirements could be a barrier for entry into formal apprenticeship schemes for young girls given their higher dropout rates and might explain why they are more likely than young men to be found in informal apprenticeships.⁶¹

A difficulty with the informal apprenticeships is that the master craftsmen and craftswomen do not always impart full knowledge to their apprentices (Bortei-Doku Aryeetey *et al.*, 2011) as apprentices are likely to set up enterprises in direct competition with their masters. Further, skills training is less likely to occur in rural communities. Only 9% of the rural youth were found to participate in apprenticeships.

Apprenticeship training usually occurs in the manufacturing and services sectors. Here there is significant variation in the areas of specialization by gender. Findings from the GLSS 6 Labour Force Report (2012/13) indicate that while 28.6% of males were likely to undertake apprenticeship training in building construction, with an additional 19.4% acquiring training in transportation and material moving trades, most females (53.5%) were likely to be focused on training in textiles, apparel and furnishing or in personal and grounds services (35.9%). About 57% of young women who are current or past apprentices received training in the garments industry. None received training as auto mechanics in contrast to 21% of young men apprentices or in carpentry and joinery, an activity that provides training to 17% of the young male apprentices. Another problem with the high dependence on the informal apprenticeship system is that it is not suited to providing skills in new sectors, e.g. ICT skills which are required for structural transformation of the NSEZ in this globalized era. The low levels of education and the pattern of skills acquisition provides an indication of the extent to which the NSEZ seems unprepared for economic transformation.

2.4.3 Standard of Living & Livelihoods

The main driver of the very low HDI for the zone is the standard of living sub-index, which is informed by the challenging situation for livelihoods and the significant levels of deep poverty in the zone. Chapter 3 explores this issue in greater detail.

2.5 Snapshot of progress on MDG Indicators and the transition from MDGs to SDGs

The Millennium Development Goals (MDGs) era came to a close at the end of 2015. With the MDGs, progress was measured at the national level. It was thus quite possible for an MDG target to be met and yet for there to be significant disparities at the sub national level.

⁶⁰ Entry into the informal apprenticeship system does not typically require formal qualifications. However, for some professions literacy is required and some master craftsmen provide their apprentices literacy and numeracy lessons (Bortei-Doku Aryeetey *et al.*, 2011).

⁶¹ Entry into the informal apprenticeship system does not typically require formal qualifications. However, for some professions literacy is required and some master craftsmen provide their apprentices literacy and numeracy lessons (Bortei-Doku Aryeetey *et al.*, 2011).

Table 2.23 Snapshot of Progress on the MDGs

	Indicator	National	NSZ	National	NSEZ Status
MDG1	Poverty Incidence (\$1.25) (GLSS 2013)	24.2	45.4*	<i>achieved</i>	<i>Off track</i>
	% of children who are underweight (GSS 2014)	11	19.5	<i>achieved</i>	<i>Slow progress</i>
	% of children who are stunted (NGHDR, 2014 for NSEZ)	23	18	<i>achieved</i>	<i>Off track</i>
	Employment to population ratio (%) (NGHDR, 2014 for NSEZ)	67.4	63.6	<i>Significant progress</i>	<i>Slow progress</i>
	Vulnerable employment (%) (NGHDR, 2014 for NSEZ)	72.4	83	<i>Likely to be off track</i>	<i>Off track</i>
MDG2	Net Enrolment Ratio (NER) in primary education, (GES, 2014)	83.9	81.5	<i>Significant progress</i>	<i>Significant progress</i>
MDG3	Gender Parity Index: 2014, Primary Secondary(JHS) Tertiary*	0.99	1.00	<i>achieved</i>	<i>achieved</i>
		0.93	0.92	<i>Significant progress</i>	<i>Significant progress</i>
		0.71	0.56	<i>Off track</i>	<i>Off track</i>
	Share of women in wage employment in the non-agricultural sector (PHC, 2010)	32.7	31.0	<i>Off track</i>	<i>Off track</i>
	Proportion of seats held by women in national parliament (%)	10.6 (30)	5% (4)	<i>Off track</i>	<i>Off track</i>
MDG4	Under 5 Mortality rate, (Per 1000 live births) (MICS 2011)	82	105	<i>Significant progress</i>	<i>Off track</i>
	Infant Mortality rate, (per 1000 live births) (MICS 2011)	53	64	<i>Off track</i>	<i>Off track</i>
MDG5	Maternal mortality ratio, (Per 100,000 live births) PHC 2010	485	585*	<i>Off track</i>	<i>Off track</i>
	Proportion of births attended by skilled health personnel (NGHDR, 2014)	68.4	65.6	<i>Significant progress</i>	<i>Slow progress</i>
	Antenatal care coverage (%)	96.4	87	<i>Significant progress</i>	<i>Significant progress</i>
MDG6	HIV Incidence Rate (MOH 2013)	1.3	1.2*	<i>On track</i>	<i>Significant progress</i>
	HIV Awareness rate	75	51		<i>Slow progress</i>
MDG7	Proportion of Population using improved water sources, (NGHDR, 2015)	76.4	80.6	<i>achieved</i>	<i>achieved</i>
	Proportion of Population using improved Sanitation facility, (NGHDR, 2014)	42	16.6	<i>Off track</i>	<i>Off track</i>
MDG8	ICT Access: Mobile Phone penetration (GLSS 2012/2013)	76	70	<i>achieved</i>	<i>significant</i>

Source: estimated for the NSEZ from various sources including Ghana 2015 MDG Report

Note: *The NSEZ's figure is the average of the five regions which includes the entire Brong Ahafo and Volta regions.

In the NSEZ, given the significant differentials in terms of access to infrastructure, facilities, and human resources in critical sectors, progress was often below the average for the country. Most of the targets for the zone were off track, some recorded slow progress, fewer recorded significant progress.

With the Sustainable Development Goals (SDGs), which came into operation in January 2016, there is a dedicated focus on disaggregating data and progress at sub-national level (*leave no one behind*).

While for the North it is evident that there are several areas where addressing the ‘unfinished’ MDG agenda is critical and still relevant, the sustainable development goals (SDGs) can help the zone to address under-development in a more holistic way.

The SDGs highlight the importance of an integrated focus and coherence across economic, social and environmental sustainability. More specifically, the SDGs are strategically and analytically useful for the following reasons:

- The SDGs differ from the MDGs in that they provide for flexibility in a choice of indicators that are most suitable at national and sub-national levels. The people in the zone can have their priorities better reflected and have progress judged by indicators more appropriate to conditions in the zone;
- Agenda 2030’s imperative to move beyond national averages and to explicitly promote a focus on tackling sub-national disparities and “leaving no one behind”, can be very useful for ensuring a national and regional policy focus to ensure that the zone which lagged behind on the achievement of the MDGs is not ‘left behind’ going forward. As evident from the presentation of poverty maps (GSS 2015) for the zone earlier in this chapter, there is significant variation at district level which needs to be taken into account in designing strategies.
- The SDG approach to balancing economic transformation with environmental sustainability and social justice offers a way forward to jointly tackling the intersecting drivers of economic underdevelopment, environmental fragility and relatively low levels of investment in social development. “This focus uniquely suits a zone plagued by serious environmental fragilities which contribute to extreme poverty and vulnerabilities”;

Chapter 3: Labour Force Participation, Jobs and the Structure of Production

3.1 Introduction

A review of economic production and resource use is critical from a human development point for two main reasons: the extent of engagement in employment and the pattern of economic production inform the standard of living (which is one of the sub-components of the HDI) and point to disparities in opportunities. The way production is undertaken has impacts on sustainable resource use and sustainability of human development outcomes over time. This chapter provides a snapshot of economic activities engaged in by the people in the zone, followed by an analysis of the structure of economic activities and coping strategies, including high rates of out-migration. The chapter concludes by outlining some suggested measures to enhance productive and decent employment and sustainable livelihoods.

3.2 Economic Profile of the Population

In 2014, 73.2% of the population aged 15 years and older in the NSEZ was found to be economically active.⁶² The Northern Region had the highest economically inactive population (30.9%). Unemployment was above the national average, particularly in rural areas. About 91.4% of persons 15 years and older reported being employed in urban areas as compared to 88% in the rural areas. The unemployment rate among females was also higher (11.2% compared to 10.5% for males). Males (76.3%) were more likely to be economically active than females (70.3%). The NR recorded the lowest employment to population ratio (55.8%).⁶³

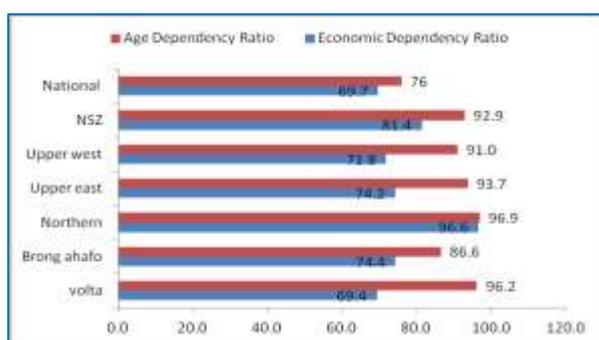


FIGURE 3.1 AGE & ECONOMIC DEPENDENCY RATIOS BY REGION

Source: Ghana Statistical Service (2010) PHC

The age dependency ratio⁶⁴ for the Northern Savannah Ecological Zone was high (92.9) as compared to the national ratio (76.0), pointing to a higher number of dependents (those below 15 or above 64 years of age). The Brong Ahafo region had the lowest age dependency ratio (86.6) while the Northern Region registered the highest (96.9).

⁶² A person is considered economically active if they are engaged in the following: worked for pay or profit or family gain for at least 1 hour within the 7 days preceding the survey. This included persons who were in paid employment or self-employment or contributing family workers; those who did not work but had a job to return to or were unemployed.

⁶³ The employment to population ratio provides information on the proportion of the working-age population that is actually employed. It is computed by dividing the total number of employed person 15 years and above by the population of the same age group.

⁶⁴ The age dependency ratio is a measure of the dependent population (persons aged less than 15 years and those above 64 years) relative to the working population (i.e. the population aged 15–64 years). The larger this ratio, the heavier the potential economic burden the working population has to bear.

The dependency ratios for the Upper East Region and the Volta Region (93.7 and 96.2% respectively) exceeded the average for the Northern Savannah Ecological Zone. The high dependency ratio observed for these regions may partly be the reflection of the out-migration of working age population (i.e. those within age group 15–64 years) to the South in search of jobs, leaving behind a large number of children and older people. It should also be noted that the age dependency ratio effectively assumes that all persons aged 0–14 years or 65 years and above do not work or cannot work and are, therefore, dependent on others. It also assumes that all persons aged 15–64 years are working and therefore not dependent on others. Thus, there is the tendency to ignore the fact that there are many economically independent older persons, as well as economically dependent unemployed adults.

The economic dependency ratio, i.e. the ratio of total economically inactive population to the employed population is lower than the age dependency ratio (Figure 3.1). Like the age dependency ratio, the economic dependency ratio in the NSEZ (81.4) is higher than the national ratio (69.7). This is largely driven by the phenomenon of child labour, children dropping out of school to work and continued employment by the elderly and aged over 64 years. The NR recorded the highest economic dependency ratio of 96.6%, almost the same as the age dependency ratio. Nevertheless, dependency ratios are useful as crude indicators of potential levels of economic, physical and social support needed by persons in these broad age groups.

Youth Unemployment

Youth unemployment is a growing concern in Ghana and even more so in the NSEZ given its potential to catalyze social upheaval. It also drives adolescent North-South migration as the lack of jobs for the youth encourages them to migrate to the South and to engage in elementary or menial jobs such as push truck, “*Kayayeri*” (head porters) etc. (See Box 3.1).

The NGHDR Field Survey pointed to a youth unemployment rate⁶⁵ in the NSEZ of 18.04% (Figure 3.2). The Northern Region had the highest rate of youth unemployment with close to 4 out of every 10 youth (37.5%) being unemployed. The Upper West Region followed with a youth unemployment rate of 15.8%. The unemployment rate in the rural areas (18.7%) was 2 percentage points higher than the rate in the urban areas (16.5). Young males (18.6%) were more likely to be unemployed than their female counterparts (17.5%).

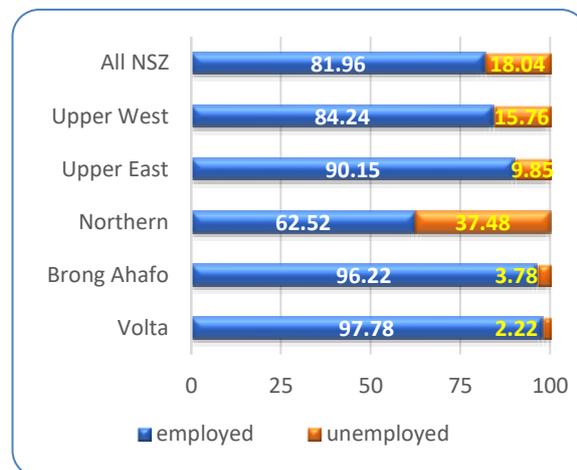


FIGURE 3.2 UNEMPLOYMENT RATE OF YOUNG PEOPLE AGED 15–24 YEARS BY REGION

Source: NGHDR Field Survey (2014)

⁶⁵ The ratio of the number of people aged 15–24 years who are unemployed divided by the number of people in the labour force of the same age group.

3.2.1 Vulnerability of Employment

Although employment to population ratio appears high in the NSEZ, most of the job opportunities are in vulnerable employment. Vulnerable workers do not have formal work arrangements and, are therefore more likely to lack decent working conditions and adequate social security. Vulnerable jobs are also characterized by inadequate earnings, low productivity and difficult conditions of work that undermine workers’ fundamental rights, and do not allow workers to live a life of human dignity (ILO, 2000).

The ratio of unpaid or contributing family workers and own account workers to total employment is often used as an indicator to monitor vulnerability.⁶⁶ Figure 3.3 shows that the majority of the employed in the NSEZ are vulnerable - more than 8 out of every 10 workers (83% according to the 2014 NGHDR Field Survey). Both the 2000 and 2010 PHCs (not comparable with the 2014 survey) also recorded significantly high levels of vulnerable employment.

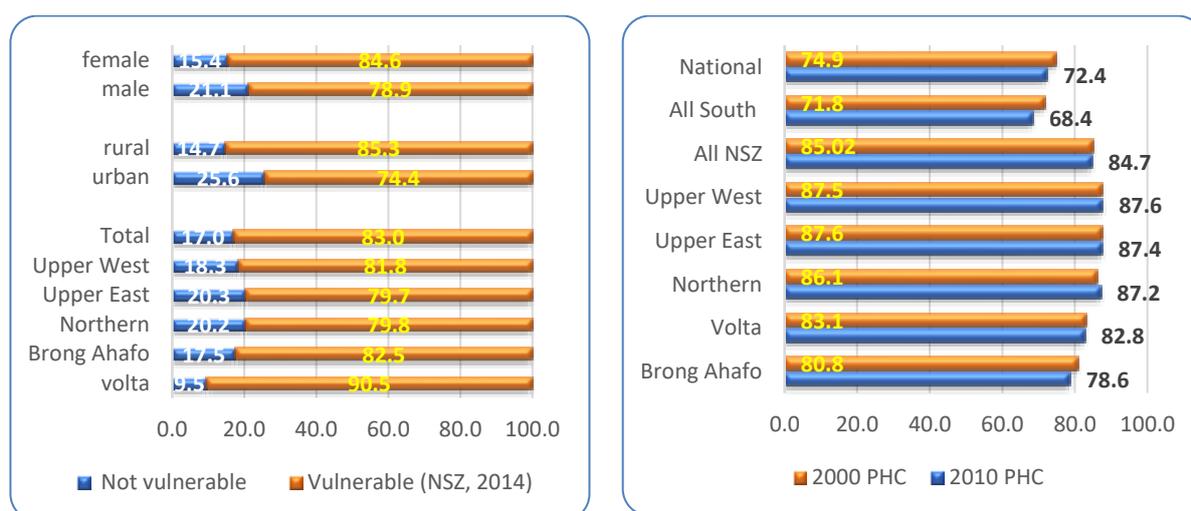


FIGURE 3.3 AND FIGURE 3.4 VULNERABLE EMPLOYMENT BY REGION, RESIDENCE AND SEX

Source: NGHDR Field Survey (2014)

Source: PHC (2000 & 2010).

While there appears to be very little disparity across regions in the zone, except for the Volta Region which recorded the highest vulnerability of employment of a little over 90%, the disparity between urban and rural workers is pronounced. More than 85% of workers in the rural areas are more likely to be in vulnerable employment compared to 74% in the urban areas. Figure 3.3 further shows that vulnerability among female workers (84.6%) is about six percentage points higher than their male counterparts (78.9%).

⁶⁶ According to the International Classification of Status of Employment (ICSE), own account workers refer to those who, working on their own account or with one or more partners hold the type of jobs defined as “self-employment jobs” and have not engaged on a continuous basis any employees to work for them. People engaged in own account and contributing family jobs are deemed vulnerable because they are more likely to lack relevant elements associated with decent work as mentioned above.

3.2.2 Underemployment

Underemployment occurs when there is insufficient demand for labour services or there are unfavourable climatic conditions, forcing labour to work insufficient number of hours per day or fewer days or weeks in a year despite desiring to work more or full-time.⁶⁷ The data available does not allow us to identify the underemployed based on this. An alternative measure -the number of workers who work less than 40 hours a week is used.

Data in Figure 3.5 indicate that close to 3 out of every 10 workers (28.9%) in the NSEZ were underemployed. The Volta and the Upper West regions topped the list - 38% and 35.8% respectively - while the Northern Region had the lowest incidence of underemployment at 25.4 %.

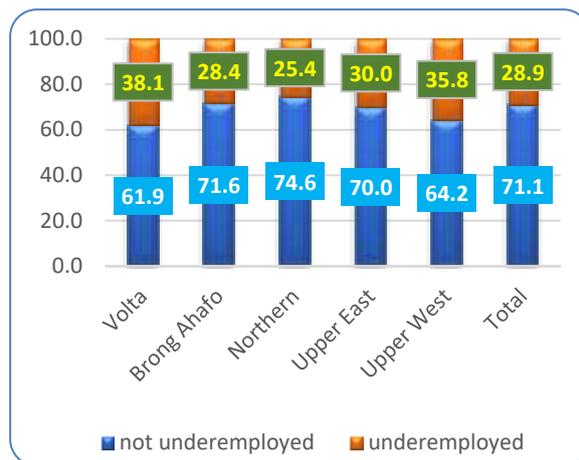
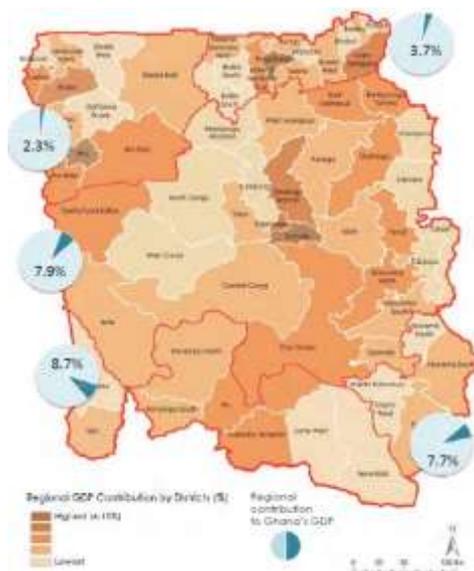


FIGURE 3.5 PROPORTION 15 YEARS AND OLDER WHO ARE UNDEREMPLOYED BY REGION

Source: NGHDR Field Survey (2014)

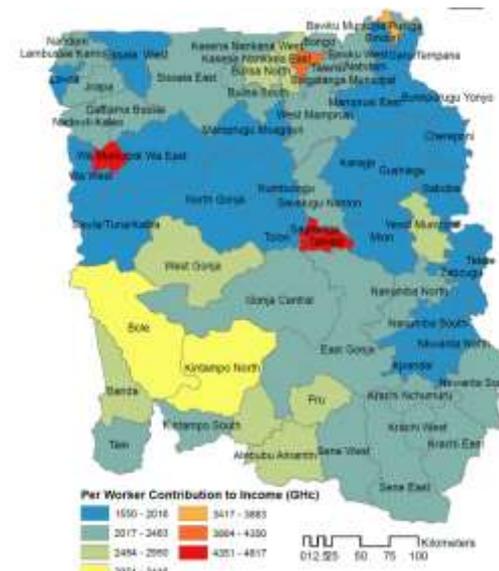
3.3 Structure of Economy and Employment

Map 3.1 Estimated Regional Contributions to National GDP (%)



Source: SADA Master plan (2016) based on data from LUSPA/TCPD (2015b)

Map 3.2: Per Worker Contribution to Income in the NSEZ, 2014



Source: LUSPA (previously TCPD), vol 1.p. 54 (6th GLSS data)

⁶⁷ Underemployment can also mean “over-qualification” or “over-education”, or the employment of workers with high education, skill levels, or experience in jobs that do not require such abilities (Erdogan and Bauer, 2009). E.g., a trained medical doctor who works as a taxi driver would experience this type of underemployment.

Ideally for the structure of production, we should make use of shares of gross domestic product (GDP). Unfortunately, Ghana does not currently produce regional GDP data. LUSPA (2015) provides some estimates based on contribution to income. These were developed further for SADA-led master planning exercise that was underway for the zone. According to this, the NSEZ was estimated to contribute to less than 30% of the national GDP, with the Northern, Upper West and Upper East Regions together contributing about 15% to GDP (Figure 3.6). This is not too surprising given the largely rural subsistence economy of the zone. There are also significant spatial variations in productivity and per worker contributions to income across the zone⁶⁸ – with the highest levels in the three most urbanized municipalities – Tamale, Wa and Bolgatanga (see Map 3.2). **The largest source of employment in the zone was the primary sector (74% compared to 40% at the national level)**, although the sector’s per worker contribution to GDP for the zone was the least given the low level of productivity in the largely rain-fed subsistence agriculture. See Figures 3.6 and 3.7.

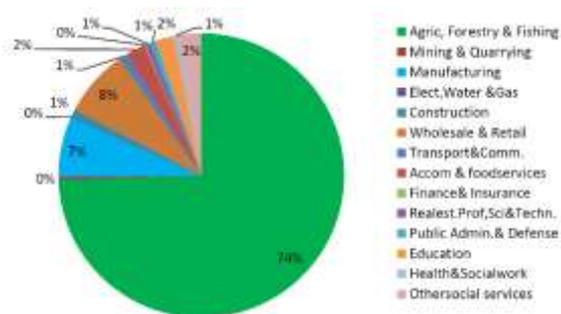


FIGURE 3.6 EMPLOYMENT STRUCTURE OF NSEZ



FIGURE 3.7 AVERAGE WORKER CONTRIBUTION TO GDP, NUMBER OF EMPLOYEES BY SECTOR (2010)

Source for figures: LUSPA/TCPD (2015) Vol 1, p.46 based on 2010 GSS PHC & National Account Statistics, 2012

There was significant variation in terms of economic activities within the zone, with higher levels of manufacturing in the NR, UER and UWR and very insignificant levels in northern BA and northern Volta. See Table 3.1.

Region/Economic Activity	Northern Volta	Northern Brong Ahafo	Northern	Upper East	Upper West
Agriculture/fishing/forestry	86.85	64.79	59.16	43.40	78.87
Manufacturing	0.40	0.51	4.19	4.36	2.90
Construction	0.33	1.66	1.99	5.78	8.26
Finance/insurance/services	3.60	3.03	4.78	4.88	1.17
Wholesale/retail trade	3.59	19.71	2.25	9.57	2.84
Community/social services (e.g. security)	5.23	10.30	27.63	32.01	5.96
Total	100	100	100	100	100

Source: NGHDR Field Survey, 2014.

⁶⁸ LUSPA (2015). As GDP data is unavailable at the district level, the basic annual earnings or income in each employment category was multiplied by the number of employees to arrive at the income earnings. A summation of all the employment categories was derived to gain basic income earnings for each district.

3.3.1 The Primary Sector

Within the primary sector, the majority of households were found to be focused on crop farming (see Table 3.2). The NSEZ produces cereals, roots and tubers and legumes. The zone dominates the production of rice, maize, cowpea, groundnuts and yam.⁶⁹ The NR and UER are major contributors to rice production. The share of the three Northern regions, as well as Volta and Brong Ahafo in Ghana's maize output increased from 32% in 2000 to 51% in 2013, representing an increase of 60%. Chapter 5 elaborates on the game changing character of strategic investments in irrigation which would allow for double and triple cropping of crops and contribute to increasing incomes in the zone.

Table 3.2 Composition of Production by Agricultural Households, 2010

Region	Crop Farming	Tree Growing	Livestock	Fish Farming
Northern	95.9	0.9	60.9	0.2
Upper East	96.7	0.4	82.8	0.1
Upper West	95.7	1.9	63.7	0.1
Volta	94.9	0.6	37.2	0.3
Brong Ahafo	95.8	1.4	36.0	0.1
Ghana	95.1	1.1	40.5	0.2

Source: Ghana Statistical Service, Regional and National Population and Housing Census Reports.

In Ghana, livestock rearing is concentrated in the rural savannah where 86% of draught animals, 63% of cattle and about 80% of guinea fowls are reared (GSS 2014). It is widespread particularly in the UER, UWR and NR. For the most part, herds and flocks are small, production methods are simple, and sales are largely to finance consumption or working capital for farming. Pigs, small ruminants and poultry are predominantly reared by women and youth.

About 7% of households were into fish farming (Table 3.3). An increase in fish farming can make protein more easily available for household nutrition since the other livestock are kept for purposes that limit their use for household consumption.

Table 3.3 Distribution of Household owning livestock by locality

Livestock	Rural savannah	Others
Draught animals	85.6	15.4
Cattle including calves	63.1	26.9
Sheep	59.0	41.0
Goats	42.4	77.6
Pigs	62.9	36.1
Chicken	23.1	76.9
Guinea fowls	79.7	20.3
Fish farms	6.5	93.6

Source: GSS (2014), GLSS 6 Main Report.

Aside from irrigation, other challenges for agriculture include: access to land at scale; the lack of affordable access to inputs (a major issue given the significant poverty levels and small holder farmer base), low extension worker to farmer ratios; and poor transport infrastructure which limit access to markets.

Farmers need guidance on much more targeted use of improved seeds and fertilizers in line with the specific soil and nutrient quality of their land. The seed production system has a good regulatory framework, however, the capacity of the institutions (staff, resources) is limited.

⁶⁹ MOFA Production Statistics various years.

Ghana Commercial Agriculture Project (GCAP); Agricultural Mechanization Service Centres (AMSECs); National Food Buffer Stock Company (NAFCO); the Block Farms project; and the Seed and Fertilizer Law are expected to contribute to improving the environment for the supply and use of quality seeds.

An important aspect of agricultural transformation is the use of technology and innovation to boost productivity across value chains and enhance market competitiveness. The zone has various centres of knowledge: e.g., the University for Development Studies (UDS) which has a Department of agricultural economics and agribusiness; various Polytechnics, the Savanna Agriculture Research Institute (SARI), and the Animal Research Institute. However, a common thread is the limited funding available for research which is critical for the zone. Data for assessing agriculture R&D for these institutions are not available therefore trends in the Agriculture Science and technology indicators for Ghana are used as proxy. The main sources of funding for the institutions are government (84%) and donors (8%). Public spending increased cumulatively by 53% between 2000 and 2011 to a level of USD68.1 million.⁷⁰

Another factor to consider is scale and orientation of farming. Small farmers range from 40% of the sample in Upper West and Brong Ahafo, to 55% in the Upper East region, (see table 3.4). Nevertheless, there appears to be some shift towards the medium and bigger farm sizes (6–12 Ha). With the exception of the Northern Region, there appeared to be some scope to increase farm size to more than 12 hectares.

District	<2 Ha	2–6 Ha	>6 - 12 Ha	>12 Ha	Possibility of >12 Ha
Upper East Region	55.3	39.2	5.7	0.0	59.7
Upper West region	40.3	44.8	11.8	3.1	70.8
Northern Region	44.7	47.1	5.9	1.9	42.4
Brong Ahafo Region	40.5	48.9	6.8	3.8	85.9
Average	45.6	45.0	7.4	2.0	62.2

Source: Recalculated from NRG⁷¹ Field Data, (2012)

A report of a survey of medium and large-scale farms in the NSEZ by IFPRI and SARI⁷² (it covered 8 districts with only one, Ejura, being outside the NSEZ.) confirms this shift towards medium and large farms. The report finds that at least 50% of the sample of 1843 farmers started with farms averaging 1.2 hectares; small scale (<5ha) farmers in the sample started with 0.81 hectares. Similarly, both the medium (5–20 ha) and large-scale farmers (>20 ha) started small with 1.62 hectares. The report concludes that it is possible to grow smallholders into large farmers.

The survey also found that yields of small farms were comparable to those of the medium and large farms. In the case of rice, sorghum, soybean, and cassava, yields on small farms were better than the sample average.

⁷⁰ ASTI (2014) Accessed at asti.cgiar.org/pdf/factsheets/Ghana-Factsheet.pdf on December 1, 2014

⁷¹ The NRG⁷¹ survey does not include districts in the Volta Region.

⁷² Chapoto *et al.*, 2014.

This revisits the debate⁷³ as to whether large scale farms necessarily have higher productivity (more efficient) than small ones. Petit and Debar (2014) note that the small farms can improve their productivity and efficiency if they adopt a business approach and are supported with inputs, technology and knowledge and are linked to markets. The study also examined maize yields estimated from the GLSS 5 survey and the 2006 agricultural production data from the Ministry of food and Agriculture. Findings suggested that the use of improved seed and fertilizer in combination almost doubled maize yields.

An analysis of changes in crop yields from Ministry of Food and Agriculture’s (MOFA) production data from 2000 to 2013, points to marginal growth in yield of almost all the crops but also high levels of variability in yield growths across crops and regions. In many cases, production growth was driven by area expansion – e.g., rice in Upper west and Northern Volta; Maize in Upper East, Northern Brong Ahafo and groundnut in the Upper West – but this was not always accompanied by an increased use of inputs at recommended levels.

Data from the NGHDR survey point to improvements in the proportion of farmers using various inputs and improved methods but the fact that yield improvements were small requires further explanation in terms of whether the application rates were in fact at recommended levels.

Commercial orientation is also an indication of transformation. The proportion of farmers selling maize and who they sell to are used to assess the extent of

Buyer Type	Full Sample	Small	Medium	Large
Small-scale trader	36.7	39.2	52.9	15.1
Large-scale trader/wholesaler	25.7	16.5	19.3	35.4
Retailer/marketer	24.9	36.4	22.3	26.9
Other households for consumption	0.1	0.2	0.1	0.0
Direct sale to NAFCO	0.4	1.7	0.2	0.5
Sale to NAFCO through an agent	2.1	0.3	0.2	4.9
Out grower	6.5	4.7	3.1	11.3
Processors	2.0	0.1	0.1	4.8
All other buyers	1.5	1.0	1.9	1.0

Source: NRG (2012)

commercialization among farmers. However, selling to the small trader is still predominant among small and medium farmers. Outgrower schemes are relatively limited in the region.

Aggregation of produce from small producers in warehouses and the use of warehouse receipt systems (where receipts for crops stored can serve as collateral for credit) can, in principle, help to reduce transactions costs, attract larger buyers, thereby enhancing access of producers to bigger markets while meeting the financial needs of medium scale farmers. However, use of formal warehouses and warehouse receipt systems by small farmers is low. For the issues facing use by small farmers see Miranda et.al. (2018). See chapter 5 on Transformative Investments in Infrastructure.

Livestock off-take rate is the indicator for assessing the level of commercialization of livestock keepers. The rates are high for domestic and guinea fowls but not so for sheep and goats (Table 3.6).

⁷³ M. Petit and J. Debar (2014) “Small vs Large farms: an old debate which remains open today” FARM

Table 3.6 Livestock Off-take (Number of Animals kept and sold in a year per household)

Region	Domestic fowl			Guinea Fowl			Goat			Sheep		
	Kept	Sold	% Off-take Rate	Kept	Sold	% Off-take Rate	Kept	Sold	% Off-take Rate	Kept	Sold	% Off-take Rate
Upper East	19	12	63	19	13	68	8	3	38	9	4	44
Upper West	17	10	58	15	12	80	12	5	42	12	4	33
Northern	21	11	52	18	11	61	8	4	50	9	3	33
Brong Ahafo	25	16	64	9	5	56	11	5	45	11	5	45

Source: NRGF (2012)

Since livestock is an integral part of farming systems in the NSEZ, support for scaling up is key for the agricultural transformation in the zone. Prof. David Millar passionately advocates for both livestock and grasses (the focus is currently on commercial value trees). Grasses are important for fodder but also for baskets, fertilizer and fuel briquettes etc. and need to receive more attention in development policies. Veterinary services and information on good husbandry practices can also help to improve the contribution of livestock to household income, food security and nutrition.

3.3.2 Mining and Quarrying

Mining is mostly concentrated in the Bole District extending towards Wa (highest concentration of gold deposits in the entire NSEZ) and Bawku West, Kasena Nankana, Builsa and Jirapa Lambusie. The high estimated levels of per worker income earnings in Bole and Kasena Nankana East districts are the result of high concentration of mining and quarrying activities located therein.

Well-planned mining concessions that can leverage advanced and sustainable mining methods need to be encouraged as well as sustainable small scale artisanal mining.

There are estimated to be significant mineral deposits in the ecological zone including gold, diamond, manganese, iron ore, and limestone among others. However, the existing mineral maps do not always capture these and need to be updated for the zone. In the Volta region, feasibility studies have shown that the Voltaian and Keta Basins as well as areas of Hohoe and Nkwanta have proven Base Metal Potentials (Ministry of Land and Natural Resource, 2012). The Volta region also has much potential in terms of salt winning but that is mostly in the Southern part of the Volta region along the sea and the Keta lagoon.

Map 3.3 Mineral Resources of the NSEZ and Illegal Mining 'Galamsey' Sites



Source: Minerals Commission, 2010

Source: LUSPA (previously TCPD) (2015b) based on data from Minerals Commission

In the Brong Ahafo region, large number of precious minerals such as gold, bauxite, and iron ore have been proven to be economically viable and are located in areas such as Asutifi, Asunafo North and Tano North (Ghana Statistical Service, 2013). Diamonds are found at Wamanhinso, granite at Gambia No 2, and Dadiesoaba while Goatifi, Konkrotreso have bauxite deposits (GSS, 2013).

The construction, electricity, water, gas supply, mining and quarrying sub-sectors is estimated to absorb less than 2% of total employees in the zone (LUSPA, previously TCPD), 2015a). This is likely to be an under-estimate of livelihoods in the sector as a significant amount of the mining and quarrying activities are illegal small and medium scale artisanal mining (Galamsey).

Artisanal and Small-scale Mining (ASM) is typically practiced in poor and remote rural areas by those with few employment alternatives (Labonne, 2003). This is the case particularly for youth. (Hilson and Potter, 2005). The NGHDR survey (2014) points to school drop-out and child labour as major risks. **Livelihood/employment was found to be the most important reasons for the exploitation of natural resources** (Figures 3.8 and 3.9). There was no significant variation between the frequencies of men and women who engaged in the exploitation of natural resources.

The survey did not look at the impacts on health and wellbeing as a result of the exploitation. Evidence however points to several adverse impacts. Unregulated mining activities are contributing to land degradation, pollution and loss of soil and value of lands. While Galamsey mining is typically referred to as artisanal mining, the use of excavators to dig deep into the earth has been increasing with concomitant increases in the scale of contamination of underground and surface water amongst other things.

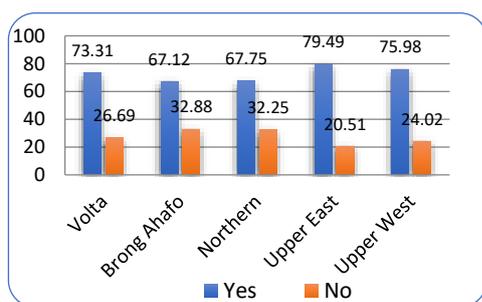


FIGURE 3.8 EMPLOYMENT OPPORTUNITIES FROM EXPLOITATION BY REGION

Source: NG-HDR Field Survey (2014)

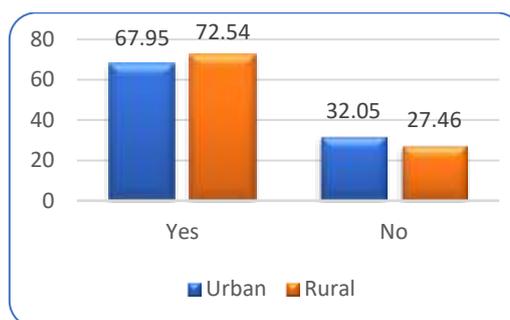


FIGURE 3.9 RURAL URBAN VARIATION IN TERMS OF EXPLOITATION

Source: NG-HDR Field Survey (2014)

3.3.3 Tourism and Livelihoods

There are potential tourist sites that have remained underdeveloped for long in the NSEZ. Key challenges here are limited transport and hospitality infrastructure which are needed to attract tourists. The common tourist sites in the region are the Mole Game Reserve, Laribanga Mosque, the Mystery Stone, Paga crocodile pond and the slave market (in Salaga) (Picture 6.3). The Ghana Tourism Authority is in the process of identifying and developing potential and existing tourism sites in the NSEZ through strategies like capacity development, education and marketing and development of basic infrastructural facilities.

Picture 3.1 Tourist attractions in the NSEZ (Larabanga Mosque & Paga Crocodile Pond)



Source: [World Monuments Fund](#)



Source: [Seek Ghana](#)

3.4 Vulnerability and Coping Strategies

Inhabitants of the NSEZ face a number of structural vulnerabilities. For example, the WFP (2012), and MOFA (2007) Food and Agriculture Sector Development Policy (FASDEP II) as well as other surveys cite the role of poor infrastructure and difficulties in accessing markets as being two of the most important factors constraining the growth of the agricultural sector and heightening vulnerabilities of those dependent on agriculture.

WFP (2012, citing data from MoFA 2007) notes that the high post-harvest losses (of up to 20-50% for fruits, vegetables, roots and tubers and 20-30% for cereals and legumes) seen in the zone can partly be attributed to the lack of storage and drying facilities, which forces the farmers to sell their produce immediately after the harvest when prices are low and requires them to re-purchase them for consumption during the lean season when prices are at their highest.

It also found that a quarter of northern households had members who migrated to other parts of the country in the year before WFP's 2012 Comprehensive Food Security and Vulnerability Analysis (CFSVA), peaking at 34% for the Upper West Region. The main driver for migration was the search for employment opportunities followed by inadequate food year-round.

Households in the NSEZ were also exposed to a wide range of 'negative shocks'. Death or illness of a household or family member was the most frequently reported shock, accounting for 32% of the total shocks reported. Next in importance were policy (29%) and natural disaster shocks (20%). Respondents provided information on how frequently a particular shock had occurred during the previous 12 months. For example, about 33% of the shocks involved the direct loss of assets due to theft, destruction by fire or livestock death (Figure 3.10). Assets can act as buffers during shocks to keep a household from falling into poverty. If, however, the negative event directly results in asset loss, this suggests that households' capacity to avoid falling into poverty by using assets as buffers is greatly reduced.

A wide range of coping strategies are employed by the different households when they are hit by shocks. The most frequently used strategy is the sale of physical assets such as livestock, land (Figure 3.11).

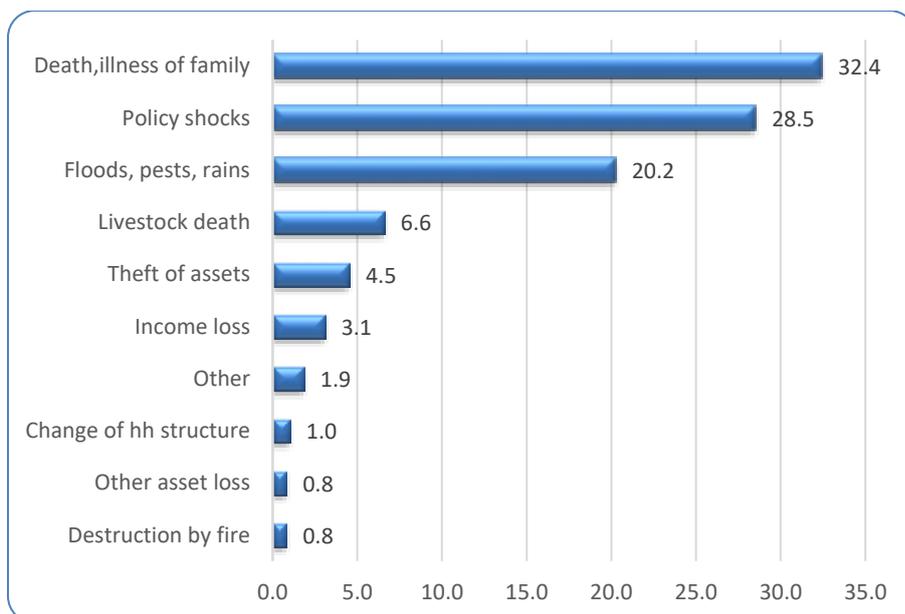


FIGURE 3.10 FREQUENCY OF SHOCKS (%)

Source: NGHDR Field Survey, 2014.

Households make recourse to market (selling assets, loans and taking on more work) and informal social protection mechanisms such as assistance from family and friends as coping strategies.

There is very little recourse to formal social protection mechanisms as social protection programmes are not yet available at scale and there is little by way of accessible and affordable livestock or other asset insurance for the poor.

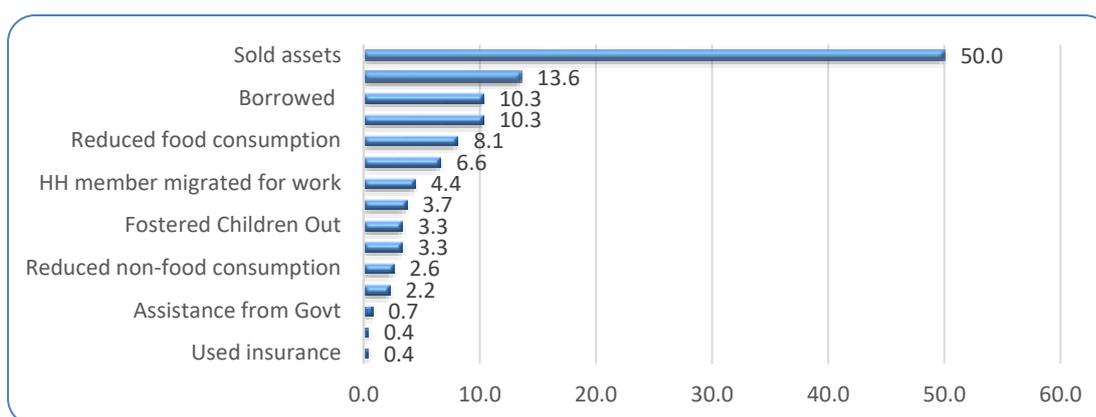


FIGURE 3.11 HOUSEHOLD COPING STRATEGIES IN RESPONSE TO SHOCKS IN THE NSEZ, 2014

Source: NGHDR Field Survey, 2014.

Another coping strategy is migration. The zone is a net supplier of migrants to the rest of the country, particularly from the Upper West Region. It was thus surprising to find that less than 5% of households reported migration as a coping strategy in the NGHDR survey. Perhaps, it is so common that many did not find it worth mentioning. Some of the strategies adopted by households such as the sale of assets and advanced sale of the harvest run the risk of increasing the likelihood that the household will fall into poverty or remain in poverty.

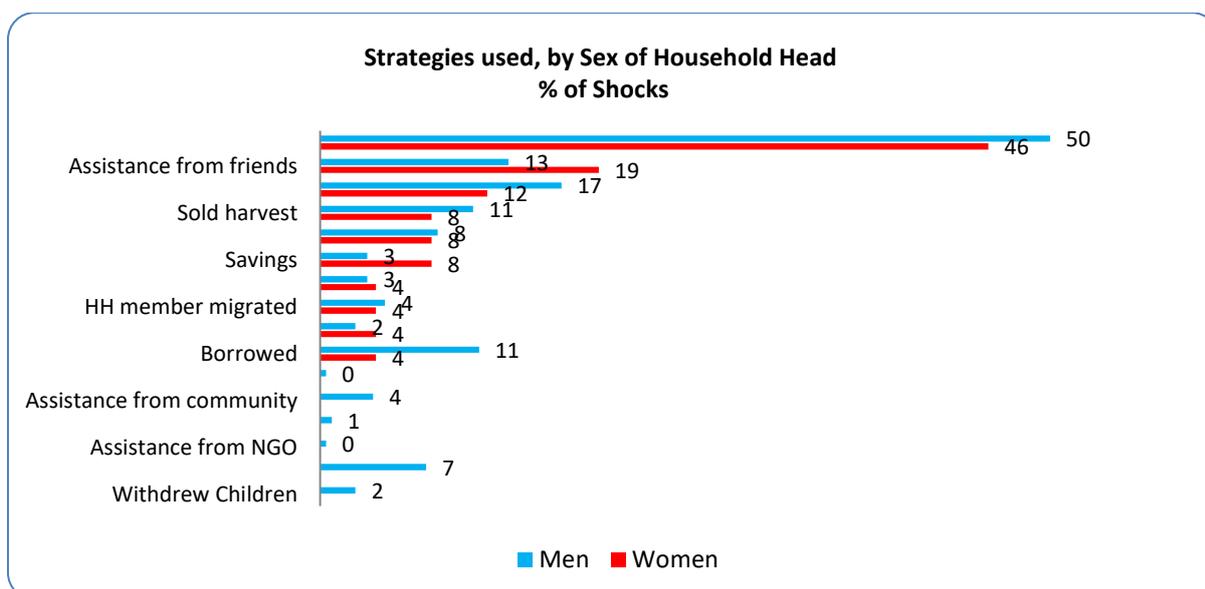


FIGURE 3.12 COPING STRATEGIES UTILIZED BY HOUSEHOLDS HEADED BY WOMEN AND MEN, 2014

Source: NGHDR Field Survey, 2014.

Interesting comparisons can be made between female-headed households and male-headed households (Figure 3.13). The sale of assets is the most frequently used strategy by both types of households. However, the range of strategies reported by households headed by women is much narrower. Female household heads do not report using insurance, receiving assistance from the community, government or NGOs, taking on additional work or withdrawing children from school. They are less likely to borrow or to do nothing when a shock hits. Households headed by women are more likely to rely on assistance from family and friends and on their savings. The differences in the range and pattern of coping strategies utilized by women and men probably reflects the differences between them with respect to the type of shocks they experience, their preferences, ownership of assets and their ability to access formal social protection and market mechanisms.

Table 3.7 Current Circumstance of Households that Reported Shocks

Gender & Region	% of Shocks	
	Assets since been repurchased or reclaimed	Circumstances Reverted
Sex of Household Head		
Women	11.1	36.0
Men	5.8	21.2
Region		
Volta	25.0	55.5
BA	0.0	36.4
Northern	13.7	42.1
Upper East	6.8	7.9
Upper West	0.0	3.9
Total	6.2	22.7

Source: NGHDR Field Survey, 2014

Households in the Northern and Upper East regions were more likely to adopt diversified coping strategies than those in the Brong Ahafo and Upper West regions. Only about 23% of households that experienced shock episodes 12 months prior to the survey, reported recovery from the shock (Table 3.7). In the Upper East and Upper West regions, households recovered from 8% and 4% of the shocks. This failure to recover from shocks may be due to the multiple shocks households in these regions experienced during the period. It also suggests that the coping strategies utilized may not be effective in cushioning households from the effect of shocks. Finally, the emotional effect of death shocks may take much longer to recover from. The sale of assets is the most frequently employed coping strategy in response to shocks. In the majority of these instances, sadly, the assets were not repurchased or claimed. This may also explain why household circumstances have not reverted to what they were before the shocks.

There is a gender dimension to the asset losses. Table 3.8 reports on the proportion of assets lost and assets sold among men. The majority of owners of assets lost and assets sold are men. The proportion of male owners of lost assets is greater than their share of sold assets. This is probably because men are more likely to own assets than women and therefore more likely to suffer asset loss when there is a fire, flood or theft.

Table 3.8 Sex of Owners of Assets Lost and Sold

Region	% owners who are male	
	Assets Lost	Assets Sold
Volta	100.0	100.0
Brong Ahafo	57.1	50.0
Northern	89.2	85.0
Upper East	100.0	94.4
Upper West	94.1	86.2
Total	92.1	86.7

Source: NGHDR Field Survey, 2014

3.5. Measures to enhance productive and decent employment and sustainable livelihoods

Alleviating the very high levels of poverty in the NSEZ calls for a multi-faceted strategy. It requires measures to tackle the various infrastructure and service delivery deficits as well to enhance job creation.

3.5.1 Enhance access to affordable finance at all levels

In Ghana, interest rates for the domestic private sector are very high by Sub-Saharan African standards. In the current context, commercial financial institutions face information gaps and for strategic business reasons, are likely to chase more short term or low risk opportunities (such as government T-bills). This works against critical infrastructure and green field investments which, all other things being equal, is likely to attract a higher risk premium. Commercial and rural banks also have a low footprint in the zone. Institutional lending to business owners is low (5%). Loans from business service providers and financial NGOs (mostly national and local) attract relatively higher interest rates (an average of 35%).

Microcredit services and information on microcredit are usually provided through a number of different sources including: the public sector (e.g., the Microfinance and Small Loan Centre (MASLOC)), independent non-profit organizations, community-based organizations (CBOs) and commercial financial institutions (Rural Banks) and other institutions (GHAMFIN).⁷⁴ Egyir and Akudugu (2009) reported that the most successful microcredit institution operating in the zone, with the largest number of clients is Sinapi Aba Trust (STA). Other well-known ones include Planet Finance, ProCredit Ltd and Opportunity International. NGOs like Simli Pong, Grammeen Ghana, Simli Aid, Community Life Improvement Programme (CLIP) have also been involved in microfinance. Interest rates from these institutions are high and women entrepreneurs are found to be more credit constrained compared to male counterparts (60% compared to 51%). Findings from interviews pointed to the following: the percentage of women who sourced capital from the bank, relatives, and friends or in the form of gifts stood at 5%, 15%, 2% and 22%, respectively.

3.5.2 Promote local markets, storage and reduction of post-harvest losses

Results of the field survey discussions indicated that **trade in villages or districts accounts for about 84% of the places where products were sold, whereas inter-regional trade was minimal (about 2%), largely due to poor linkages in road infrastructure.** A large proportion of business activities are concentrated in the district capitals in each region. The potential for regional trade in these commodities is high but not fully exploited. Beside the risk avoidance nature of rural business owners, rural dwellers are constrained by poverty, poor infrastructure and technical know-how. Business opportunities for producers are mostly evident in traditional crop farming (rice, maize, yam, soybean, cotton, etc.) and rearing of animals such as cattle, goats, sheep and pigs. As discussed in more detail in chapter 5, significant investments need to be made in infrastructure for storage and processing if agricultural households are to benefit from increasing output.

3.5.3 Promote 'structured demand' for products of small farmers

Small farmers the world over typically face challenges in integrating into value chains. In addition to the focus on contract farming, it is also useful to address the challenges and to scale up home-grown school feeding programme which can procure from and provide local market opportunities for small farmers. Given the benefits that such a programme can have to ensure inclusive livelihoods and lower risks (no need to borrow or take credit if demand is predictable), it is worth prioritizing. Linking small farmers to school feeding programmes is a modality that has had success in a number of countries. **In Brazil, a minimum of 30% of the school feeding budget has to be spent on procurement from small farmers.** Amongst other things, studies note that benefits include the enhanced collective organisation of family farmers into associations and cooperatives that can support and motivate producers to improve the quality of their produce so that they can comply with health and production requirements needed to access markets in the private sector going forward.⁷⁵

⁷⁴ In 1998, the Ghana Microfinance Institutions Network (GHAMFIN) was established as an umbrella organization with over 70 regulated and non-regulated Microcredit institutions. The objective of GHAMFIN is to serve as a knowledge-centre for the microfinance industry, provide statistics and assist with capacity-building.

⁷⁵ For Ghana see Home-Grown School Feeding pilot programme, see here <http://hgsf-global.org/ghana/> for

While Ghana has a school feeding programme, a major constraint has been the limited fiscal space of government and challenges from the delays to date in the government making payments. While bigger contractors can hold out much longer, the small farmers and providers are unable to do so. Other issues that need to be addressed include warehousing and stock-management as not all commodities are currently available in needed quantities.

3.5.4 Invest in scaling up formal and on the job skills development

TCDP (2015a) makes the case for increasing the skills base, including through practical skills training in information and communication technology, carpentry, ceramics, brick work and tiles laying, leather works, textiles and cloth making, metal works, plumbing, agriculture among others. The 2014 NGHDR Field Survey pointed to low levels of on-the-job skill training. Only 2% of respondents received such training. More women (72%) benefited compared to males (46%). Overall, 56% of the respondents received some kind of training. The proportion of those who received training in managing small businesses in the Volta, Brong Ahafo, Northern, Upper East and Upper West regions were 33%, 91%, 53%, 58% and 2%, respectively.

3.5.5 Enhance the sustainability of livelihoods and adaptive strategies

Given the very large numbers of people in the zone who are engaged in variety of pluri livelihood activities, non-standard jobs and engagement in the informal sector or self-employment, there is the need to look at the full range of livelihood practices to identify threats and opportunities to make livelihoods⁷⁶ and coping and adaptive strategies more sustainable.⁷⁷ The concept of **livelihoods** is much broader than jobs or employment. It comprises all the ways that people bring together their assets, capabilities, and activities to support themselves and their families or communities. In addition to the generation of income, livelihoods encompass any reliable ways that people access food, shelter, health care, education, safe water and sanitation, security, and protection.

The focus needs to be on mitigating risks and facilitating adaptation in terms of agricultural practices, use of new technologies, or shift to more resilient livelihood activities. Key issues relating to livelihoods identified in the NGHDR Field Survey are summarized in Box 3.1.

Brazil, see IPC-IG et.a. (2013) [PNAE and PAA for Brazil](#); See Miranda et.al for PAA Africa programme: results and lessons learned; and work of WFP (2014) P4P [here](#)

⁷⁶ The sustainable livelihoods approach (SLA) emerged in the 1990s with a view to promoting sustainable livelihoods as many coping and adaptive strategies in the face of shocks and limited opportunities had the potential to be unsustainable. For a comparative analysis of early conceptual development of the sustainable livelihood approach (SLA), see Carney, D. with M. Drinkwater and T. Rusinow (CARE), Koos Neefjes (Oxfam) and S. Wanmali and N. Singh (UNDP) (1999)

⁷⁷ Coping strategies are short-term responses to shocks while people anticipate returning to their usual livelihood strategies. Examples may include drawing down on their personal and business assets, selling livestock, draw on relief from government or partners, or engaging in public works programmes. In the absence of alternatives, people may turn to negative coping strategies with adverse long-term consequences, such as selling off vital assets, resorting to crime, or taking loans they cannot repay. Adaptive strategies are medium or long-term responses that people undertake when faced with protracted stresses. In response to the effects of climate change, for example, people may change their agricultural practices, use new technologies, or shift to more or sometimes resilient livelihood activities (away from deforestation, informal/illegal mining).

Box 3.1 Key Livelihood Issues

Agricultural livelihoods

- *Lack of land tenure/user rights mostly for women*
- *Limited access to agricultural extension services, inputs*
- *Bush burning*
- *Food insecurity*

More general constraints

- *Limited options for generating income*
- *Poor roads and communications*
- *Limited access to education and healthcare facilities*
- *No means of communicating with government agencies*
- *No mechanisms for generating credit*
- *Slow rate of coping with and recovering from stress and shocks like natural disasters and climate change related developments*

Source: NGHDR Field Survey Interviews, (2014)

While it does not directly figure in the survey results, access to irrigation is critical for enhancing the sustainability of livelihoods. More than 70% of the population depends on unimodal rain-fed agriculture and livelihoods are likely to become ever more precarious with climate change.

Farming activities in the zone take place typically between June and November. During this period, farmers devote their labour to clearing and preparing the land, planting, weeding, protecting the crops and harvesting. The period between December and May is the dry season. Most households cannot find productive jobs to do unless they engage in migration or can access water for dry-season gardening. The prolonged dry season (usually November to April each year) coupled with limited dry season farming activities contributes to significant levels of underemployment, increases the dependence on pluri activities and seasonal migration. Within agriculture, other factors affecting livelihoods include the low fertility of the land; the limited access to finance, inputs and markets for both food crops and indigenous products (e.g. shea butter); and low levels of education and skills.

Diversification, that is shift to non-farm activities, is also used as a coping strategy but not everybody can afford to do it because it requires some level of capital which is mostly difficult to get. Results of focus group discussions indicated that diversification is practiced more in urban areas. Petty trade is often a livelihood option for urban and peri-urban households, but the field can get crowded in small towns, if traders all focus on the same activities.

Charcoal production has appeared as another means to diversify income. However, this is also a major challenge as a result of the indiscriminate felling of trees, including economic trees such as shea. Wood fuel accounts for about 70% of total primary energy supply of Ghana, and 90% is obtained directly from the natural forest. The transition and savannah zones of Ghana; mainly the Kintampo, Nkoranza, Wenchi, Afram Plains, Damongo districts provide the bulk of dense wood resources for wood fuels (Republic of Ghana, 2012). In Gushegu District of the Northern Region, for example, Anang *et al.* (2011) found that charcoal ranked as the second major occupation and source of income generation in the area and involved mostly women as producers. The study points out that the way that is carried out is found to have adverse environmental effects.

The study also stresses that the provision of alternative livelihood systems for rural people could help to reduce their dependence on forest and other ecosystem resources. E.g., the provision of irrigation facilities to facilitate dry season vegetable farming and credit to start businesses could reduce women’s participation in charcoal production. To the extent that charcoal production is likely to continue in the medium term, it is also important to support sustainable methods of charcoal production within the context of strengthening socially and environmentally sustainable livelihoods.⁷⁸

3.5.6 promote inclusive measures to increase productivity across value chains

Increased irrigation, cost-effective access to mechanization services and inputs are needed.⁷⁹ The experience in other parts of Ghana, countries on the continent, and China point to a variety of approaches which facilitate cost-effective access to mechanization services.⁸⁰ Figure 3.14 points to some options. Transport and other infrastructure is discussed in chapter 5. The potential to engage and incentivize sustainable and inclusive private sector investment, including in delivering services, in line with the priorities of *Planting for Food and Jobs* programme and the E-Agriculture focus to drive farm productivity cannot be stressed enough.



FIGURE 3.13 INNOVATIVE SERVICES WHICH CAN DRIVE FARM PRODUCTIVITY

Source: Gatune, J. (2015)

⁷⁸ E.g. green charcoal value chains, bamboo charcoal briquettes, biomass pellets. See Basu (2014)

⁷⁹ Given the constrained budgetary situation prevailing in recent years, the timely provision of anticipated levels of fertilizer subsidies has been impacted. Bumb et.al (2011) point various options including the creation of a common fertilizer market for West Africa which could provide economies scale (with the inclusion of Nigeria) for providers, reduce smuggling across borders and improve reliability of access for local purchasers. Resnick et al. (2016) and Gatune (2016) look at institutional bottlenecks and opportunities across the value chain.

⁸⁰ See Houssou et.al. (2016) on the renting out of tractor services by large farmers in Ghana. For China, see Zhang et.al (2015) on how smallholder farmers stayed viable through outsourcing some power-intensive activities, such as harvesting to specialized mechanization service providers who travel across the country. Also see Gatune (2015).

There is scope for also small and large-scale agriculture and processing activities to have synergies. As alluded to earlier, productivity for some crops can be higher for small farmers; further, where little used land can be made available at scale, commercial farms could thrive. The policy agenda needs to explicitly explore how agricultural modernization and commercialization can be undertaken to avoid adverse impacts on equity and access to land by the poor. The work of Gatune (2016) is useful in underscoring the importance of inclusive and gender-equity enhancing agricultural value chains.

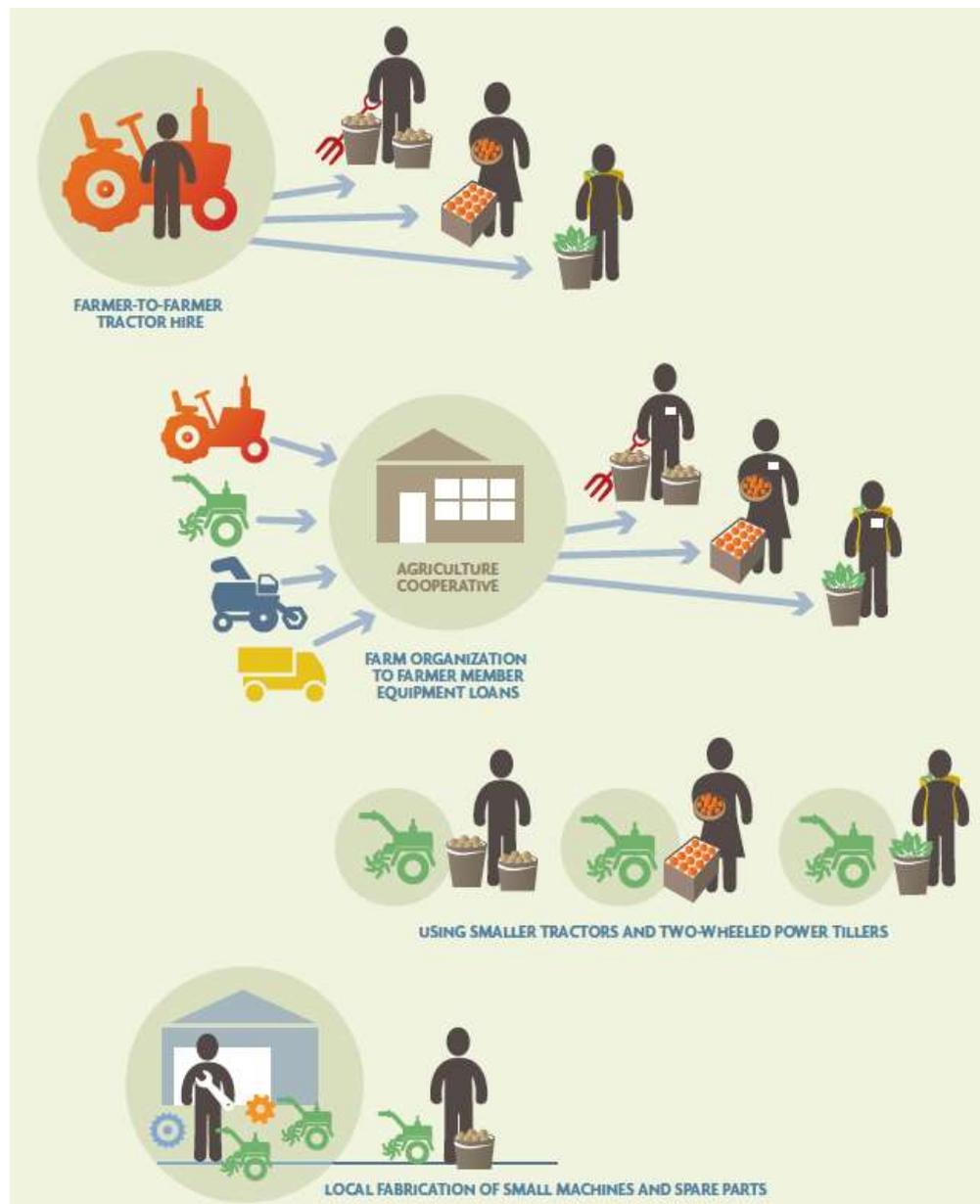


FIGURE 3.14 INCREASING FARM MECHANIZATION

Source: ACET African Transformation Report 2017

3.5.7 Focus on women's economic empowerment and adopt gender-aware strategies

Within the context of the prevailing gendered division of labour, women perform a variety of tasks, ranging from agricultural work (on their own and husband's farms) to raising livestock (local chickens, guinea fowl and other small animals) and care of the household and family.

Women seem to grow some crops more (e.g., soya and groundnut). They also rear different animals, i.e., ruminants and guinea fowl versus cattle reared by men. Their biggest challenges seem to lie in accessing harvesting technologies, irrigation and veterinary care. Access to solar pumps for irrigation and focused measures to improve productivity would free up women's time for other activities and help to reduce their time-poverty.

There has not been much focus on technologies that women could use. The technologies that they deploy are rudimentary compared to what is in use for crops grown by men (rice, maize). Gatune (2016) emphasizes the [importance of recognizing that upgrading in value chains typically brings in new players and new business models, and that if care is not taken it can leave behind many behind](#). In particular, women tend to be disproportionately impacted as they tend not to own land-the key collateral; he also emphasizes the importance of pro-actively focusing on women-friendly technologies in this regard.⁸¹

Farnwoth and Alima (2012) look at the maize value chain, but their findings and lessons are useful for other value chains as well. They highlight the need to systematically address the gender-based constraints that work to disadvantage women as value chain actors and reduce their competitive advantage in comparison to men. These include not just the land, technology, participation in associations, and finance issues referred to earlier, but also unequal relationships which guide the use of their labour time. Such constraints combine to keep women's farms less productive and women's businesses small.⁸²

Rural women gather and sell fuel wood and shea nuts to balance the kitchen budget (Republic of Ghana, 2011). Along with charcoal production, livestock and poultry serve as the rural household's 'savings bank'. Charcoal is produced and sold in almost every part of the NSEZ. While women dominate in the production of charcoal, men are involved in the transportation and distribution. There are wholesalers who buy the charcoal from rural women producers and sell to retailers in urban cities like Tamale, Wa, Techiman, Bolgatanga, etc.. Charcoal is also sold along major roads linking regional capitals and districts. Popular spots for charcoal sale include Pwalgu and Disiga. Although the traditional kilns require very little investment to build and allow for mobile charcoal production, they have very low efficiencies and make for adverse health impacts. Facilitating access to improved methods for charcoal production and "improved earth kilns" could be necessary in the interim.

⁸¹ Gatune gives the example of cassava where although artisanal cassava processing is largely a women's enterprise, the design of processing machines requires a lot of strength to operate (they thus need to employ men). The Gratis Foundation, which is starting to design more women friendly machines, faces its own challenges in scaling up and could do with support.

⁸² See Farnwoth and Alima (2012) who find that: productivity levels on women-managed farms are lower than productivity levels on men-managed farms not because women are inherently less productive, but rather because of unequal intra-household resource allocations. Women cannot maximize expenditures on their land since they typically have less money available and because women lack collateral for securing credit. Further, cultural norms allow men to command women to work on men's land first before working their own. This often results in (i) a lack of timely work (e.g. planting) on women-managed land; (ii) while men do perform certain tasks, such as ploughing and spraying, this is usually after male-managed fields have been attended to; being able to improve productivity would allow women to hire sufficient male labourers when needed; (iii) women don't have access to women-friendly technologies and men typically operate dehuskers/shellers and demand payment.

Picture 3.2 Women engaged in Shea butter Roasting and Kneading



Source: Author's own

Women are key players in artisanal agro-processing activities (shea butter extraction, rice parboiling, pito brewing), as well as the sale of food along the road and at markets, in the management of restaurants and chop bars, and in batik tie and dye enterprises. Businesses typically owned by women do not appear to experience sustained growth, i.e., they are short-lived and/or have lower barriers to entry. This is in line with McPherson's (1996) analysis that enterprises owned by females are typically constrained in their growth. This is because, traditionally, women's own funds are used to cover the family's basic needs; they have relatively limited access to scalable credit; and female proprietors may avoid taking risks necessary for enterprise expansion.

Ensuring enhanced access by women to resources such as land, livestock, information and credit, is pivotal for poverty reduction and women's economic empowerment. Designing livestock development programmes to include a focus on the animals reared by women (local poultry, guinea fowls, small ruminants) is important for poverty reduction and food security. Interestingly, while local chickens and guinea fowl often command a price premium as opposed to broiler chickens, there is typically more policy support for broiler chickens. One of the critical challenges for women is access to vaccines. Without these, local poultry are at risk of being decimated, e.g., from Newcastle disease. Ethiopia, Bangladesh and other countries have supported all-*female* vaccinator groups to address this challenge.⁸³ Such initiatives in Northern Ghana could be transformative.

While women play a key role in processing and distribution, most often they operate at lower rungs of the value chain (market women as opposed to medium and large traders) where profit margins are quite low. While initiatives such as engaging women in village savings and loans associations can provide a stepping stone for financial inclusion, the question is how women can access larger amounts of finance to grow their businesses.⁸⁴ **A concerted strategy is needed to help women add more value, integrate into higher rungs of the value chains and secure more affordable and scalable finance.**

⁸³ See Galvmed protecting livestock blog [here](#)

⁸⁴ Also see [The Impact of Savings Groups on the Lives of the Rural Poor in Ghana, Malawi, and Uganda](#) and Fidelity Bank [Strategic Partnerships](#)

3.5.8 Address security and empowerment issues, particularly for migrant *kayayei* and children

Ghana's population is characterized by high mobility. Migration is a key strategy for coping with livelihood challenges, as is engagement in illegal artisanal mining (*galamsey*). Migration has long been used as a livelihood diversification strategy. It involved the movement of people from the rural areas to towns and cities in Ghana.

The high population growth rate in Ghana over the past three decades is thought to have encouraged migration by generally increasing the domestic supply of labour and putting pressure on the available cultivable land (Abdulai, 1999). Effectively urban-biased policies have resulted in terms of trade that are unfavourable for agriculture and rural areas and have widened the rural-urban income differentials (Abdulai, 1999). In a study of the Volta Basin, Tsegai (2007) found that income differentials were an important determinant of migration.

In terms of determinants related to individual characteristics, Twumasi-Ankrah (1995) reported that the background of the rural-urban migrant population in Ghana is mixed, and that education enables migrants to take advantage of employment opportunities offered in urban areas. However, other determining factors, such as the lack of prestige of farm work, the social denigration and stigma associated with rural living, and the lack of appropriate jobs and social amenities are thought to have similar effects on both educated and uneducated individuals. What is characteristic of the NSEZ is significant negative net migration, especially for the UER and UWR. The Greater Accra, Ashanti and Brong Ahafo regions saw positive net migration (in-migration higher than out-migration).

The North has long been a region of internal out-migration with a somewhat different set of dynamics. Historically, the British recognized that the Southern forest regions had the strongest potential for development in light of its mineral resource base, the conducive climate and soils for cocoa cash crops, and the relative proximity of these regions to the coast. They promoted the Northern Savannah a source of labour for southern industries and agriculture.

Traditionally, north-south migration in Ghana was largely male-dominated, long-term and long-distance. However, a new dominant north-south migration stream emerged almost two decades ago involving female adolescents moving independently of their families, mostly towards the cities of Accra and Kumasi, most often as seasonal migrants.⁸⁵ The recent stream of young female migrants circulating between Northern Ghana and Accra, where they tend to work as street vendors/head porters (*kayayei*), has been shown to stem from poverty, a lack of education and employment opportunities, and the need to accumulate wealth in preparation for marriage (Awumbila and Ardayfio-Schandorf, 2008, Kwankye *et al.*, 2009). These findings were also confirmed by the NG-HDR survey. Many of the women respondents contended that the *kayayoo* business relieved them of the responsibility of providing wedding items for their daughters and foster children as the young girls themselves were able to acquire almost all the necessary things needed to prepare for marriage.

⁸⁵ In a study on child migration to Kumasi and Accra, Kwankye *et al.* (2009) found that "About two in every three migrants hail from the Northern region (60%), while a smaller proportion of them hail from the Upper East and Upper West regions, most of the girls have come from the Northern region (79.8%)."

Box 3.2 The Case of Kayayei in Ghana

“Kayayei” refers to the head porters who carry market ware for shoppers or traders around the market areas in the big cities in the South, mainly Accra, Kumasi and Takoradi (Kwankye et al., 2009). The name Kayayoo finds its origin in two words, Kaya and Yoo. In the Hausa language Kaya means luggage, goods or load and Yoo means woman in Ga (Opere, 2003). Most Kayayei come from the northern parts of Ghana, particularly from the Northern Region. Most of them are *Dagombas* (Kwankye et al., 2009). According to Abdulai Yakubu from CID Ghana almost all of them are originally from the rural areas in the north, the girls who come from the urban areas in the north are not very likely to become a Kayayoo. Only a very small part of the Kayayei comes from other parts surrounding southern areas (Kwankye et al., 2009). According to a 2010 survey of Kayayei, conducted by the Ghana Federation of the Urban Poor (GHAFUP), an affiliate of Slum Dwellers International, and Peoples Dialogue on Human Settlements, over 90 percent of the survey’s Kayayei were northerners and had migrated without taking full advantage of free education. Only 11 percent had attended school, while 13 percent had been idle. Of the surveyed Kayayei, 23 percent were 10–17 years old and, thus, in their attempt to escape poverty, they had missed out on education. In addition, the results demonstrate the prevalence of child labour.



Kayayei on the streets (one of them carrying her child)
Source: World Bank, (2010)

Occasionally, Kaya are brought into private homes to perform domestic tasks and the income from private homes is at a slightly higher rate. The Kaya are often transient, and often without basic sanitation. Basic hygiene & nutrition conditions are also poor. Loads are almost always carried in a large pan which is carried on the head of the Kaya, often only with a moistened coil of cloth to act as a buffer between the pan and their head. According Yeboah & Appiah-Yeboah (2009), the physical demands that they face are very high, having to carry very heavy wares all day, resulting in body aches and pains. They also have a higher risk of getting malaria or intestinal diseases due to their conditions and accommodation and the unhygienic way their food is prepared. They sometimes earn enough money for two meals a day, but they do not have the money for medical assistance when needed.

According to the GHAFUP survey, one-third of the survey respondents earned between US\$3 and US\$5 a day, while a few (5%) earned between US\$5 and US\$10 a day. These figures contrast favorably with the current daily minimum wage of US\$2.65 per day.

A number of studies point to the gendered social norms and responsibilities, wherein mothers and aunts play a role in encouraging and/or facilitating their young daughters and nieces to embark on *kayayoo*. Pickbourn (2011) points to the fact that:

Household members have separate budgeting arrangements, and where norms of household provisioning assign women significant responsibility for feeding household members and caring for children but give them limited resources for meeting these obligations” and “where the feminization of migration flows, if it leads to increased remittances directed to women, may help to relax the budget constraints.

Remittances typically contribute to consumption, but depending upon the amounts, it may also contribute to investment. Quartey (2006b) documented that about 52% of migrant remittances are meant for consumption purposes (living expenses, funerals and other social activities) while about 44% are used for investment purposes. The NSEZ is a net receiver of remittances. However, it is estimated that only one in four internal migrants transfers money back to the household and that these transfers are generally low (Tutu, 1995). Therefore, remittances cannot really unleash accumulation in the North.

Given the predominance of high level of poverty, the pressures to put children to work is also high. There are also high rates of out migration, including by children and child trafficking. It is useful to present a broader snapshot of trends for the country, before presenting developments in the zone. The first standalone Ghana Child Labour Survey was conducted in 2000. The GLSS6 (2012/13) provides the most up to date information on this issue with a dedicated report on the subject.⁸⁶

It is important to look at the broader picture as far as the engagement of children in economic activity, not all of which is considered to constitute child labour.⁸⁷ Findings from GLSS 6 (2012/13) survey indicate that 28.5% of children aged 5-17 years, participated in economic activities (participation for male children in the requisite age group was slightly higher at 29.2% to female 27.9%). At the locality level, the proportion of children engaged in child labour was higher in rural (39%) than urban (16.8%) areas. In GAMA, the participation rate was far lower (6.1%) than in other urban areas (20.7%).

A higher proportion of children in the rural savannah (44.3%) participated in economic activities compared to those in rural forest (38.8%) and rural coastal (22.1%) areas. The Upper West (45.1%), Upper East (44.5%) and Brong Ahafo (41.7%) regions had high participation rates while Northern Region had 31.2% and Greater Accra recorded lowest at 6.9%. The survey found that most of the children had to combine working with going to school. Across the regions, more than three-quarters of the children who participated in some form of economic activity also attended school except for the Northern Region where the percentage was much lower (56.8%). 74.7% of children in Accra (GAMA) who were not currently attending school worked for 43 hours or more a week compared to 38.9 % in other urban areas. The rural savannah had the highest proportion of children not attending school who worked 43 or more hours (37.3%), and among those attending school those who worked 15-42 hours (46.2%). At the regional level, the proportion of children who worked for 15-42 hours was highest in the UWR (59.9% with the UER and NR coming in at 51%) with Greater Accra coming in at 45%.

⁸⁶ Primary data for the zone was gathered from the NG-HDR survey and focus group discussions in 2014. The GLSS6 (2012/13) had a specific focus on the labour force, and the Labour Force Module was expanded to include a section on Child Labour. Among other objectives, the survey sought to estimate the nature, prevalence and extent of child labour. Here, child labour is viewed as a subset of 'children in employment'. According to the Children's Act of 1998 (Act 560), children under the age of 15 years are expected to be in school and hence are debarred from engaging in any form of employment. However, children aged 13 to 14 years are permitted to engage in 'light' family work.

⁸⁷ The experience of ILO and discussions in the research agenda on child labour (CL) distinguishes between children's work and child labour, as it cannot be assumed that all children's work is incompatible with child welfare and development. As a starting point, the framework for measurement of CL is based on the ILO Minimum Age Convention, 1973 (No.138) which defines a range of minimum ages below which no child should be allowed to work and stipulates that: · The minimum age for employment should normally not be less than 15 years, but exemptions can be made for developing countries who may fix it at 14. · The minimum age for permitting light work should not be less than 13 years but developing countries may fix it at 12. · The minimum age for admission to hazardous work should not be less than 18 years, but under strict conditions may be permitted at 16. Child labour is thus defined to include any activity, economic or non-economic, performed by a child, that is either too dangerous or hazardous and/or for which the child is too small to perform and that has the potential to negatively affect his/her health, education, moral and normal development.

The proportion of children who were currently attending school and working for 43 hours or more was highest in the Volta region (17.2%) compared to the other regions, while for those not attending school, the proportion was higher for the Greater Accra Region (70.4%). (See GLSS 6 Child Labour Report)

Another dimension to consider is child trafficking. Child trafficking is thought to be an old phenomenon prevalent in some communities (e.g., Wungu, Kpaasenkpe, Janga, Bugya, Yaama and Bulbia). Key informants in the NGHDR Field Survey mentioned that the practice of child fostering, which is part of the Ghanaian culture, has, in some instances, become abusive of the rights of children. Results of the NGHDR 2014 survey focus group discussions also indicated that child trafficking can be a planned activity involving negotiation, offer and acceptance. The contractors for child trafficking tend to be experienced native male migrants who have lived in Southern Ghana for long but still have ties with their families back home.

Individuals who have no relation whatsoever with the communities also appear to transact child trafficking using the experienced native migrants as agents. The majority (60%) of the respondents attributed the cause of child trafficking to poverty. Other causes included the lack of parental care, ignorance on the part of parents and children, school dropout and money rituals (get rich quick attitude of people). Child trafficking takes place throughout the year but typically ramps up around Christmas. Many children in the NSEZ are forced to engage in economic activities to supplement household income because of large household sizes. Children living in families with limited economic resources are at higher risk of abuse, exploitation and violence than children from families with higher socioeconomic status (Cancian, Slack & Yang, 2010). Of significant concern is the fact that whatever the driver, the many children are at significant risk.

Chapter 4: Environment and Natural Resource Management

4. Introduction

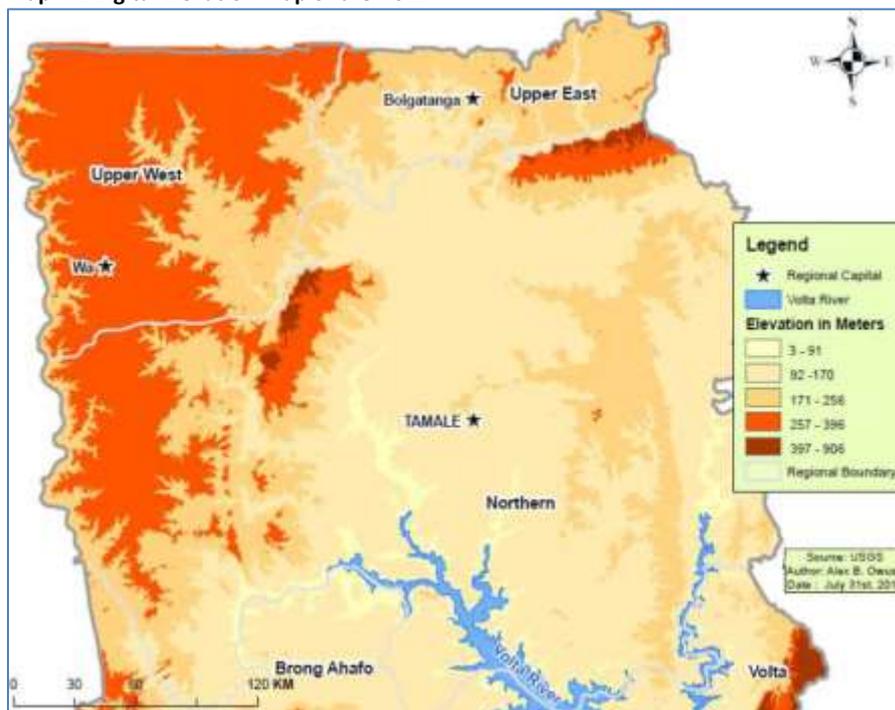
The nexus of natural aridity and poor soils in parts of the NSEZ, reinforced by historical marginalization, relatively low levels of investment over the decades, and now climate change contribute to high levels of poverty and vulnerability. This chapter provides a background of the environment in the zone before it goes on to explore issues related to land and natural resources and the implications of climate change impacts for human development.

4.2 The Environment and Transformation

4.2.1 Geology and Soil

The topography of the NSEZ consists of gentle, undulating land, with the altitude ranging between 110–300 metres above sea level with slopes of less than 10%, although there are isolated peaks in places such as Gambaga (Gambaga scarp, or more appropriately the Napkanduri scarp), Nkwanta North and South, Kadjebi District and North-Western corner of West Gonja District that rise above the normal elevation of the area (Dietz and Millar, 1999). The low-lying areas are the valleys of the Black, White and Red Volta Rivers (See Map 4.1).

Map 4.1 Digital Elevation Map of the NSEZ



Source: SADA (2015)

The soils of the Northern Savannah Zone are typically described as being very shallow which overlay impenetrable iron pan (iron pan soils). Particularly in the interior (within Northern Region), soils are low in organic matter (less than 2% in the topsoil), have high levels of iron concretions and are susceptible to severe erosion.

Well-drained upland areas, which tend to be particularly droughty, have cement-like plainthite when sun scorch is added in.⁸⁸ Soil erosion and loss of vegetative cover have become the most widespread causes of soil degradation and loss of soil productivity in the zone, especially in the Upper East Region (UER) (Songsore, 2011). In their natural state, about 47% of soils in the NSEZ were regarded unsuitable for crop production as is. Twenty 5% were considered marginal and only 28% were viewed as being suitable (FNSU-UDS, 2011).

However, the limited use of soil management practices (e.g. fertilizers, water management, mulching) also contributes to low levels of productivity for both crops and livestock. Despite these features, the soils already support extensive cultivation of cereals, legumes, tubers and vegetables. Further, with proper soil and water management and increased irrigation, provision of ploughs and other low cost and affordable inputs such as organic and chemical fertilizers, pesticides and improved seeds, many areas of the region could be transformed into viable commercial agricultural zones and conditions could be improved for small farmers.⁸⁹ Limestone and other mineral reserves, also present in the zone, could be harnessed not only for construction but for making the soil less acidic.

Research suggests that there needs to be a much more refined use of chemical fertilizer, and greater use of organic fertilizer from grasses and livestock etc., in line with the nature of soils in different parts of the zone rather than the indiscriminate use of the same type and quantity everywhere. Jayne et. al. (2015), amongst others, underscore that knowledge of soil characteristics and processes regulating nutrient availability and supply to crops is essential to raise productivity per unit of fertilizer nutrient applied. They further underscore the fact that insufficient and unbalanced fertilization of soils using fertilizers as well as lack of nutrient conservation technology adoption by farmers can contribute to rapid decline in soil fertility.

4.2.2 Vegetation

The vegetation within the NSEZ of Ghana is, to a large extent, dominated by Guinea Savannah but it also includes a small area of the Sudan Savannah and a transitional zone.

The **Guinea Savannah** is characterized by a continuous grass cover interspersed with generally fire resistant, deciduous, broad-leaf trees. In the most luxuriant form, the trees show varying completeness of canopy.

A narrow strip of degraded grassland vegetation which fringes the zone's north-eastern corner, around Bawku Municipal, Bawku West, Garu and Bongo districts (about 7,200 km²), is classified as **Sudan Savannah** on account of its shorter grasses and shrubs. Given high population pressure in the area, this small patch is likely the result of degradation by human activities rather than a climatic climax biome.

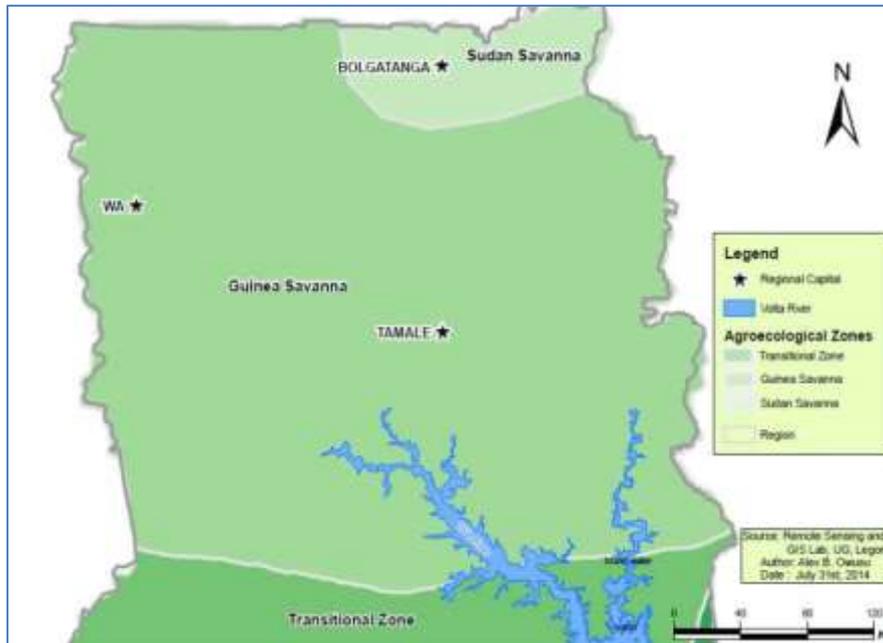
The grasses within the interior of the Guinea Savannah are not uniform but differ according to soil type and moisture regime. The vegetation is dense in the southern portions of the NSEZ and in the northern parts of Brong Ahafo and Volta Regions where they form part of the transitional zone.

⁸⁸ For more details, see Obeng (2010)

⁸⁹ See SADA (2015) Commercial Agricultural Guide

The **transitional zone** is expanding along forest fringes where grassland is gradually replacing forest. Rainfall is in 'one peak' in some years and 'two peaks' in other years, although the double maximum is more common. This variation in the distribution of rainfall points to the transitional nature of this zone. As one of the ecological zones of Ghana, the transitional zone is the vegetation zone between semi-deciduous forest belt of the South and the Guinea Savannah vegetation belt of Northern Ghana. The transitional zone is characterized by degraded forest with a wide range of tall grasses and it offers opportunity for growing a number of root and tuber crops.

Map 4.2 Agro-ecological Zones of the NSEZ



Source: SADA (2015)

According to MoFA (2005), vegetation species in the UER consists of degraded tree savannah dominated by fire-resistant species due to annual wildfires. Similar observations were made for the other four regions of the NSEZ. Within the NR, the most degraded lands were found around Tolon and Kumbungu District. Similarly, the UWR has large areas of degraded vegetation, although it is better-vegetated than the UER. Additional factors accounting for the extensive degradation found in the NSEZ include the use of fire for clearing land for agricultural purposes and for hunting. This is largely driven by the high population density and demand for land for agricultural purposes. This is particularly true in the case of the UER where the population density exceeds 115 people per km² compared to the national average of 65 people per km² (Owusu *et al.*, 2013). Other concerns raised by the local residents, who participated in focus group discussions for the NG-HDR survey, included frequent droughts, poverty, lack of investments in land management and poor soil fertility.

4.2.3 Drainage

The NSEZ of Ghana is drained by three main rivers and their tributaries. These include the Black Volta to the West, White Volta in the north-north-east, and the Red Volta to the east. All three major streams take their sources from Burkina Faso and flow southward before eventually emptying into the Volta Lake.

As such, there is good irrigation potential in the zone and scope to reduce flooding and outflow of water during the year, particularly as regards the White Volta where the stream-flow is influenced by releases of the Bagre Dam in Burkina Faso. Major tributaries to these major streams include Sissili, Kulpawn and Nasia. The volume of water in these streams is directly related to the inter and intra-annual seasonal rainfall regimes of the area.⁹⁰ Leveraging irrigation dam potential can enhance investment opportunities especially in commercial agriculture.

In other areas, groundwater is being harnessed. Most residents in urban and rural areas largely rely on groundwater for drinking and sometimes for irrigation purposes (Carrier, *et al.*, 2009). Though groundwater has a lot of potential for irrigation, it needs to be complemented by dams in various places.

Recent analyses point to significant ground water resources in some parts of the zone. Groundwater potential is very high in the Northern, Brong Ahafo and Northern Volta Region section of the NSEZ. In the lower half of the NSEZ, however, borehole-tunneling work done by the Ghana Water Company points to groundwater resources as being low yielding. The situation in the Upper East Region (UER) of NSEZ is even more acute as it is characterized by shallow and often inaccessible groundwater resources.

4.2.4 Rainfall

The NSEZ generally experiences a mono-modal rainy season that starts in April at the southern boundaries and ends in November. Figure 4.1 shows the mean monthly rainfall recorded at Navrongo in the UER of the NSEZ from 1950–2013.

The monthly rainfall increases gradually from April and reaches a maximum in July-September; it begins to decrease gradually from late October to November.

There is a prolonged dry season beginning at the end of November and lasting until the beginning of April, when the region comes under the influence of the Inter-Tropical Convergence Zone (ITCZ).

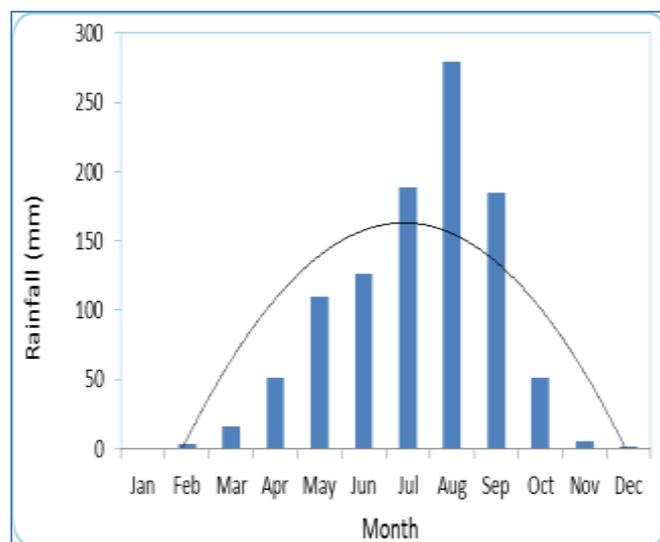


FIGURE 4.1 MEAN MONTHLY RAINFALL FOR NAVRONGO IN THE NSEZ

Source: GMET (2000)

⁹⁰ These rivers can be classified as permanent and have their annual regime peaks in August-September, which coincide with the rainfall peak for the year. From January to April (the dry season), the volume of water in these streams reduces to the minimum due to low recharge and the drying up of their many perennial tributaries and ephemeral streams that form the source of recharge through springs and runoff from rainfall (Regional Coordinating Unit (UER, 2003; MoFA, 2005).

The mean annual rainfall ranges from 900mm to 1150mm; it is irregular and erratic, typical of dry savannah zones. Rainfall and the climate of the region is influenced by two oscillating air masses: the south-westerly winds blowing from the Gulf of Guinea (April–November) bring rainfall, whereas the north-easterly winds (harmattan) blowing from the Sahara, reaching their maximum in January, bring dryness and dust.

Local residents pointed to new trends, confirmed by available data, in terms of the amount, duration and intensity of rainfall. They expressed concern about the potential implications for agriculture, health and sustainable livelihoods. This underscores the need for assistance to strengthen both short term coping as well as long-term adaptation strategies.

4.3. Changing Climate

According to Köppen’s classification, Ghana is located within the tropical type of climate which is generally identified by clear skies and high temperatures all year round. Comparatively, it has less precipitation than other climate types. Within the Köppen classification, Ghana can be divided into three main sub-climatic zones. Northern Ghana lies within the Southern Savannah climatic belt (includes Sudan and Guinea Savannah), followed by the forest belt in the tropical zone and the dry equatorial belt in the Accra Plains.

The latitudinal location of the NSEZ puts it in a unique position in relation to the ITCZ and for that matter, the nature of the climatic conditions experienced in different times of the year and at different parts of the zone. The northern Brong Ahafo, northern Volta and Northern Region of the NSEZ experience completely different climatic conditions as compared to the UER.

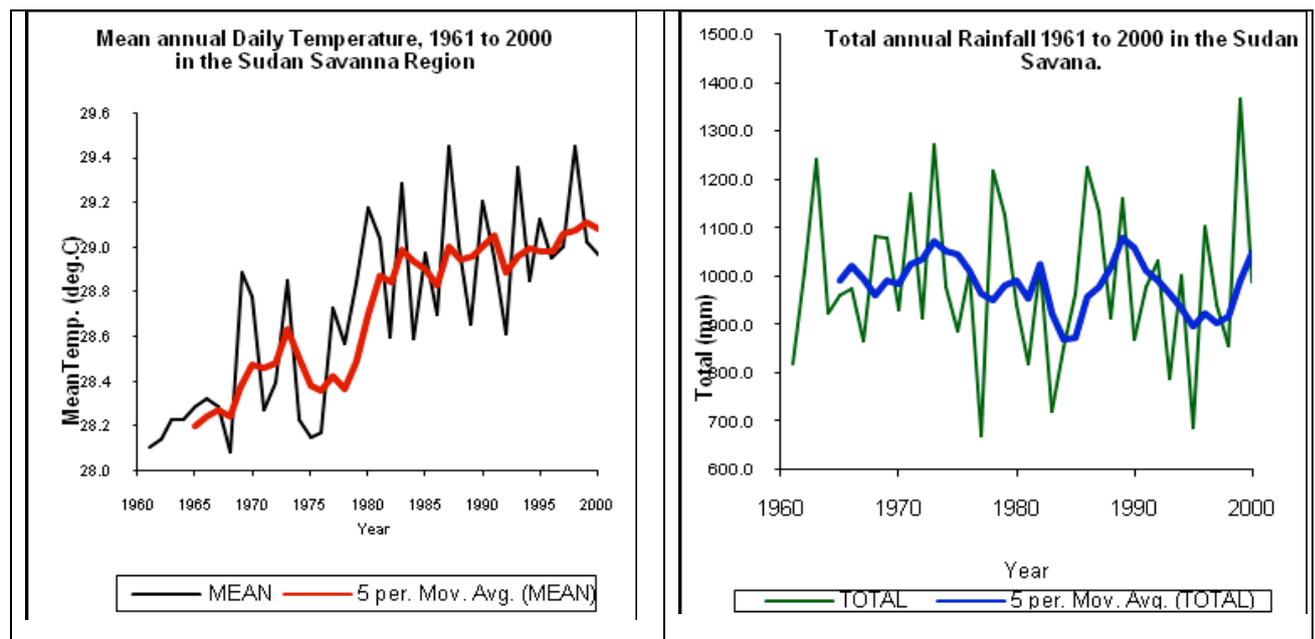


FIGURE 4.2 MEAN ANNUAL DAILY TEMPERATURE & TOTAL ANNUAL RAINFALL (SUDAN SAVANNAH ZONE)

Source: Ghana 2nd National Communication on Climate Change (2011)

Ghana's Second National Communication Report to the UNFCCC (2011) provides a time series analysis of temperature and precipitation for the Sudan and Guinea Savannah zones, as indicated in the Figures 4.2 and 4.3 below.

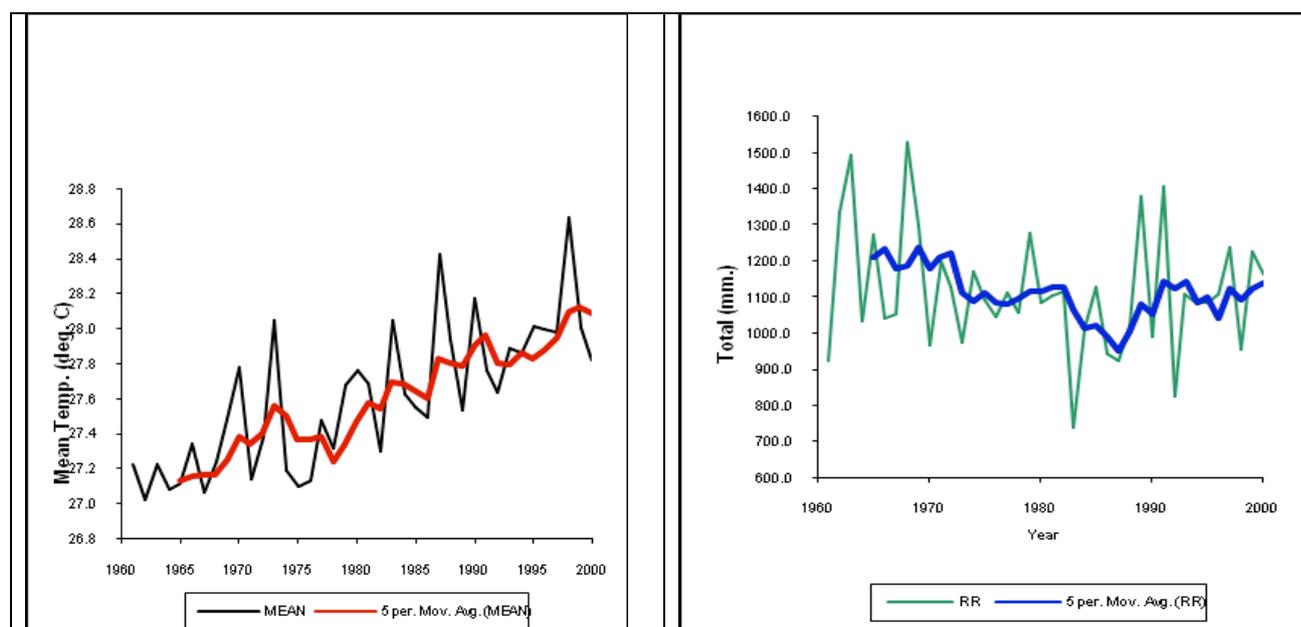


FIGURE 4.3 MEAN ANNUAL DAILY TEMPERATURE AND TOTAL ANNUAL RAINFALL AMOUNT (GUINEA SAVANNAH ZONE)

Source: Ghana 2nd National Communication on Climate Change (2011)

Based on an analysis of temperature and rainfall records for 1980-2010, scenarios developed for the years 2040, 2060 and 2080, point to increases in projected *mean temperature* by 3.8% (1.02°C) by 2040, by 5.6% (1.5°C) by 2060 and a further increase of 6.9% (1.8°C) by 2080. *Mean monthly minimum temperature* are expected to increase by 1.44°C, 2.5°C and 3°C by 2040, 2060 and 2080 respectively. For the Guinea Savannah, the *mean monthly minimum temperature* is projected to increase by 3.3°C for 2040 and 2060 and by 4°C by 2080. The *mean monthly maximum temperature* is expected to increase by 2.6°C by 2040, 3.4°C by 2060 and 4.1°C by 2080.

Based on historical rainfall patterns (1981-2010), rainfall is projected to decrease by 2.9% by 2040, followed by a slight increase (1.1%) in the mid future (2060) and then by a decrease (1.7%) by 2080. For the Guinea Savannah, mean annual rainfall is projected to decrease by up to 3.5% by 2040, 0.9% by 2060 and 3.1% by 2080. For the Sudan Savannah, the model projects that mean annual rainfall total will decrease by 3.2% that by 2040, followed by a marginal increase of 0.8% by 2060. The mean annual rainfall total by 2080 is projected to decrease by 23%. See Ghana's Third National Communication Report to the UNFCCC (2015).

4.3.1 Awareness of Climate Change and Concerns

Concerns have been expressed both locally and at the national level about the current state and expected climate change in the NSEZ particularly the context of locality, gender and rural differences as well as the extent of poverty and low adaptive capacity in the area.

Across the NSEZ, narratives by local residents pointed to a reduction in the rainfall period from the expected 6–5 months to 3–4 months; the rainy season now appears to start in July and to end in October/November (depending on one’s location) compared to running from April to November previously. Knowledge about the changing rainfall patterns cuts across the regions, sex and urban and rural areas. At the regional level, over 90% of residents in all regions reported observing a change in rainfall regime. (Figure 4.4)

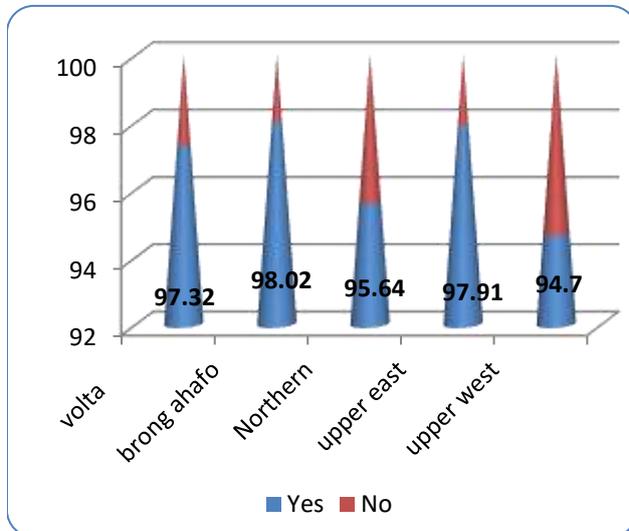


FIGURE 4.4 KNOWLEDGE OF CHANGE IN RAINFALL PATTERN BY REGION

Source: NGHDR Field Survey (2014)

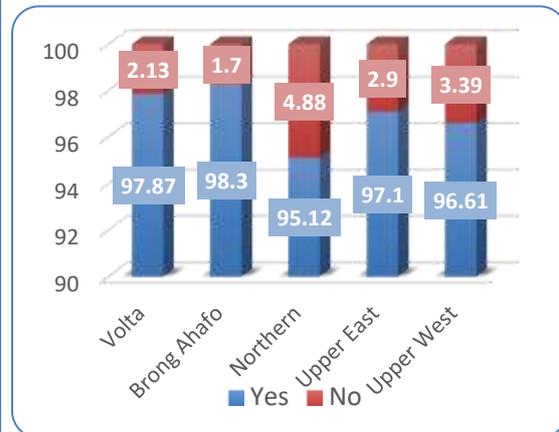


FIGURE 4.5 AWARENESS ABOUT CHANGE IN TEMPERATURE PATTERN BY REGION

Source: NGHDR Field Survey (2014)

The experience and observations of males and females were not different in this regard. Moreover, there was unanimity, between rural and urban residents, regarding changing rainfall patterns in their area. In spite of the unequivocal agreement that rainfall patterns appear to be changing, local experiences vary. The common indicator of changing rainfall patterns reported was the delay in the onset of the rainy season. For instance, in southern parts of NSEZ, mainly northern Brong Ahafo and northern Volta, as far as participants could recall, the rainy season hitherto started in April and ended in November. In recent years, the rains seem to start in late May and to end in November: a reduction to 7 months in a year. Additionally, residents observed seasonal variation of rainfall over the last 2 decades. Indicatively, in the UER, two out of every three people interviewed described the pattern of rainfall as sporadic, i.e. temporally irregular and spatially discontinuous. There were also reports of an increase in the frequency of extreme events such as windstorms.

The observations by residents in the northern savannah region were consistent with the findings from available literature. Rainfall patterns in Northern Ghana show more variability in intra- and inter- annual amounts (McSweeney, *et al.*, 2012). As alluded to above, the 2nd and 3rd NCCC reports point to a decrease in total rainfall of about 74mm for the Sudan Savannah Zone, while for all the agro-climatic zones of Ghana, about 9–27% decrease is expected by 2100, using the baseline of 1960–1990.

For these reasons, some communities in the region now begin planting and harvesting earlier than others. Other studies have shown that the erratic start of the rainy season has also forced farmers to start sowing before the rains finally set in (Quaye 2008; Armah *et al.*, 2011; Akudugu *et al.*, 2012). Generally, the NSEZ is already known for high temperatures compared to the rest of Ghana. Over 90% of respondents across all regions reported that temperatures are getting even warmer than expected (Figure 4.5). These observations by residents are consistent with earlier studies.

4.4 Impacts and Implications of the Changing Climate

As already intimated, the natural aridity and poor soils of the NSEZ contribute to significant levels of poverty and vulnerability. The effects of these factors are reinforced by climate change and by policy and implementation gaps.

Between 70% to 80% of the population of Northern Ghana depends on unimodal rain-fed agriculture for their food, income and livelihoods. This makes ensuring the sustainability of farming systems in the presence of a changing climate, a daunting challenge.

Figure 4.6 points to the various perceived effects of changing climate conditions.

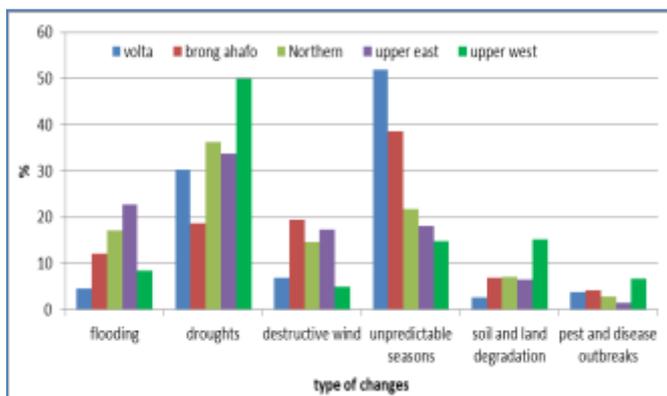


FIGURE 4.6 CHANGES SEEN ON FARM FOR PAST 10 YEARS DUE TO CLIMATE CHANGE

Source: NGHDR Field Survey (2014)

Table 4.1: Climate Change Risks

Ecological zone	Identified risk	Risk level (ranking)**
Coastal Savannah	Sea level rise	High
	Out-migration	Medium
	Weak livelihood support	Medium
	Sea erosion	Extreme
High forest	Erratic rainfall	Medium
	Late start of rains	High
	Early termination of rains	High
	Drought spell	Low
Transition	Low rainfall	High
	Rainfall extremes	High
	Crop failures	High
	Reduced minor rains	Low
Guinea and Sudan Savannah	Long dry spell	High
	Frequent flooding	High
	Out-migration	Extreme
	Erratic rainfall	Medium
	Rising temperature	High

** ranking score – weight average of score assignment by interview responders at the community level. Score 0 (low) and 10 (extreme) on the graduated risk scale

Source: Ghana 3rd National Communication on Climate Change (2015)

These include floods, droughts, destructive winds, unpredictable seasons (harvest), soil and land degradation and pest and disease outbreak. They make agriculture-based livelihoods even more risky. Analysis and projections suggest that these risks are likely to increase. See table 4.1.

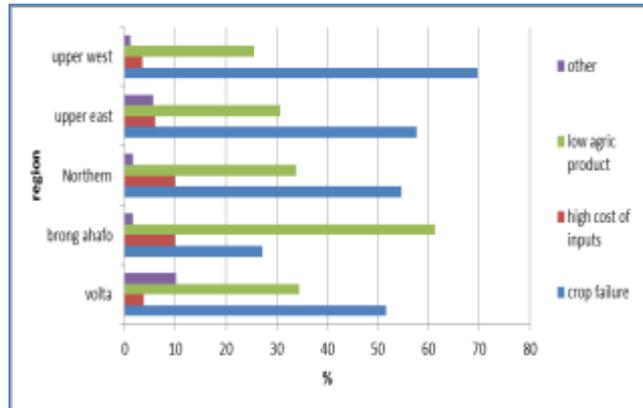


FIGURE 4.7 HOW CLIMATE CHANGE AFFECTS LIVELIHOODS

Source: NGHDR Field Survey (2014)

More specifically, the livelihoods of communities in NSEZ are increasingly vulnerable to *water-related impacts* of climate change, such as decreasing annual rainfall, increasingly erratic rainfall patterns and increased frequency of high intensity rainfall events.

It is important to emphasize that at the local community level, regional rainfall averages are poor indicators of the effects of changing rainfall patterns on farming. The annual and daily rainfall variations as well as intensity and distribution in the critical months of farming are key issues for farmers (Grishow and Weiss, 2012). The amounts of rainfall or June and July are particularly important. This is because cessation of rains during the early months of the cropping season, that is associated with drought, may have severe impacts on crop yields especially for the early maturing crops that serve as a buffer for the lean season (Grishow and Weiss, 2012). Yaro (2010) notes that the right inputs for farming combined with an average of 75 rainy days well distributed between the critical months of April and November is ideal for good harvest in Northern Ghana. This is because a shortage of rainfall which influences moisture in April and May can quash prior investment made in farms.

Apart from the effects of climate change on livelihoods, the health effects of changing climate have also attracted attention. In the case of the northern regions, climate change is likely to enhance the prevalence of existing environment-related diseases such as malaria and cerebrospinal meningitis (CSM), as well as malnutrition (Figure 4.9).

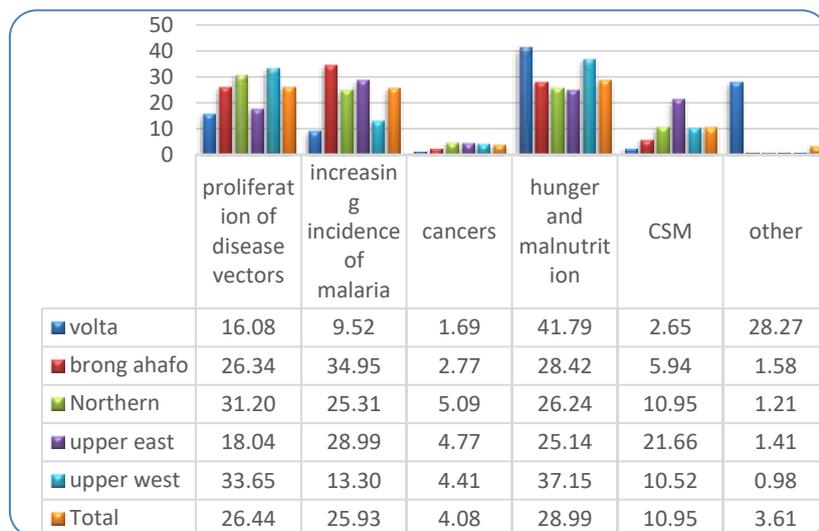


FIGURE 4.8 HOW CLIMATE CHANGE AFFECTS HEALTH

Source: NGHDR Field Survey (2014)

4.5 Climate Change Adaptation and Mitigation

In the midst of intensified and frequent mix of floods and droughts, key concerns for the NSEZ are ensuring sustainable agriculture and food security, health and wellbeing, addressing conflicts over land use and ownership, out migration and social cohesion and, above all, tackling worsening poverty and socio-political exclusion. Towards these ends, efforts need to be geared towards supporting short term sustainable coping strategies that can lead to long term adaptation and serve as primary basis for executing mitigation measures. Common coping strategies observed in the NSEZ include measures to minimize the risk of crop failure and improve soil fertility and crop diversification to facilitate year-round cropping. This can involve cultivating multiple farm plots, adopting mixed cropping, and cultivating quick maturing and disease resistant crops, including hybrid maize and yam. Crops cultivated need to be local climate adapted. It also involves shifting to livestock.

Farmers currently use simple, but locally adapted technologies, including locally manufactured hoes, cutlasses, and sticks. Mixed farming of crops and livestock are a common feature of farming. Other practices include the adoption of continuous cropping systems where a piece of land is cultivated yearly due to high population and land scarcity, although there is a sizable proportion of farmers practicing farm rotation with fallow periods of 2-3 years. The short fallow period has increased the cost of farming since farmers have to apply chemical fertilizer to maintain soil fertility to ensure year-round cropping. This likely explains why NR receives the largest supply of subsidized fertilizer in Ghana (MoFA, 2012).

Picture 4.1 Dry season shallot and tomato farming along River White Volta, UER



Source: Owusu (2012)

To provide water for all year-round agriculture, farmers construct basins (communal owned reservoirs) where water can collect during the rainy season, over which they then plant a type of grass that covers the water surface to prevent excessive evaporation and drying so that the water can be used for farming during the dry season (Owusu, 2012). Examples of this practice are found in the Wa West District of the UWR. Some farmers, particularly vegetable farmers, have also adopted different strategy whereby the planting is done on the main land during the rainy season and in river valleys during the dry season (See Picture 4.1). However, sustainability depends not just on short-term coping strategies but also on long-term adaptation to climate change. A good assessment of climate change adaptation process must answer key questions related to (1) the likelihood of withstanding the test of time to promote economic resilience, (2) promoting ecological integrity, and (3) the promotion of sociopolitical stability and social cohesion.

The current situation in the NSEZ points to some extreme cases of sociopolitical conflict and worsening economic indicators compared to the rest of the country, in spite of progress made; continued out-migration; and increasing land degradation, including desertification. On the positive side, some current coping strategies are likely to promote adaptation. Crop diversification, for instance, has been used as a short-term coping mechanism but can also facilitate longer-term shifts. To maintain the positive gains, attention needs to be paid to good soil and conservation practices to provide soil nutrient and water requirements for the new crops. The dominant view is that the new crops must also be drought-resistant, quick to mature, high-yielding, require low nutrients, be pest resistant and have market value.

Land degradation, high rates of erosion and high intensity rainfall contribute significant volumes of sediment to the existing small dams and dugouts, reducing their water holding capacity. Efforts to reduce erosion such as reforestation and riparian zone management, coupled with efforts to de-silt and repair infrastructure will be necessary to reduce the vulnerability of agriculture to the increased reduction and variability in rainfall in the NSEZ. To this end, future adaptation and mitigation efforts must focus on practices that would ensure effective land and water management; build rural infrastructure and commercial capacity to facilitate access to markets; support activities to enhance the productivity of small holdings for food security; and strengthen local institutions and promote dialogue. Above all, dissemination of research and successful development innovations, including of improved technologies and new agricultural practices that promote the triple gains of food security, sociopolitical stability and ecological integrity need to be scaled up.

Adaptation efforts need to include a much greater focus on water conservation and management. Ghana's Riparian Buffer Zone Policy (RBZP) was launched in 2013. Riparian buffers - grasses,⁹¹ shrubs, trees or other vegetation (e.g. bamboo) that can be planted around streams and water bodies can help to limit erosion and filter and keep water bodies clean. In some cases, the buffers may call for restricting cultivation by farmers who previously farmed along the rivers and thus would need to involve a broader discussion on sustainable land use and consideration of alternatives. Projects such as the Sustainable Land and Water Management Project implemented by EPA, the Ghana Social Opportunities Project (GSOP), the Africa Adaptation Programme (AAP) led by UNDP (funded by the Government of Japan), the main objectives of which are to enhance the resilience and adaptive capacity of communities to climate impacts and risks on water resources in Northern Ghana, have an important role to play in this regard.

4.6 Natural Resources: Risks, Threats and Opportunities

4.6.1 Natural Resource Base

The NSEZ boasts of large arable land, although much of it is undeveloped. The natural resource endowment of the zone varies widely between regions. Known natural resources of the area include minerals, shea, *dawadawa*, sand, water bodies, and abundant sunlight.

⁹¹ Also see Millar (2012) on Grass for Carbon where the focus would be on viable economic, fire resistant and carbon-absorber wild grasses which protect and strengthen the vegetation cover of the North and contribute to check climate change impacts amongst other things.

Feasibility studies have pointed to the availability of high quality limestone deposits in Buipe and Gambaga. The region is also known to have deposits of iron ore in Sheini and clay in Kukuo, Yong, Nabari, Kpaligu and Bewna (KPMG, 2012). Picture 4.2 illustrates two major crops commonly cultivated in the UWR. The UWR is known to have great natural resource potential even though it is one of the three poorest regions of Ghana. Its economy is largely agrarian-based with the top export being shea nuts (a non-traditional export commodity).

The region comes second in the production of millet, sorghum, groundnuts, and cowpeas and contributes 40% of Ghana's cotton.

Picture 4.2 Major Crops of Upper West (Shea Butter and Sorghum)



Source: http://www.cepa.org.gh/researchpapers/Upper_West_Socioeconomic_Development_WRP17.pdf

Picture 4.3 Major Crops of Upper East (Millet and Groundnuts)



Source: ghanadistricts.gov.gh/?arrow=atd&=100&sa=1225. It also possesses a stone quarry in Pwalugu, granite and marble factory in Tongo (KPMG, 2012)

Soya beans production has also recently increased in the region (Centre for Economic Policy Analysis, n.d.). It also hosts a number of local industries such as poultry, shea butter processing, groundnut oil extraction, soap making, cloth and smock weaving (KPMG, 2012). Other studies have pointed to the potential of gold mining. The UER has similar features compared to UWR. Agriculture remains the premier economic activity, and arable land remains the most valuable resource. About 70% of the population in the UER engage in poultry production, farming and fishing.

Picture 4.4 Yam and Cattle in NSEZ



The region boasts of about 172 dams and dugouts which are scattered across its landscape. Millet and groundnuts are the two major crops cultivated by the people of the UER. These are shown in Picture 4.3. Agriculture is equally prominent in the NR and notable crops include yam, millet, maize, rice, cotton and cattle production. The Picture 4.4 shows yam and cattle from the Northern Region. Other endowments include the Mole game reserve, the Volta River and minerals. The Northern Brong Ahafo sub-region has the highest concentration of natural resources including minerals, forest reserves and water resources (KPMG, 2012). The region produces a significant amount of cassava and yam (MoFA, 2007).

Source:

<http://www.swopa.org/mainsite/sirigu/northern%20ghana.html>

Natural resource exploitation provides for a variety of opportunities to individuals, families and the community at large. While some families largely depend on their use for survival, others rely solely on the incomes accruing from their exploitation. In this regard, it serves as a livelihood strategy. Royalties paid by international or local companies for resource exploitation also provide revenues. Findings from NG-HDR Field Survey indicate that three of the five regions in the zone received royalties from mining companies (Figure 4.9). The royalties were paid in cash or in-kind.

Natural resource exploitation

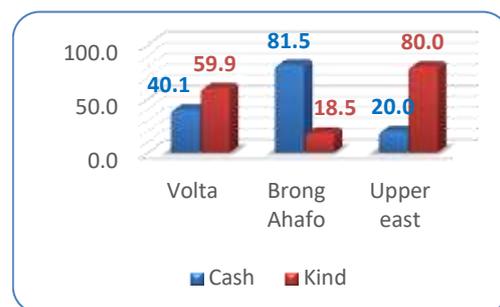


Figure 4.9 REGIONS RECEIVING COMPENSATION FROM EXPLOITATION OF NATURAL RESOURCES

Source: NGHDR Survey (2014)

4.6.2 Natural Resource Management and Exploitation

There are several different laws governing the related to administration of land which are thought to create confusion and uncertainty, gaps and overlaps in the laws and various institutions. The effectiveness of the various institutional ecosystems is being called into question. There are situations where private individuals exploit resources without due documentation and permission, and private and unauthorized 'land guards' have become a common practice especially in urban centres where there has been competition for land. Similarly, extraction of gold and other precious minerals is done by artisan unauthorized miners, known locally as galamsey operators. Exploitation of forest resources, particularly rosewood is also often undertaken illegally. A popular perception is that illegal Chinese immigrants are engaged in this area with the unofficial assistance of some local residents and/or chiefs.

There is also a major problem of institutional collaboration and harmonization of arrangements to ensure common understanding and action. The lack of common arrangements has made it difficult to not only track illegal operators but also to validate operating permits. The role of the chiefs in land administration has also been called into question on occasion. The NGHDR survey points to over-exploitation of resources. See Figure 4.10.

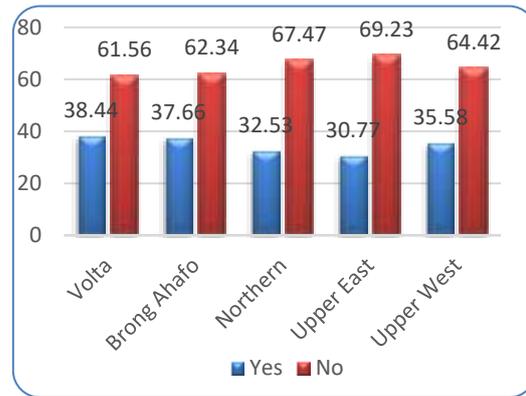


FIGURE 4.10 OVER EXPLOITATION OF RESOURCES

Source: NGHDRS (2014)

Sustainable agriculture

A multi-faceted focus on sustainable agriculture is also key. See Figure 4.11.

Four main approaches:

- 1 Conducting participatory appraisals to identify local potentials and political and technical challenges
- 2 Identifying, documenting, testing and diffusion of local knowledge/alternative practices and encouraging local innovation
- 3 Promoting sustainability through appropriate agricultural research and extension services based on technologies that reduce dependence on external inputs and agro-chemicals, help adapt to climate change, build on and reinforce local knowledge
- 4 Empowering farming communities to promote sustainable agriculture through local, national and global campaigning actions for policy and budgetary changes in favour of smallholders

With a particular focus on the following seven pillars:



FIGURE 4.11 ACTIONAID'S CLIMATE RESILIENT SUSTAINABLE AGRICULTURE INITIATIVE

Source: ActionAid International (2014)

It calls for a **diversification of the sector and the introduction of climate-smart measures**, such as testing the use of drought resistant and pest resistant crop varieties as well encouraging local innovation, including appropriate R&D and extension services and support to community seedbanks and nurseries. It also involves building on local knowledge and focusing on crops which are well adapted and have multiple uses. **E.g., groundnuts have been proposed as a game-changer crop** by legendary professor David Millar given that it is has low input and water requirements, can be grown on marginal soils, does well in dry season, and has multiple uses – e.g. for fertilizer, feedstock for livestock, and as a source of protein for households etc.

4.6.3 Emerging Issues and Threats

There has been a rise of illegal artisanal mining (popularly known as *galamsey*) in the zone as discussed in chapter 3. Such mining degrades land and pollutes drinking water sources in communities. It is also associated with the rise of child labour and higher school dropout rates. Significant school dropout rates are more common in the rural areas than the urban areas.

It is not only unsustainable mining which is an issue. Current practices in fresh water fishing across the NSEZ are also seen to pose serious health risks. Many fisher folks use chemicals in fishing which pollute water sources and the fish itself. The use of pesticides and inorganic fertilizer for farming is also thought to be a major health risk in the zone.

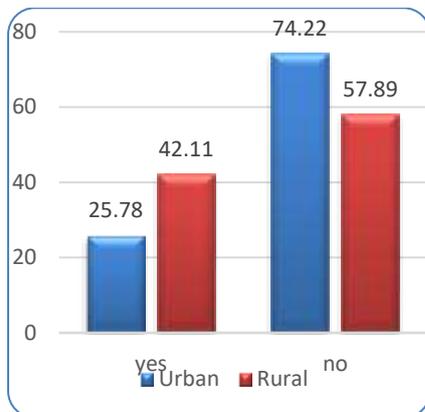


FIGURE 4.12 INVOLVEMENT OF HOUSEHOLD HEADS IN EXPLOITATION (FEMALE)

Source: NGHDR Survey (2014)

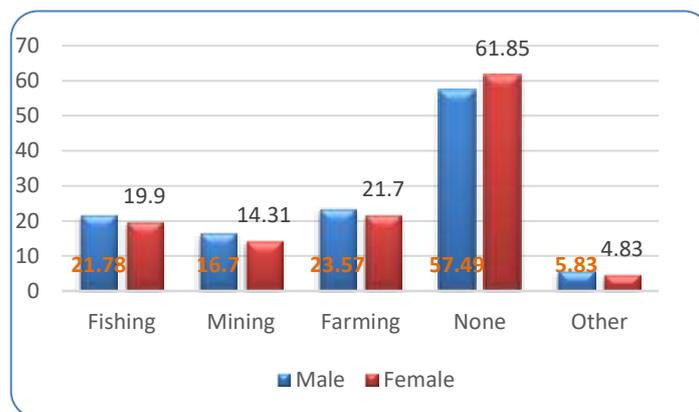


FIGURE 4.13 COMMUNITY ECONOMIC ACTIVITIES BY SEX

Source: NGHDR Survey (2014)

Although the adverse health and resource use implications from the unsustainable exploitation of natural resources have been variously discussed, interviews from the NG-HDR Field Survey did not point to an acknowledgement of these impacts or the need to identify sustainable approaches, which is worrying.

In the exploitation of natural resources, traditionally there is a gender division of labour. Given patrilineal inheritance and male dominance in the zone, one would have thought that men would dominate when it comes to natural resource use. However, the survey findings reveal that males and females equally take part in the exploitation of natural resources in both rural and urban settings. See (Figures 4:10 and 4:12). For issues related to land see chapter 3 and 6 as well as detailed proposals in the conclusions.

Climate change is adding stress to the often-unsustainable patterns of resource use that are underway. In the Northern Region where the expected ratio of precipitation to evaporative demand is expected to decrease, rain-fed agricultural production is vulnerable to climate change. Even where erratic increases in precipitation could contribute to increase yields, it often results in crop damage linked to heavy storm events, excessive soil moisture and flooding. Similarly, livestock rearing, previously subject to traditional grazing practices, is now being affected by reduction in grazing grounds and the drying up of important water bodies.

As alluded to earlier in this chapter and discussed in more detail in **Chapter 3**, seasonal and circular migration are traditional livelihood strategies. However, given climate variability in the sub-region, the traditional migration patterns are increasingly being replaced by a more permanent southward shift. Northern pastoralists, for example, have pushed further southwards into regions used by sedentary farmers, while increasing demand for food has meant that farmers have expanded cultivation into lands used primarily by pastoralists or into water catchment areas. Unfortunately, if care is not taken, the coupling of climate change with ongoing agricultural land expansion in arid areas will increase vulnerability to climatic shocks and place different community groups in direct competition with each other over use of land and water and lead to heightened local-level tensions and conflicts. See more on farmer-herder conflicts as an emerging issue in **Chapter 6**. Other causes of natural resource conflicts that have been cited include ineffective state structures to manage and ensure effective and equitable utilization of accrued benefits; resentment on account of exclusion and a lack of environmental justice for local communities; and the politicization of natural resource governance. These issues need to be the subject of more focused research.

CHAPTER 5: Transformational Investments in Infrastructure

5.1 Introduction

There is a growing recognition that sustainable improvements in human development need to be underpinned by structural transformation and improvements in productive infrastructure. This is especially so in the case of the NSEZ given that historically the zone has a larger infrastructure deficit than the rest of the country. Infrastructure development should, therefore, be at the centre of efforts for accelerated growth, poverty reduction and sustained development in the zone. This is captured in the Sustainable Development Goals (SDGs), with Goal 9 focused on the need to “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster development” (Sustainable Development Knowledge Platform, 2015).

Improvements in infrastructure for transport (roads, water, rail and air) and communication can help to reduce unit costs of moving goods and persons and contribute to enhanced intra-zonal, north south and zonal-Sahelian country trade, and contribute to improving investment and service delivery in the zone. Improved penetration of telephony has been noted to impact positively on economic growth in Africa (Andrianaivo and Kpodar, 2011). Mobile telephony facilitates financial inclusion by reducing the cost of financial intermediation and contributes to the emergence of branchless banking services. Important infrastructure for agricultural transformation include warehouses, pack-houses with cooling facilities, processing centres with adequate water and sanitation facilities and irrigation. Irrigation is vital because of the unimodal rainfall pattern and increasing erratic nature of rainfall in the zone. Better supply of non-fossil energy can increase the productivity of industry and households, and enhance the quality of life, especially of rural women. Expanded infrastructure for potable water reduces time spent to find water, improves sanitation and reduces health risks for households. In the following section, we discuss developments in infrastructure for transport, ICT, energy, water and sanitation, agriculture and financial services.

5.2 Transport Infrastructure

The main modes of transport in Ghana are road, rail, water and air. To date, the focus has largely been on road transportation. Transportation corridors and initiatives are not only expected to stimulate economic growth, trade and investment in the NSEZ but also to facilitate cross-border trade with countries in the Sahel region (such as Burkina Faso, Niger, and Mali) and to enable Ghana’s landlocked northern neighbours to move goods through Ghana’s seaports.

5.2.1 Roads

In terms of roads, there are three main types – i.e., trunk⁹², urban and feeder roads – which are managed by Ghana Highway Authority, Urban Roads Department and Department of Feeder Roads respectively.

⁹² National trunk roads connect the zone to other parts of Ghana and neighbouring countries whereas inter-regional and regional trunk roads connect regions and major centres within regions.

Map 5.1 Road Infrastructure Gaps in Trunk Roads⁹³



Source: LUSPA (previously TCPD) based on Ghana Highway Authority's Dataset cited in NS-SDP 2015

At first glance, road connectivity does not appear to be too bad although there are clear gaps which need to be addressed. With respect to trunk roads, the zone is traversed by the Central, Eastern, Western corridors which are high order trunk roads that connect neighbouring countries, regions and major centres.⁹⁴

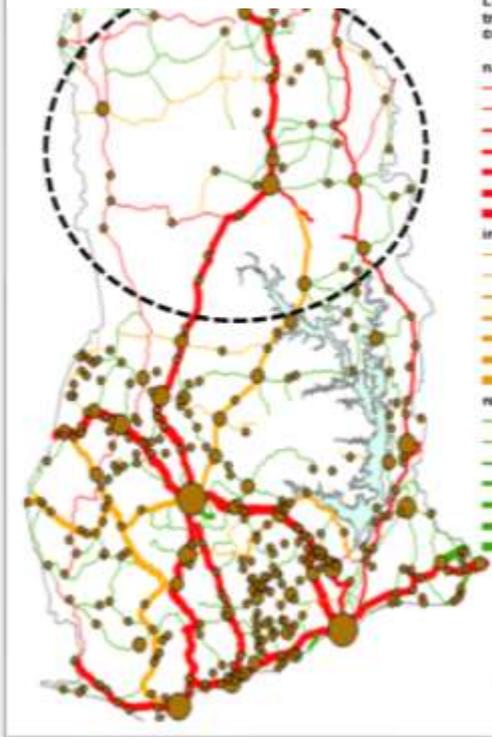
In all, about 40% of the total population live within a 5km radius from the corridors, although there are rural-urban disparities; i.e. while about 80% of urban dwellers in the zone live within 5km distance, about 85% of the rural population are within 10 km from trunk roads.

The conditions of the roads are worthy of mention. For instance, while a third to half of the western trunk corridor in the zone is asphalted, only about a quarter of the length is considered to be in good surface condition. Except for the central corridor, road maintenance appears to be lacking or woefully inadequate. See Maps 5.1-5.3.

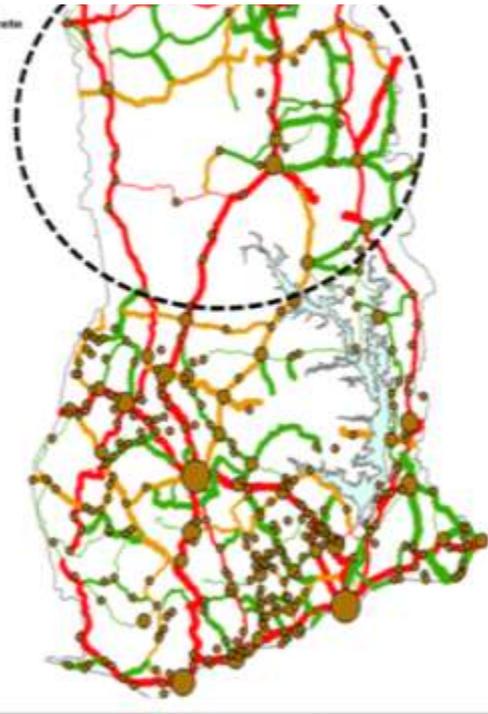
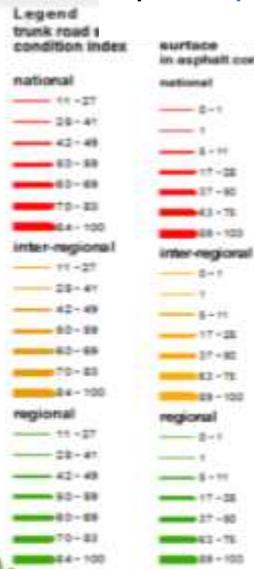
⁹³ The external missing links indicated here are with regard to strategic possibilities with neighbouring countries

⁹⁴ The NSEZ SDF considers the trunk road between Bawku and Lawra as the fourth corridor in the zone

Map 5.2 Surface Condition



Map 5.3 Proportion of road Surface in Asphalt



Source: NSEZ SDF Study 2015 based on GHA Road Condition Report cited in NSEZ SDF

The poor feeder road density in the southern parts of the zone is a serious barrier to the NSEZ's connection to Southern Ghana and development in those areas. For the most part, gaps in road infrastructure are not only in areas with low population density and low economic activity but also in areas where there are water ways such as in the Volta region.

Investment analyses for roads in these areas are not likely to be favourable and justification for them can be difficult in a situation of competing investment needs in the country. However, some of these may be good candidates for an expanded labour intensive public works programme. Recent road projects in the zone include the 147km Fufulso-Sawla Junction, Buipe-Tamale; Salaga-Mankango; the Eastern Corridor road from Asikuma Junction through Nkwanta to Damanko in North Volta. Feeder roads targeted for improvement are Wenchiki-Bunkpurugu, Zabzugu-Kuntumbiyilli; Bolgatanga-Naga; Bui-Zanlerigu; Karni-Kulkarni; and Kundugu-Bawaseble. The Fufulso-Sawla link has enhanced the access to Wa created by the Bole-Bamboi road improvement. The good link between Bolgatanga and Tamale has already attracted private transport services between the two cities for passengers transiting by air from Accra to Bolgatanga.

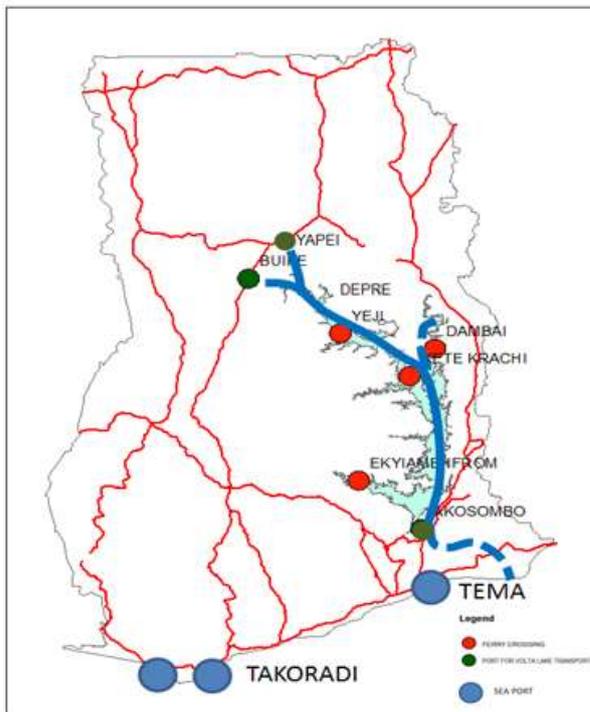
5.2.2 Air

There is one airport at Tamale in the NSEZ and at least three landing grounds at Wa, Navrongo and Bolgatanga. The air traffic to Tamale has increased over the last decade. The number of airlines has increased from one in the early 2000s to three which fly daily, with at least two airlines flying twice a day. Tamale Airport is also in the process of being upgraded to an international airport. This is expected to have significant impacts for people's wellbeing, and for development and trade with the Sahelian countries.

According to the NSEZ SDF, close to 30% of the population of the zone are in districts (in the Upper West, Upper East, Brong Ahafo and Volta sub region) that are more than 150 km from Tamale Airport. The airstrips in Wa and Bolgatanga are also to be upgraded to mini-airports and domestic flight operations could significantly improve accessibility to air transport for under-served populous areas in these regions. Investments in these airports will boost the services sector in the region (commerce, hospitality) and create new opportunities in agriculture such as production and export of horticultural produce.

5.2.3 Water-ways and Railways

Map 5.4 Volta Lake Transport



Source: TCPD

Water transport is very limited, even though there is an inland port at Buipe. There is also the old route of ferry transport linking Yeji in Northern Brong Ahafo, to Makango in the Northern region.

The huge void in the road network around the Volta Lake, has led to a serious exploration of river transport to move goods by rail or water transport, depending on the nature of the cargo, and off-loading at the inland port of Buipe for onward transportation to the regions of the North and the landlocked countries in the Sahel region.

While an initial investment would be involved to make the channel navigable, water transport is likely to be relatively cheap and would also reduce the wear and tear on the trunk roads caused by

articulated trucks moving from Southern ports through Northern Ghana to the Sahel countries. Studies to leverage water transport and develop a specialized logistics hub to boost transportation and management of freight and passengers using the Volta Lake at Buipe are underway.

Assessments of the potential for Buipe to be developed into a Special Economic Zone (SEZ) and Logistics hub are also underway (see city plan for Buipe, available through the Northern Development Authority website). The manufacturing of cement, Bulk Oil Storage and Transportation (BOST) facilities as well as the shea-butter processing plants can trigger further agglomeration of other industries. Shea-butter manufacturing can trigger pharmaceutical industries, soap making and cosmetic industries among others. Agro-processing or agro-manufacturing and textile manufacturing industries can thrive within such a SEZ. Incentives can also be introduced to attract manufacturing firms into the enclave.⁹⁵

⁹⁵ See LUSPA (previously TCPD) NS-SDF (2015) and SADA master-planning exercise for the city of Buipe

There is no north-south rail transport or network within the zone, although this is anticipated down the line. The exploitation of the mining potential of the NSEZ—iron ore, clinker or even gold – would benefit from rail transport. In 2011, news briefs indicated that contractual discussions were initiated for a railway line from Paga (on the border with Burkina Faso) to Kumasi, with a branch from Tamale to Yendi in the Northern Sector. The Ghanaian government has been looking to the private sector for partnership to modernize its rail sector.

5.3 Energy Infrastructure

Limited access to power poses particular challenges for commercial agricultural activities, manufacturing and services in the zone, and constrains the provision of public service delivery in health, education etc. In recent years, Ghana’s power sector was faced with enervation and operational challenges and significant tariff increases.

While Northern Savannah Ecological Zone is connected to the national grid, it is clear that the connections are limited in comparison to the rest of the country. Map 5.5 illustrates power coverage in Ghana.

Amongst others, the concentration of plants in the southern parts of the country, particularly around Tema is noted to contribute to losses in transmission. Further, the lines in Yendi and Buipe, for example, have single transformer stations, and customers served by these lines suffer complete blackout anytime the lines are out-of-service. When the 330kV line (Kumasi – Kintampo–Tamale–Bolga II) is commissioned and there is an export of 100 MW to Burkina Faso, transmission losses are expected to fall.⁹⁶

Further, hydroelectric power for the zone appears to be significantly under-tapped. While overall the share of hydro-electric power has been falling in Ghana, there are more than 15 potential dam sites spread across the zone capable of generating small to medium-quantities of hydro-electric power ranging from 20MW to 95 MW with sustainability safeguards in place.

Map 5.5: Grid Coverage

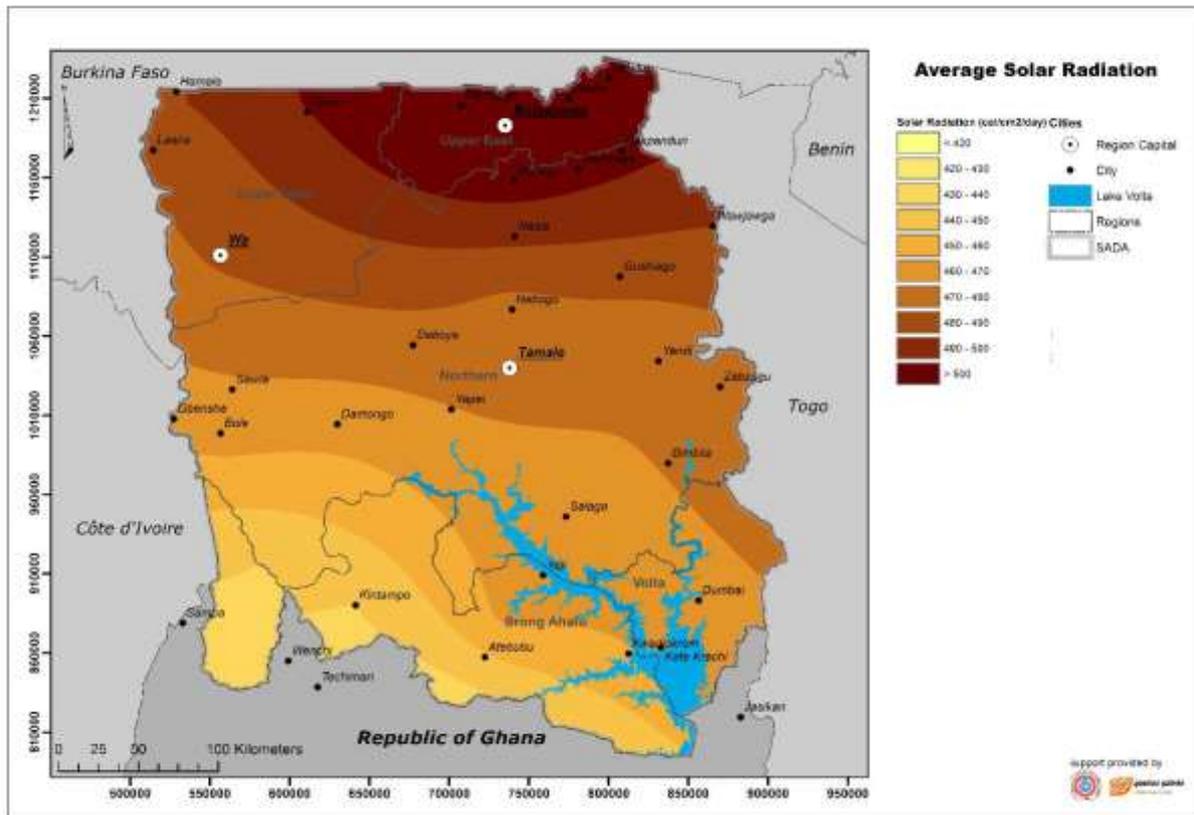


Source: GRIDCO <http://www.gridcogh.com/en/national-grid.php>

⁹⁶ See Government of Ghana (2018b).

These are discussed under the section on irrigation.⁹⁷ Another priority is solar, both on industrial farm scale but also mini-grids and off grid solar. Areas of high irradiation levels are spread across the entire zone with annual sunshine duration ranging between 1800 to 3000 hours offering very high potential for grid connected and off-grid applications.⁹⁸ Proposed solar projects include a 70 MW solar power farm to serve the city and the port of Buipe.⁹⁹

Map 5.6 Solar Radiation Map for NSEZ



Source: SADA (2016) Commercial Agriculture Investment Guide (Appendix) Volume II

In many contexts, the price of new wind or solar farms is now below the cost of competing fossil fuel alternatives, even without considering issues such as fuel price variability or environmental or health impacts (Stark et al. 2015 cited in Arent, D. et.al. 2017). In addition, it is argued by Arent (2017) that the dispersed nature of wind and solar resources, combined with the use of new technologies and business models, also allow for bottom-up pathways for expanding energy access in rural areas and dispersed settlements. Over the years, various solar project initiatives have been launched, e.g. lighting, solar water pumps for boreholes and other productive uses. These are supported on a limited scale and are mostly not within the reach of most rural households.

⁹⁷ These include the Pwalugu Dam, Sissili Dam, Kulpawn Dam, Kamba Dam, Koulbi Dam, Juale Dam, Netereso Dam, Nasia, Dam, Tono Dam, Lanka Dam, Kanvabi Dam, Daboya Dam, Jambito Dam etc. Pre-feasibility studies have been undertaken for all of these.

⁹⁸ See http://www.energymin.gov.gh/?page_id=205

⁹⁹ See SADA www.sadagh.org/index.php/download_file/163/264

5.3.1 Sources of Energy for Household Use

Most households, especially in rural areas, use solid energy sources (fuelwood and charcoal) for cooking and kerosene for lighting (Figure 5.1). Urban households also use significant amounts of charcoal, although liquefied petroleum gas (LPG) for cooking is also emerging as an option in some areas as is electricity from the national grid for lighting and use of other household electrical gadgets. Detailed field studies for this report indicated that only a few of the communities used LPG for cooking. Further, even in communities where LPG and electricity were mentioned as sources of energy, biomass energy use remained dominant.

According to Ghana Energy Commission (2013), the Northern Region had the highest proportion of households (90.5%) using charcoal. While on average a household in Ghana consumed 434.4kg of charcoal/annum, households in the Northern Region consumed an average of 510.1kg of charcoal per annum. In the Upper East Region, households consumed an average of 363.9kg of charcoal per year. The high use of low efficiency biomass energy in Northern Ghana is either because the poor lack access or because communities cannot afford modern energy services due to the very high levels of poverty in the zone. The dominant use of fuelwood in the Northern Savannah is one of the reasons for the significant levels of deforestation in the zone.

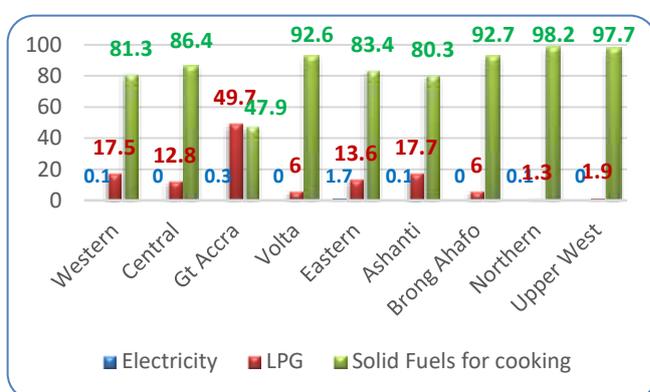


FIGURE 5.1 HOUSEHOLDS USING FUEL TYPES FOR COOKING (%)

Source: GSS (2011) MICS.

This is forcing communities to resort to the use of guinea corn and maize stalks especially in the UER as alternatives for fuelwood. In addition, conventional use of cow dung as source of fuel for cooking has been a common practice for many in NSEZ due to scarcity of fuelwood and charcoal for household cooking. Clearly, use of solid waste is not only inefficient and hazardous to the health of women, but also unsustainable because of its reliance on rapidly degrading vegetation. While the goal is to promote access to renewable and sustainable energy sources, in the interim, with regard to

cooking fuels, there is a growing focus on encouraging more sustainable production of charcoal as well as more efficient/improved cook stoves.¹⁰⁰

The main sources of lighting used by most households in Northern Ghana are kerosene lamp and torchlight. Electricity is the most used form of energy for lighting as long as it is available and affordable in almost all the regions while kerosene is the preserve of the lowest income earners in the three poorest regions of Ghana. Inadequate energy generation capacity, over the past few years raised awareness and interest in renewable energy sources, particularly solar. Adopting cleaner and sustainable energy provides added benefits in terms of environmental sustainability, improved health and increase in agricultural productivity.

¹⁰⁰ See UNDP (2015) NAMA Study for a Sustainable Charcoal Value Chain in Ghana

5.3.2 Gender and Energy

In Northern Ghanaian households, it is generally the responsibility of both men and women to provide energy for the house. Where available, men may foot the bills for LPG, charcoal and electricity while it is generally the responsibility of the women to fetch fuelwood¹⁰¹ from their farms or those of their husbands.

Beyond their primary role as food producers at home, rural women are in fact heavily involved in fuelwood collection and charcoal production. It is estimated that many rural women spend a minimum of two to three mornings a week collecting wood fuel (Arthur *et al.*, 2011). With increasing scarcity of wood fuel, the gender division of labor and environmental degradation are increasing women's time burden. At the household level, time saved from not having to fetch fuelwood would otherwise be used for educational or other productive activities which would provide additional income and enhance the nutritional and health status of the household; and for making up on rest. Moreover, access to modern energy fuels would allow children to attend school instead of looking for fuelwood. The health impacts of indoor air pollution from traditional biomass fuels and their negative impacts on women, girls and babies currently is a critical issue.

5.4 Water and Sanitation

According to GLSS6 (GSS, 2012/13), more than 90% of households in the NSEZ accessed water that met the WHO safety standard of up to 10ppb of arsenic. However, regarding the level of *E. Coli* bacteria (indicator of presence of fecal matter in community water), about 83% of households in the zone had drinking water with *E coli* levels of medium to high,¹⁰² which points to health threats for the local population, especially for children. This is a direct outcome of the practice of open defecation and lack of facilities for the disposal of waste.

GLSS 6 findings indicate that more than 70% of households did not have toilet facilities, while another 14% used public toilets. Worse still, about 96% discharged liquid waste in open areas.¹⁰³

In addition to improvements in infrastructure, scaling up of sensitization on hygiene and behavioural change is called for in schools and in communities. See, for example, UNICEF's Community Led Total Sanitation (CLTS) strategy.

Box 5.1 Community aspirations for and perceptions about infrastructure provision

The needs of the communities varied from community to community across the five regions; but infrastructure most needed to support their livelihood included:

- ✓ *HEALTH: Clinics and hospitals; veterinary clinics;*
- ✓ *FINANCIAL SERVICES: Banks and credit facilities*
- ✓ *SANITATION: Good drinking water; toilet facilities; drainage facilities;*
- ✓ *PRODUCTIVE BUSINESS SERVICES: Agriculture machinery, corn mills and irrigation dams; Markets and good roads,*
- ✓ *EDUCATION & COMMUNITY DEVELOPMENT: day care centres; school blocks (Primary, JHS and SHS); teacher's accommodation; library facilities; adult literacy schools; community centres;*
- ✓ *SKILLS TRAINING : skills training centres;*
- ✓ *ELECTRICITY AND BASIC INFRASTRUCTURE: electricity;*
- ✓ *SECURITY: Police posts.*

Source: NGHDR Survey 2014; Focus group discussions.

¹⁰¹ An exception is the Gukpegu area of Dagbon, where it the responsibility of men to harvest firewood for the household.

¹⁰² GSS (2014) GLSS6 Main Report. Ghana has adopted zero E coli levels as the standard

¹⁰³ GSS (2014) GLSS6 Main Report.

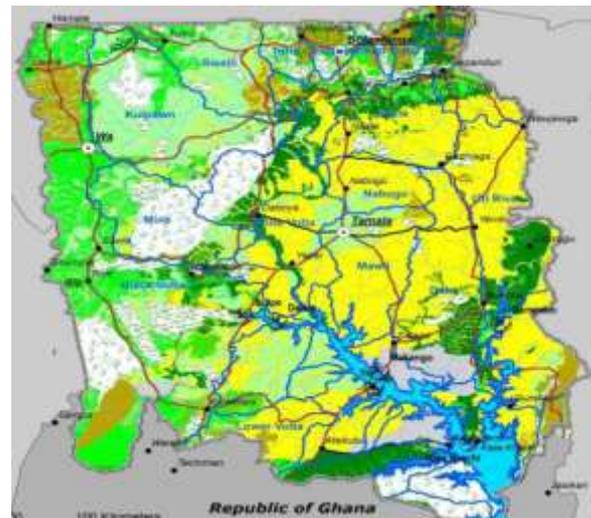
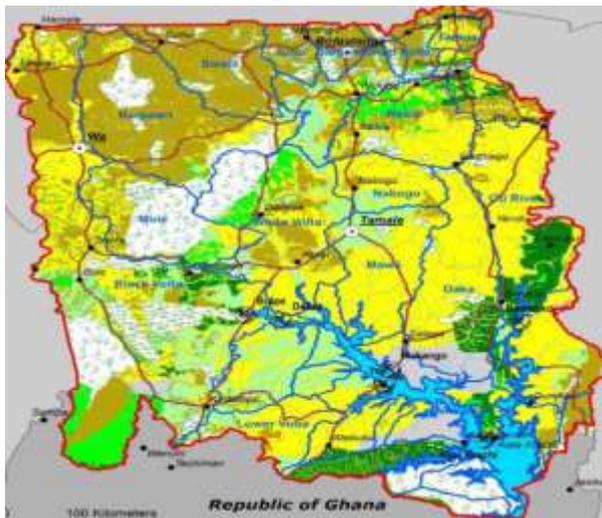
5.5 Infrastructure for Agricultural Production

To tap the agricultural potential of Northern Ghana, infrastructural investments are key:

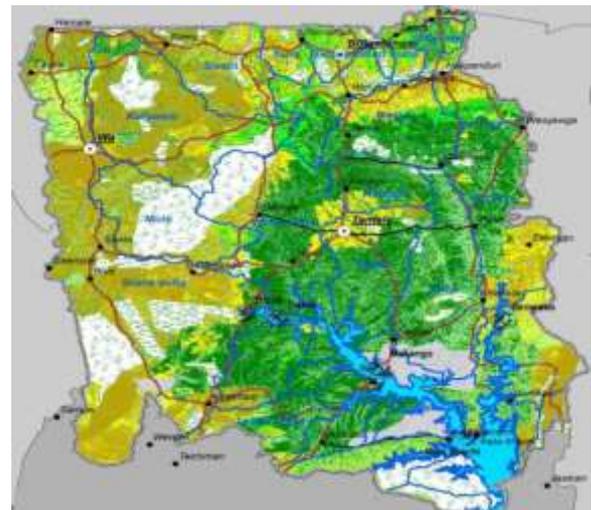
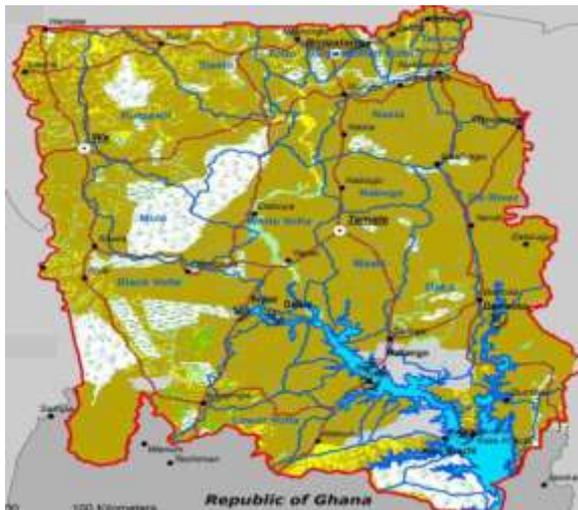
5.5.1 Irrigation and Improved Water Management

The zone has unimodal rainfall and in the absence of irrigation, farmers are limited to one crop a year. However, a detailed analysis of a variety of data, feasibility studies, and research projects for the Agricultural Master Plan¹⁰⁴ point to the game changing character of strategic investments in irrigation which would allow for double and triple cropping periods. See below Maps 5.7 and 5.8 for changes for groundnut and rice.¹⁰⁵

Map 5.7a and 5.7b land suitability (with and without irrigation) for groundnut



Map 5.8a and 5.8b: Land suitability for banded rice with high inputs (without and with irrigation).



Source: SADA (2016) Commercial Agriculture Investment Guide

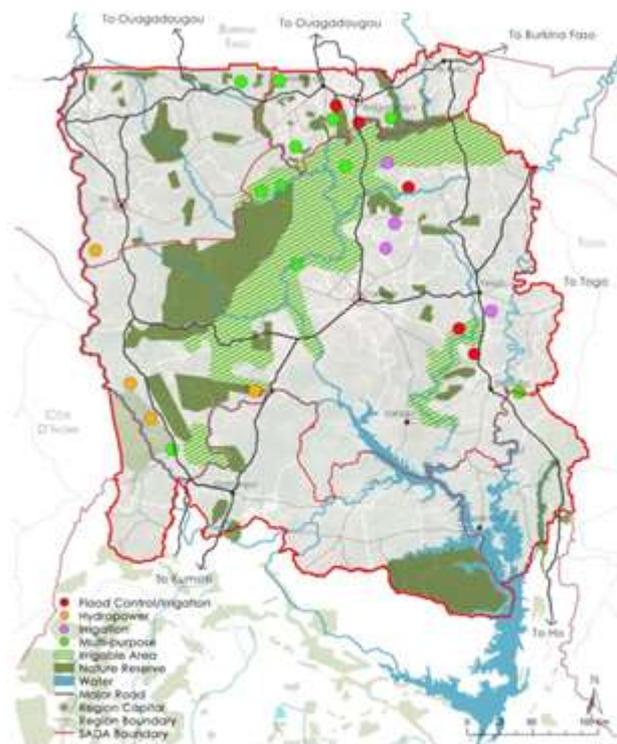
¹⁰⁴ See SADA Commercial Agricultural Investment Guide and Atlas. Land suitability (with and without irrigation) at high inputs was carried out for 19 crops.

¹⁰⁵ **Key:** dark green - very suitable; light green – suitable; very light green – moderately suitable; yellow – marginally unsuitable; brown - unsuitable

The research that has been carried out for the development of a regional masterplan also highlighted the potential for:

- At least 23 dams for various purposes;
- A minimum of 95 small dam and weir sites for small and mid-sized irrigation schemes that could bring 104,000 ha into production;
- Over 8 million ha suitable for rain-fed or irrigated agriculture under 25 crop/LUTs¹⁰⁶;
- Over 553 MW of potential installed capacity (2,276 GWh) in new sites for hydropower generation (excluding the existing capacity at Bui);
- 174,000 ha to 400,000 ha in gross irrigable area to be developed for irrigation under 5 major, “ready-made” (existing feasibility studies) irrigation schemes, including: Bui Pwalugu; Nasia-Nabogo; Daka; and Fumbisi Irrigation Schemes (see Map 5.9).

Map 5.9 Potential Irrigation & Multi-purpose Dams



Source: Quieros Galvao and Surbana International produced for SADA’s Master Planning Exercise and Commercial Agriculture Atlas (2015)

It is important to not only identify how to secure financing and investment for one or more of these critical irrigation schemes but also to ensure that the irrigation initiatives are *sustainable* in terms of their management and social, economic and environmental impacts and are well-maintained over time.

Currently, it is estimated that of Ghana’s 55 irrigation projects, with a total irrigable area of 11,400ha, 32 of them, with an irrigable land of nearly 7000ha, are in the NSEZ (Figure 5.2). However, only 13 of the 34 irrigation projects are in good condition and functioning properly; the rest are either still under construction, broken down, or under repairs. In effect, the total irrigable area serving the projects is 2,629.22ha (IDA, 2012).

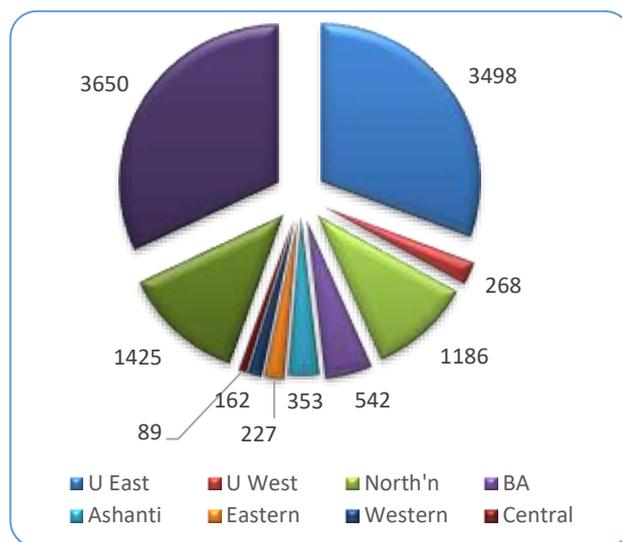


FIGURE 5.2 DISTRIBUTION OF IRRIGATION BY REGION
Source: IDA, 2012.

¹⁰⁶ Land Utilisation Type

Farmers along river banks such as the White Volta, pump water for dry season farming and in other parts of the zone there are similar groundwater and pond irrigation mechanisms including those using solar power.¹⁰⁷ Many small community dams are in need of rehabilitation and good management. The government's *One Village, One Dam* initiative provides opportunities for the development of local water resources and networks and maybe useful in this regard. However, it would do well to be complemented by larger sustainable irrigation facilities and support to and water conservation.

As Irrigation infrastructure can be very costly, efficient use of water and cost recovery is critical for sustainability of the projects. Water use associations (WUA) are now common on formal irrigation projects. They are mostly charged with the day to day management (operation and maintenance). Their functions include the collection of water users' fees and participation in the distribution of water, repair of broken canals, embankment and catchment area protection. However, in many instances maintenance is found to be challenging. The reasons include high costs, the reluctance of some farmers to pay levies, poor coordination among WUAs and poor participation by farmers who are the direct beneficiaries of the schemes in maintenance activities.

The Ghana Irrigation Development Authority also aims to increase private participation in the management of various irrigation facilities. The private entities are expected to adopt a more commercial approach in terms of identifying markets, producing crops as a nucleus farm, and supporting farmers with inputs and services in out-grower schemes.

It is however important to ensure access of small scale farmers and gender balance in access to irrigation in terms of existing management models and the new private sector led models.

The draft agricultural masterplan for the zone, in fact, puts forward a mix of irrigation schemes and complementary mechanisms to tap into ground water sustainably so as to address both commercial agriculture potential (e.g., in sparsely populated areas and where land is more plentiful) and equity considerations, working around existing land use patterns where feasible. This type of 'balanced' approach needs to be at the forefront to help achieve transformation with equity.

UNDP, though technical support from UNDESA, is also assisting with capacity building in the use of integrated modelling to identify how the proposed agricultural transformation, which will draw significantly on water resources, can be made more sustainable. See Integrated Assessment of Climate, Land, Energy and Water Systems (CLEWS) model Fig 5.3.

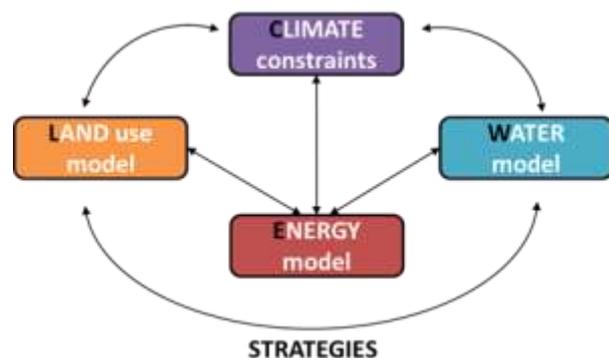


FIGURE 5.3 CLEWS MODEL

Source: UNDESA [Modelling Tools for Sustainable Development](#)

¹⁰⁷ See New Energy <http://www.newenergygh.org/>

Water and land management

Rehabilitation of broken down irrigation facilities and completion of ongoing ones should be a policy priority for irrigation development in the zone. In addition, innovative management systems need to be developed in partnership with users of the facility to ensure effective, economical and sustainable use of the facilities. Irrigation pumps can be procured by the agricultural mechanization centres, sold to farmers or hired to them.

Farming along river banks should be regulated and monitored closely to stem possible degradation (silting and pollution) of the water systems. Riparian buffers are needed along water bodies and underground cisterns/tanks in local communities. At the national level, capacity to deliver extension services for irrigated agriculture should also be improved.

Given the prolonged dry season (upto 7 months) with very high evaporation losses which lead to drying up of many surface water bodies, it is important to look at options other than the management of surface water alone. It is also important to look at underground water availability and recharge. Some of the critical issues in this regard include the need to: secure technologies to undertake a mapping of the deep underground aquifers in the zone to identify opportunities as well as ensure sustainable water management; undertake integrated planning for the management of both surface and groundwater resources including through integrated flood plain management for the entire river basin and recharge of aquifers in the zone; mainstream an adaption and resilience approach, including at the community levels, to assist communities with climate impacts and risks to water resources; and to facilitate community engagement on sustainable land and water use issues. Also see chapter 6.

5.5.2 Warehousing and Storage

Storage and cold chain facilities are essential for minimizing post-harvest losses of agricultural produce. Most farm households store produce on the farm or at home for food security. Storage for price gains is common among larger more prosperous farmers who can take advantage of selling when prices are high. Central warehouses can help farmers to aggregate produce, thereby reducing transaction costs for traders and enhancing access to buyers.

The typical local storage structure in Northern Ghana is the mud silo (Picture 5.1). It is commonly used for grain and dry produce such as dried cassava. The capacities of the silos are small. Grain can be exposed to pests, insects, rain and mould. Produce is also stored in sacks and pots in the house. In such cases, application of storage chemicals can pose health hazard to women whose rooms seldom have good ventilation. The use of chemical products, fire and smoke to prevent infestation and control moisture levels in the silos can also result in high loss rates. A number of institutions and NGOs have been working to adapt and improve the technology for storage.

Picture 5.1 Mud Silo



Source: Innovate Development.Org

The focus is on training local artisans to construct and/or design storage systems, wherein crops can be properly treated and dried before storage to reduce losses significantly.¹⁰⁸

For larger community level storage, targeted to improving market access, warehouses are more appropriate. Map 5.10 shows the distribution of warehouses in the NSEZ. Many of these were put up under the Farmer Agricultural Services Company (FASCOM) in the Upper East and Upper West regions. This explains the higher density of warehouses in the two regions compared to Northern region. Northern Brong Ahafo and Northern Volta have very few warehouses. This map however does not show the capacities of the warehouses. More importantly, there is little information on the complementary services provided (crop cleaning and drying, or even access to financial services) and criteria for access by farmers.

There have been additions to warehouses through initiatives such as USAID's ADVANCE project which provided 500 metric tonne warehouses for farmer groups in six communities in the Northern Region in 2012. Under the *Northern Rural Growth Programme (NRGP)*, building of 9 warehouses and packhouses were also initiated in Kukobilla, Sawla, Gushegu, Cheriponi in the Northern Region, Pwalugu, Tono, Garu, Weisi in the Upper East Region, Sombo, Eremon, Gwollu and Yagha in the Upper West Region and Badu in the Brong-Ahafo Region. These are expected to be fitted with modern cleaning and sorting equipment, utilities, meeting rooms and offices, among other facilities¹⁰⁹.

Map 5.10 Distribution of Warehouses in the NSEZ



Source: USAID-FinGAP Investment Mapping System (IMS) <http://fingap.nautilytics.com/>

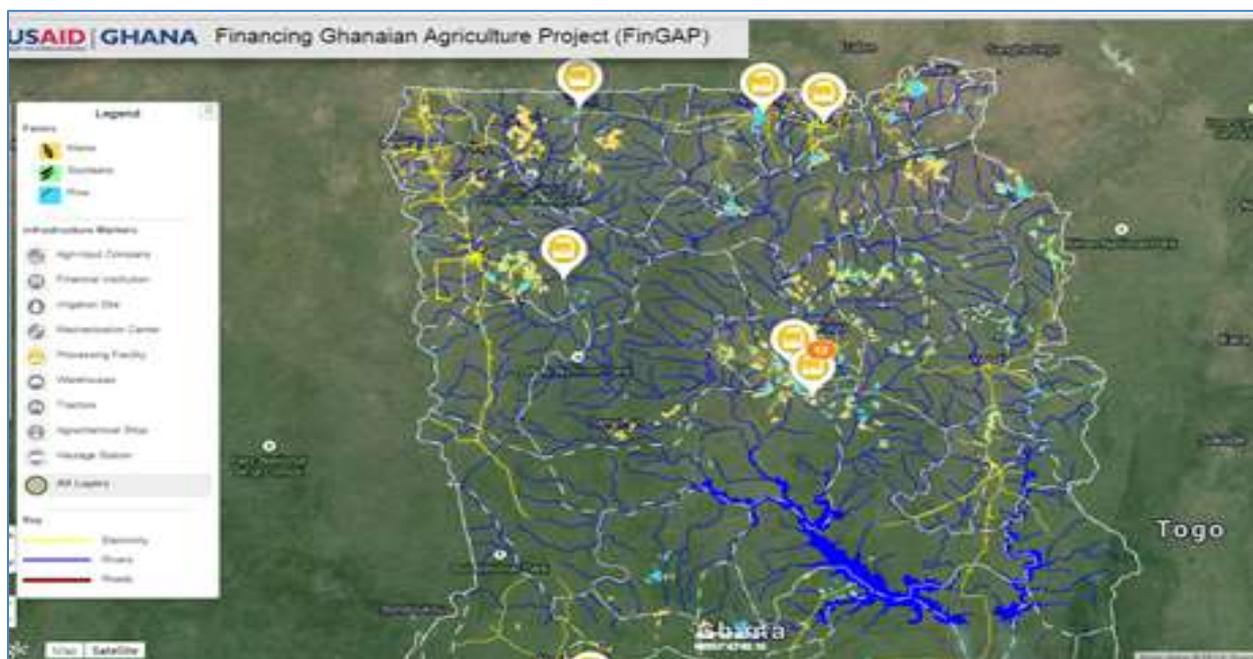
¹⁰⁸ For mud silos, see work of *Opportunities Industrialization Center International (OICI)*. OICI claims that for less than \$25, the silos with a capacity to store approximately 1.5 tons of grain, can be constructed out of materials such as dried grass and mud, and have several compartments that hold different crops, and reduce losses to less than 1%. Also see varied research and training supported by WFP, IFPRI, CIGAR etc. which Ghana can tap into. Technologies being tested by WFP, for example, include plastic silos, metal silos, multilayer plastic bags, water-resistant plastic storage unit, and insecticide infused long-lasting plastic woven bags.

¹⁰⁹ <http://www.ghanaiantimes.com.gh/construction-of-storage-facilities-for-agribusiness-begins/>

Within the context of its warehouse receipt programme¹¹⁰, with support from the Alliance for a Green Revolution in Africa (AGRA), the Ghana Grains Council (GGC) has also invested in a 500 metric tonne certified grain warehouse with office complex. New research indicates that small farmers are not necessarily in a position to benefit from such schemes. The experience of other countries with so-called warrantage schemes and the efficacy of building on and improving community-level storage and crop collateral schemes with strengthened engagement with microfinance institutions needs to be explored further.

Another essential infrastructure is processing facilities. The distribution of processing facilities in the NSEZ is presented in Map 5.11. Facilities are clustered around urban centres (Tamale, Wa, Bolga, Bawku). The most common processing facility is the corn mill. Rice and cassava mills are also common in the production areas of these crops. The mills are typically owned and operated by men and provide processing services to women. Shea processing facilities have been promoted by NGO projects supporting women’s income generation activities. In this case the women are more likely to own the facility. Traditionally, processing of agricultural produce is a women’s activity. However, women may not stand to benefit the most from formalization and improvements in this activity if gender equity issues are not factored in upfront.¹¹¹ In principle, mechanized processing facilities can reduce drudgery and workload for women and improve the uniformity and overall quality of processed products, thereby enhancing their market value and incomes for processors.

Map 5.11 Sites of Processing Facilities in the NSEZ



Source: USAID-FinGAP Investment Mapping System (IMS) <http://fingap.nautilytics.com/>

¹¹⁰ For warehouse receipt system programmes, see Ghana Commodity Exchange (GCX) and GGC. For some challenges with the warehouse receipt system for small holder farmers in Ghana, see Miranda et.al. (2018)

¹¹¹ See a study by Gatune (2016) on “Can Agriculture Be the Engine for Economic Transformation and Inclusive Development: Insights From 20 Value Chains Studies in 5 countries”.

Industrial processing centres are few and far between in the zone. The Integrated Tamale Fruit Company (ITFC) produces dry mangoes;¹¹² a new company at Bolgatanga produces baobab, tamarind and other natural fruit juices; and Sekaf produces shea products for comestics. A modern rice processing facility in Tamale with a production capacity of 450 tons per day has also been established by Avnash Industries.¹¹³ The concept is to source the paddy rice from local farmers. Shortfall, if any, is planned to be made-up by import of semi-finished rice. The new processing plant would be an addition to the existing Nasia rice mill, the biggest mill in the zone. The Irrigation Company of Upper Region (ICOUR) also has a mill to service its farmers and for milling its own paddy. These processing businesses can offer market outlets for farmers, and increase employment of the youth, especially girls. The milling capacity is growing but there needs to be increased services to farmers by aggregators who can then buy produce from small farmers for the mills.

An assessment by USAID-EAT (2012) indicated that [warehouse management in both community warehouses and large-scale government facilities was “extremely poor, resulting in inefficiency, waste, and physical asset deterioration” due to “poor management practices”](#). The assessment pointed to a number of challenges: a lack of funds for maintenance and repair as facilities were not run on business lines (e.g. farmers from were paying GHC1.00 per bag for produce stored for any length of time and programmes such as the school feeding programmes were not required to pay any rent); community-run warehouses lacked accountability and clear ownership; inadequate management skills in rural communities, whereby some co-op executives were able to monopolize the warehouses as personal assets.

Aside from successful privately run large warehouses in markets, a number of options can be looked at, including engagement with farmers associations but also partnerships or subvention type arrangements with non-profits which have successfully run warehouses. E.g., Catholic Relief Services have been active in supporting farmers with integration across the production, sale, storage and marketing stages as well as working to improve post-harvest storage systems.¹¹⁴

5.6 Information and Communication Technology

Information Communication technologies (ICTs) are an important enabler of investment, and for promoting productivity and helping businesses, small and large, to be more competitive. ICTs can also expand the reach and effectiveness of social development initiatives in areas such as healthcare, education, and environmental preservation and assist civil society with enhancing voice and partnerships.

In Ghana, as in other parts of Africa, ICTs (particularly mobile apps) are important for financial inclusion of rural communities and the poor through services such as mobile money transfer services, especially in the informal sector where businesses have very limited access to formal financial services. The NSEZ which has a low density of formal financial services infrastructure, therefore stands to benefit from mobile financial service delivery.

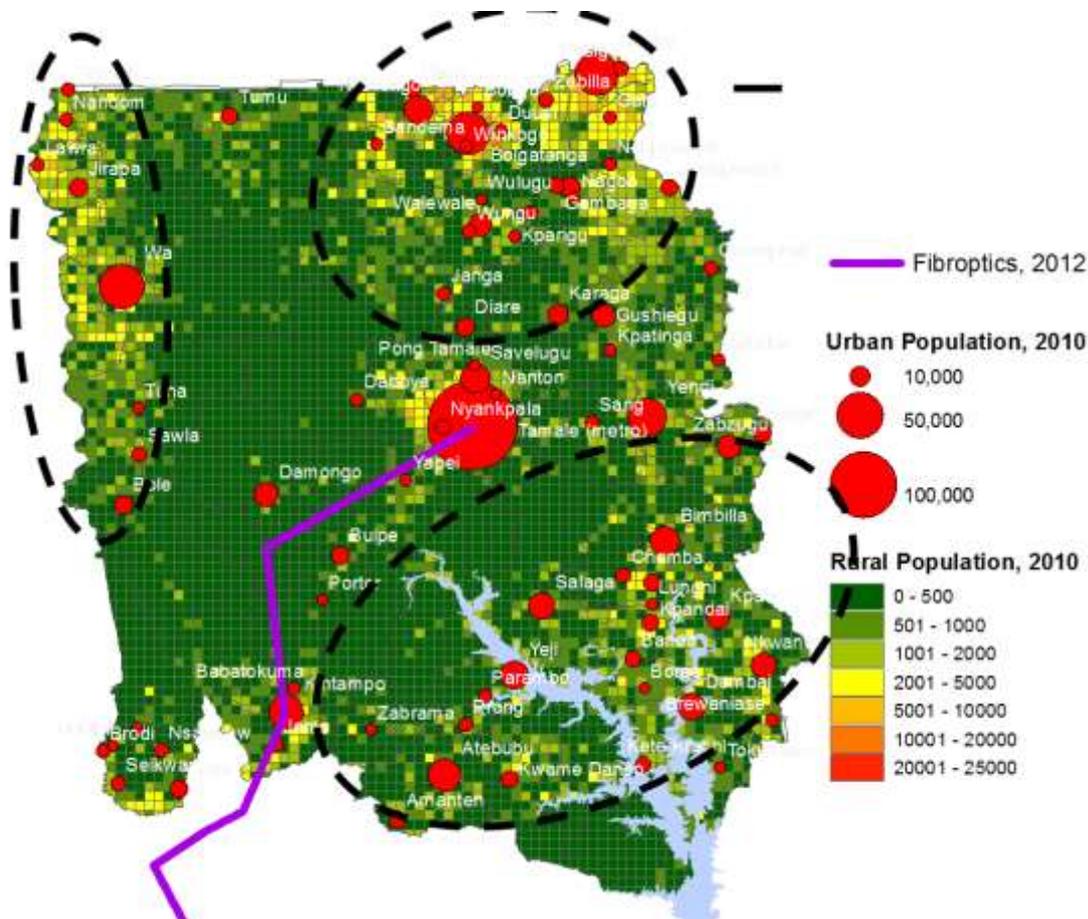
¹¹² For a recent analysis of benefits and challenges see Abdul-Razak, I and S. Donkoh, and R. Yeboah (2015)

¹¹³ Avnash Industries Ghana Limited

¹¹⁴ See [CRS in Ghana](#)

While there is a fibre optic cable on the western corridor, the Eastern Corridor fibre optic cable is not yet complete. Until that is in place and there is greater last-mile connectivity from both backbones, significant gaps in coverage remain. See highlighted areas in Map 5.12. Further, relatively high data costs are a significant constraint to the use of ICT.

Map 5.12: Critical Gaps in ICT Coverage



Source: LUSPA (previously TCPD)

The density of ICT coverage varies by the type of technology. While masts for cellphone lines are clustered in urban centres, radio stations are more widely distributed (Map 5.13) with implications for access and quality of service.

Most countries experience a digital divide between rural and urban areas. However, [there is now a range of technologies and approaches provide for a wider menu of options to enhance rural broadband on more affordable terms](#). These include the expansion of fiber networks combined with ramping up Wi-Fi and leapfrogging to next generation cellular network services. Community-based networks (See O Siochrú, S. and B. Girard (2005)), multi-purpose ICT-enabled service centres and policy initiatives to increase coverage though incentivizing shared infrastructure (by mobile service providers) to reduce costs (e.g see recommendations by Telecom Regulatory Authority of India (TRAI)); and improvements in power supply – extending grid but also off-grid solutions – to complement new ICT infrastructure to make them effective, i.e., use of solar or fuel cells.

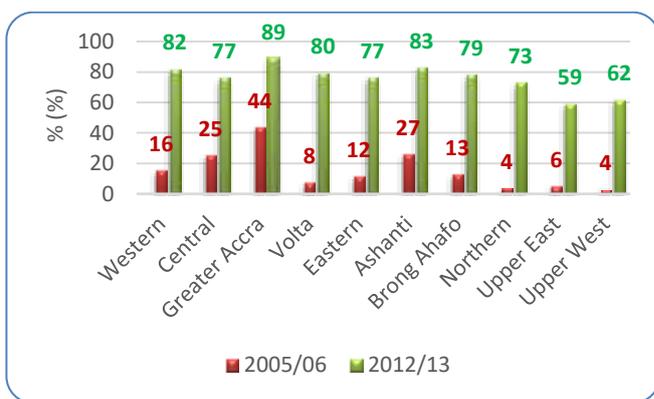


FIGURE 5.4 PERCENTAGE OF HOUSEHOLDS OWNING MOBILE PHONES BY REGION

Source: GLSS 6 (Ghana’s poverty profile, 2013).

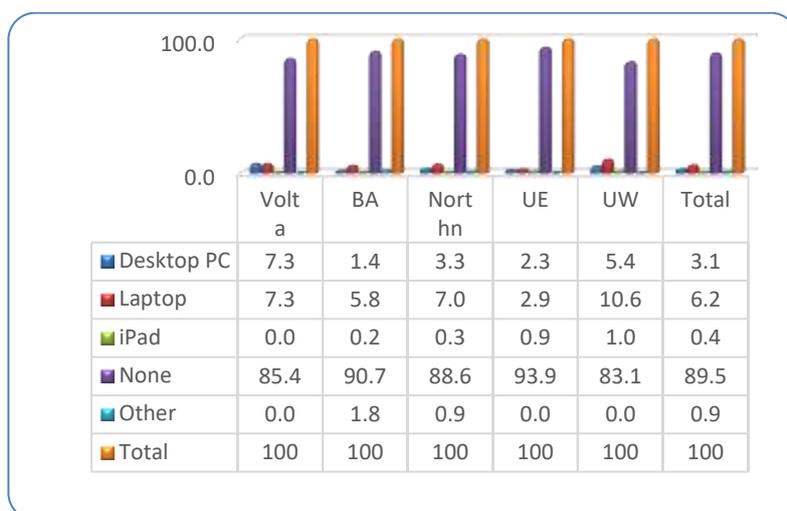


FIGURE 5.5 HOUSEHOLDS WHO OWN OTHER ICT EQUIPMENT (%)

Source: NGHDR Survey, 2014.

There is clearly demand for ICT. Data from GLSS6 already point to a tremendous growth in penetration of mobile telephony between 2005 and 2012/13. Even as the three Northern regions continued to have the lowest percentage of households owning mobile phones (Figure 5.4) in 2012, the rate of growth (800 to 1000-fold increase) since 2005 was the highest.

The rise in ownership and usage can be attributed to lower costs, increased availability and ease of use. The social value of mobile phone was illustrated by a woman participant in focus group discussions at a community outside Tamale on the Kumbungu road (Kaanfe-hiyili). She said: “I use my phone to stay in touch with my old mother in the village. Every morning I call her to see how she slept the night before.”

In addition to limited infrastructure for both energy and ICT, low levels of literacy and education limit the use of other ICTs such as computers because they require some knowledge and skills in ICT (See Figure 5.5). Furthermore, fewer women than men use ICTs, even though women also have need for ICTs. As in other countries, there needs to be a proactive focus on promoting digital inclusion.

In Ghana, most of Government initiatives to address the transformation process are at the national level, e.g. the Infrastructure Investment Fund (GIF); Ghana Investment Fund for Telecommunications (GIFTEL).

5.7 Incentivizing Investment and Tackling Issues of Infrastructure Resource Management

As a historically marginalized region, a critical issue for the zone is how to incentivize investment and to compete with opportunities available in other parts of the country, particularly in the so-called “golden triangle” in the South.

The government is focusing on increasing public-private partnerships (PPP) to address infrastructure provision.¹¹⁵ It would be useful to identify where PPPs would be most appropriate for the zone. The PPP strategy should include a focus on technology and skills transfer, local capacity building (human resource expertise, guidelines), value for money auditing, economic and financial assessments, monitoring of technical works, and social impact assessments. At all levels, there is need to abide by the procurement law, while ensuring consultation and buy-in for national infrastructure, and participation in decision making for transparency and equity at sub-national levels.

As alluded to previously, the threat of inequity is high at the community level where weaker members such as women are more likely to be excluded from formal or commercial investments and in cases where community resources, particularly land, is made available to private investors. It is important to facilitate approaches to ensure inclusiveness and transparency with regard to investments and monitoring of impacts.

¹¹⁵ Ghana's Ministry of Finance developed the National Policy on PPP, which was launched in October 2011. See the [PPP Brochure](#). "What distinguishes a PPP from other forms of private participation in infrastructure and service delivery is the greater degree of risk-sharing between the two parties. Principally, a PPP enables Government to provide better infrastructure and services through the use of private sector financial, human and technical resources, thereby freeing Government resources for other equally important uses. Usually, in a PPP arrangement, the private sector party performs part or all of a Government's service delivery functions, and assumes the associated risks for a significant period of time. In return, the private sector party receives a benefit/financial remuneration (according to predefined performance criteria), which may be derived: • Entirely from service tariffs or user charges; • Entirely from Government budgets, which may be fixed or partially fixed, periodic payments (annuities); and • contingent; or • A combination of the above

Chapter 6: Governance, Participation and Human Security

6.1 Introduction

This chapter is divided into three parts. The first part discusses characteristics of the governance of the NSEZ within a human development framework. The second part looks at the human security situation and links governance to human security objectives. There is a consideration of emerging threats and issues. Also covered in the chapter is a section on NGOs in voice and accountability (V&A) issues, the kind of programmes they promote, geographical and sectoral coverage, clients/beneficiaries and strategies employed.

In generic terms, governance can be referred to as ‘the attempt to steer society and economy through collective actions and forms of regulation that link values and objectives to output and outcomes’ (Torfing, 2012, p.101). Furthermore, governance is the exercise of authority through formal and informal traditions and institutions for the common good of society (Kaufmann, Kraay, & Mastruzzi, 2003). Highlighted in the two definitions are issues of authority and how the authority is used to improve the life of people or perpetuate poverty. These are important terms for consideration as it seeks to explore governance, participation and human security, with human development as the overarching focus.

Apart from defining governance in respect of authority and how it is used, we also conceptualize it as a system of values, culture, policies and institutions through which resources are managed and how networks with individuals, households, the private sector and civil society are created and function (UNDP, 2000). The effect of authority (formal and informal), with culture, value system and networks in creating and reinforcing already existing inequalities in society leading to marginalization and vulnerability is discussed. Human development-oriented governance is generally about promoting people-centered decision-making processes. It is about fostering accountability, ensuring transparency, achieving equity and inclusiveness, following the rule of law, being responsive, ensuring efficiency and effectiveness of institutions and creating spaces for participation. It should be conceptualized as a goal and a process that accelerates growth, equity, and human development potential for the people and the society at large.

6.2 Traditional and Western Governance Systems with regard to services and participation

Ghana operates an interplay of traditional and western governance systems as a result of its colonial political history. The traditional governance system is synonymous with the institution of chieftaincy while the western is a combination of parliamentary and executive systems of governance. In this section, we discuss the structure of the two political systems, challenges and their impact on human development in the Zone.

In the Northern Savannah Ecological Zone in particular, the political role of chiefs, ‘*tendanba*’ or ‘*tindana*’ (landlords, earth priests or spiritual leaders), elders and clan heads was recognized well before the advent of colonialism. Another institution of the traditional governance system which existed in some areas is that of the ‘queen mother’.

In recent times, the institution of queen mothers is being introduced in areas which otherwise did not have it (Atuoye and Odame, 2013) for the purpose of ensuring more gender aware political authority for development.

The chieftaincy institution, which is the most visible institution of the traditional governance system, remains a vehicle for local development and also acts as the embodiment of the values, beliefs, norms and aspirations of the people (Assimeng, 1981). Traditionally, Chiefs play non-statutory functions arising out of the important positions they hold as leaders of their communities. In many rural communities in Northern Ghana, chiefs exercise their customary authority to arbitrate in disputes. As rightly observed by Odotei and Awedoba (2006), “the lack of statutory power in chiefs to adjudicate on civil and criminal matters does not deprive them of their customary authority to arbitrate in disputes as the chief’s court in many rural settlements is the first point of call because of its accessibility, flexibility, expeditiousness and user-friendliness”. Chiefs also serve as agents of social mobilization of their people for development purposes. They act as links between their communities and the outside world, other agencies of development and non-governmental organizations, a phenomenon now conceived as ‘developmental chiefs’ in some circles. The Chieftaincy Acts [of 1971 (Act 370) and 2008 (Act 759)] restructured the institution to enable chiefs to play adjudication, custodians of customary law and practices, and social mobilization roles effectively. At the top of the current traditional governance structure is the National House of Chiefs and at the bottom are the Divisional Councils. In-between are Regional Houses of Chiefs and Traditional Councils. The creation of the Ministry of Chieftaincy and Traditional Affairs has forged direct links with the chieftaincy institution and the western governance system in recent times. Also, as part of the decentralization strategy, chiefs have seats in the Council of State, the Judicial Council, the Lands Commission, the Regional Coordination Councils (RCCs) and other public bodies. Chiefs are also consulted in the appointment of 1/3 of the members of the district assembly (see Act 759 and Act 462).

With regard to the western political system, Article 35 Section D of the 1992 constitution seeks to “make democracy a reality by decentralizing the administrative and financial machinery of government to the regions and districts”. The Article further enjoins people “to participate in decision making at every level in national life and in government”.¹¹⁶ Further, the Local Government Act 462 (1993), mandates the central government to decentralize in three main forms to the local level for the purpose of facilitating development planning and implementation. These are **administrative** decentralization, **political** decentralization and **fiscal** decentralization.

Administrative decentralization gives power to District Assemblies to plan, implement and manage development programmes. The Medium-Term Development Planning process is crucial to getting public participation and having local needs drive the development plan. As a result, it is a process that can bring human development issues to the fore in plan formulation and implementation. However, it has been shown that participation of the public in the process of development planning and implementation can remain at the level of process and not be effective due to the low capacities of local structures as well as resource constraints (more on this later). On the other hand, interest groups, who are better organized, may be able to push authorities to include their development needs in development plans and get them implemented.

¹¹⁶ See Chapter 20 of the constitution.

An important issue raised by stakeholders in meetings and perception surveys (e.g. Afrobarometer), as well as by the Constitutional Review Committee, relates to reforms for administrative and political decentralization to make MMDAs more responsive to local priorities. Currently, the Metropolitan/Municipal/District Chief Executives (MMDCEs) and a significant proportion of the membership (1/3) are not elected. Doing so would make them more responsive to local constituencies. This reform agenda is work in progress.¹¹⁷

Political decentralization involves the creation of districts and demarcation of districts into area councils to ensure that political power is devolved to the grassroots. The 1992 Constitution through the Local Government Act 462 (1993), and the new Local Governance Act of 2016, Act 936, wherein these provisions do not change, makes the election and nomination of assemblypersons non-partisan, implying that the main thrust of political power at the assembly emanates from the people for their own development. In practice, a key challenge has been the implications of the so-called ‘winner-takes-all’ political governance system that is operative in Ghana. The winner of the presidential election determines many significant appointments not just at national and regional levels but also at local levels.¹¹⁸ The current Government has expressed commitment to constitutional reforms that will devolve power to the local levels by allowing for partisan elections at the district level.¹¹⁹

Fiscal decentralization, probably the most critical, is the third element of decentralization. Articles 245 (b) of the 1992 constitution and parts VII and VIII of the Local Government Act, 1993 (Act 462) allow assemblies to generate funds locally while Article 252 of the constitution, which is a replica of Section 86 of Act 462, makes it mandatory for central government to transfer resources to Metropolitan, Municipal and District Assemblies (MMDAs).

6.2.1 Resource Challenges and Implications for governance for human development

The main sources of revenue for the local authorities are central government transfers and locally or internally generated internal funds (IGF). Locally generated revenue is derived mainly from fees and taxes (property and basic). IGF has tended to be relatively limited.

¹¹⁷ Currently, the President is vested with the power to appoint Metropolitan/Municipal/District Chief Executives (MMDCEs) subject to approval by two-thirds of the membership of the MMDAs and also appoint one-third of the membership of the MMDAs. For several years there have been calls for this system to be changed and the constitutional review committee recommended that parliament should determine a specific mechanism for choosing MMDCEs, which should vary according to Metropolis, a Municipality or a District.

¹¹⁸ See IEA (2016) which focuses on Dealing with the Winner-Takes All Politics in Ghana: The Case for Effective Decentralization. The paper explores the implications of the WTA politics for the 3 levels of decentralization and proposes recommendations.

¹¹⁹ In his 2018 State of the Nation Address (SONA), President Akufo-Addo spoke of the the direct election of MMDCEs on a partisan basis as being a firm manifesto commitment of the New Patriotic Party. He said “my discussions with the nation’s political leaders, including the former Presidents of the Republic, convince me that it is a step we must take. The constitutional impediment to this, in Article 55 of the Constitution, an entrenched clause, must, therefore, be removed. To ensure the judicious use of the country’s resources, I propose that the constitutional processes for a Referendum should be initiated in such a manner that the holding of the Referendum will take place at the same time as next year’s District Assembly elections”. As of now, the implementation of the proposed roadmap is expected to culminate in a referendum only in September 2019, with the maiden MMDCEs elections by June/July 2021, and the subsequent swearing in by August 2021.

Most MMDAs are heavily reliant on central government transfers in the form of the District Assembly Common Fund (DACF).¹²⁰ The DACF provides for critical human development investments in sanitation, education, health and policing (security) in vulnerable communities. 2% of the total fund is to be allocated to people with disabilities. Figure 6.1 depicts the over-reliance of MMDAs on the DACF. The DACF constituted more than half of the revenue of the selected MMDAs in 2013; and the trend has been the same since the initiation of the fund. The DACF allocation was almost always in arrears. Besides, MMDAs in the Zone are not able to generate adequate resources within, due to very limited economic opportunities and high poverty levels in the zone which is also more rural than other parts of the country.

The lack of financial resources, the paucity of staff numbers and expertise, constraints with regard to logistics, vehicles and materials to perform their roles as well as the lack of adequate infrastructure to support the functioning of institutions, negatively impacts governance for and investments in human development, which are imperative.

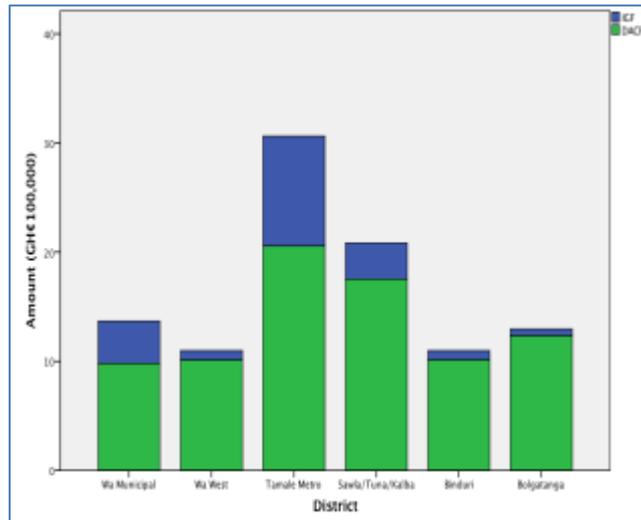


FIGURE 6.1 DACF AND IGF COMPARED

Source: Annual MMDAs Budget Statements (2014)

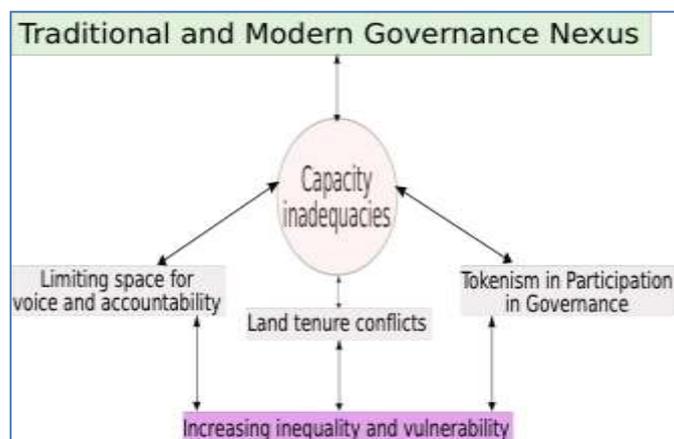


FIGURE 6.2 GOVERNANCE CHALLENGES AND EFFECTS

Source: Authors' construction

¹²⁰ See [DACF](#). The DACF is a pool of resources created under Article 252 of the 1992 constitution. A minimum of 5% of the national revenue is supposed to be set aside and to be shared among all District Assemblies. Part of the Fund is disbursed directly to District Assemblies (DAs) in accordance with the approved Formula. This is referred to as 'direct transfers.' The MMDAs use the funds for projects and programmes determined by their respective assemblies. Some of the money from the Fund is also used to support a number of important social intervention projects which take place in the Districts but are national in scope. Disbursement for such programmes is referred to as "indirect transfers". Some of the national programmes supported by 'indirect transfers' are the School Feeding Programme, National Borehole Programme, Sanitation Module and Sanitation/Waste Management. Also about 4% of the Fund is shared to Members of Parliament for constituency projects, 1½% is shared among the 10 Regional Co-ordinating Councils for supervision of the Assemblies in their respective Regions while 2% is reserved to meet contingency expenditures.

It is the same scenario with traditional governance institutions. See Box 6.1. These are also under-resourced. This has significant implications for their role in conflict prevention and management.

Box 6.1 Challenges Affecting Traditional Governance in Practice

- Only 10 out of the 17 Area Councils in the Upper East Region are functioning.
- There are succession conflicts in almost all five traditional councils in the Northern Region.
- The Bimbila Traditional Council was found to be defunct as almost all the seats were vacant.
- Bawku Traditional Council was also defunct.
- Staff of traditional councils reported their structures are in dilapidated state thus affecting their morale.
- Staffing is a problem affecting the operations of traditional council. In the Upper East Region for instance, none of the ten functioning traditional councils had a full complement of staff (registrar, secretary and bailiff).

Source: NGHDR Field Survey (2014)

The often-perceived difficult marriage of the two systems as well as challenges associated with the individual systems have implications for human development. See Figure 6.2. Limited capacities also effectively result in *a limited space for engagement* and accountability and limited opportunities for participation of citizens in development.

In particular, the resource constraints and poor functioning of sub-national structures limit the spaces available for engagement of government by excluded and vulnerable groups. Data from the 2014 household NGHDR Field Survey points to low awareness of the functioning of government agencies and departments providing services.

Across board, 40% to 45% of households in the zone had no understanding of the workings of various government departments/agencies. Extent of awareness of key departments and agencies in this regard was as follows: for the passport office (66.5%), post office (62.1%), prisons services (61.1%), DVLA (62.7%), Ghana Revenue Authority (61.9%) and Ghana Immigration Service (41.6%). Departments and agencies whose operations were relatively better known in the zone included the medical system (79.5%), basic school system (79.1%), government high schools (75.1%), and tertiary institutions (67.3%).

For the medical system, slightly over half of household respondents indicated that the medical delivery system was either very competent (21.6%) or competent (33.3%). Similarly, 59.6% of household respondents indicated their basic school facility was either very competent (20.8%) or competent (38.7%). This could be viewed as showing that the respondents were alive to the core human development issues and concerns.

Importantly, the survey also pointed to an unacceptably high level of households indicating that they pay money to induce services delivery. Well over 50% of those who indicated that they 'have ever paid money to agencies and departments', said it was routine (either all the time or about half of the time). About a quarter (25.3%) of households paid money to the police; for the other key services, the percentages were as follows: judicial service (17.82%), government school system (17.4%), medical system (16.9%), and MMDAs (15.9%). The majority (92.9%) of households were of the view that payment of additional money to government officials, either always (10.8%), most of the time (29.29%), about half of the time (10.9%) or occasionally (41.9%) gets them to solve their problems.

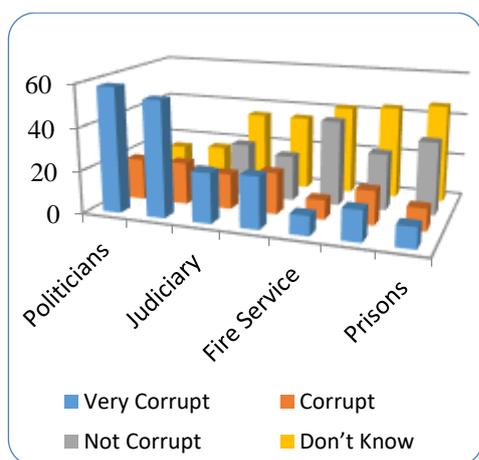


FIGURE 6.3 PERCEPTION OF HOUSEHOLDS ABOUT CORRUPTION

Source: NGHDR Survey (2014)

Anecdotal evidence indicated that the rules of agencies and departments vary (60.8%). About 40% of household respondents indicated that they vary frequently, with 30.8% believing that government takes the public opinion into account when changing rules. Fewer households in the Northern (6.4%) and Upper East regions (9.2%), however, believe that is the case.

In fact, household respondents perceive high level of corruption among public/security agencies in the Northern Savannah Ecological Zone. Notable among the agencies are politicians, the police, customs and the judiciary as shown in Figures 6.3.

6.2.2 Partnerships and Initiatives to deliver services and ensure voice

As pointed out above, and also in Chapter 2, the service delivery gaps are significant. Non-governmental organizations (NGOs) – often the channel for donors as well - and donor supported initiatives play an important role in filling some of these gaps. Critical areas targeted include health, education, agriculture and economic empowerment for women and youth. Research is needed on the extent of involvement and impact. However, it is evident from anecdotal evidence, that initiatives are not always aligned to district level needs and priorities, or present in the areas of greatest need, but more importantly, are not always sustainable either.

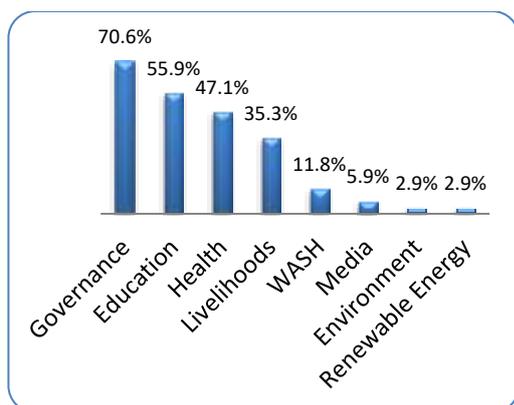


FIGURE 6.4 TARGET SECTORS OF NGOS

Source: NGHDR Survey (2014)

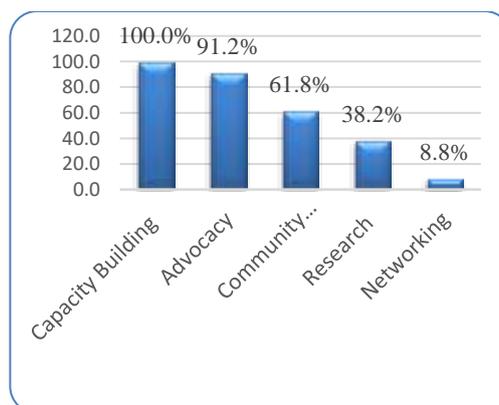


FIGURE 6.5 STRATEGIES OF NGOS

Source: NGHDR Survey (2014)

Many NGOs operating in the zone are seen to focus more on the three Northern regions compared to Brong Ahafo and the Volta regions because, according to them, poverty is more endemic in the former. However, the 'hard to reach' poor areas in all parts of the zone appear to be avoided, and some sectors were effectively under-emphasized by both national and international actors.

While there is a strong focus on children and women, other typically vulnerable groups, such as mentally challenged people, who are often isolated and hidden in communities, need more attention.

Various mechanisms have also evolved over the years to facilitate partnerships between district assemblies and civil society organizations to enhance the provision of social services. A common practice is the MMDA appointing a focal person from the department of social welfare to coordinate the activities of civil societies and NGOs. In districts where the coordination is successful, civil society is further organized into stakeholder networks and their views solicited through development forums. Inputs of civil society organizations are also solicited for the development of medium term district plans to ensure synergies and facilitate monitoring by MMDAs. The health, water, education and agricultural sectors provide some examples of successful cases of public private partnerships in the three Northern regions. Galaa and Bandie (2004) and Galaa (2012) noted that for the health and agricultural sectors, in some districts the private non-profit sector providers were allocated designated health sub-districts to operate, in order to minimize duplication of services as well as ensure that services are not spread too thin. Mechanisms were also found to exist for senior personnel of private-non-profit sector to participate in joint decision making at the sub-district and district levels through representation on management teams.

The central government remains the leading provider of infrastructure and public services, particularly economic services such as roads and electricity (Agyeman-Duah, 2002). District assemblies and statutory organizations' dealings with the private-for-profit sector have been limited either to purchasing and contracting arrangements or the enactment and enforcement of the laws and legislations to regulate the sector. District assemblies are yet to assume full responsibility in Infrastructure Service Provision (ISP) delivery despite the ISP law which grants sub-national government structures high autonomy in tariffs, user charges, cost recovery policy regime as well as transfers (Agyeman-Duah, 2002). The inability of MMDAs to assume responsibility for the various basic services is partly due to limited human and material resources as well as the apparent unwillingness of central government to cede power and resources in certain areas.

Over 70% of the NGOs in V&A focused on good governance (including the need to increase women's participation in local government by getting them elected into the District Assembly and Unit Committees). See Figure 6.4. A search through the profiled NGOs revealed that five main strategies are employed. See Figure 6.6. All the NGOs mapped use capacity building, 91.2% use advocacy, 61.8% use community empowerment, 38.2 % employ evidence based research and 8.8% leverage on networks as strategies in their work. It should be noted that the use of these strategies is not mutually exclusive. An NGO may use a combination of one or more of these strategies at the same time. But a key question is how do citizens hold NGOs that are in Voice and Accountability, in particular, and other NGOs in general to account? The legal space and limited capacity to hold NGOs to account is in fact an issue.

The traditional and western governance systems have shaped development in the NSEZ and in Ghana in general, in a way that seems to be both conflicting and complementary. Data from the communities surveyed show that strong and effective community leadership facilitates human development. Leadership provides for organization and mobilization of community members for community development (Galaa, 2012). Chiefs and other traditional leaders of a community, in partnership with the assembly-person of the area can initiate and mobilize local resources as well as advocate for resources from outside the community for purposes of development. In communities where there is no leadership it is often difficult to attract development projects and programmes from NGOs and other development agencies (Galaa, 2012). Leadership is found to legitimize development projects, likely to optimize the chances of attracting further initiatives.

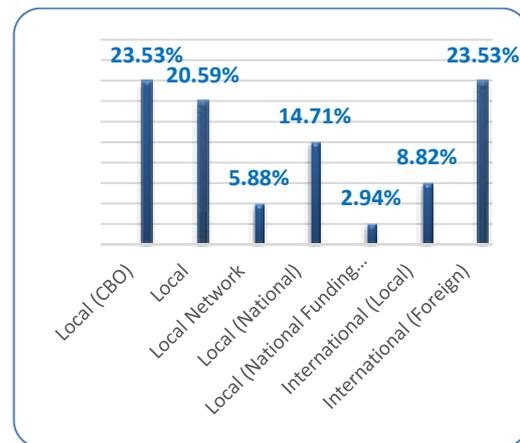


FIGURE 6.6 TYPES OF NGOS IN VOICE AND ACCOUNTABILITY (V&A)

Source: NGHDR Survey (2014)

School infrastructure, Community based Health Planning and Services (CHPS) compounds and boreholes are priorities. These are now being complemented by government’s flagships such as the Infrastructure for Poverty Eradication Programme (IPEPs). The sustainability and coherence across these different types of programmes is likely to be an issue going forward.

6.2.3 Governance, Voice and Accountability

The right of communities and local people to participate in local matters is provided for in the 1992 Constitution. Chapter 20, clause 240, 2 (e) states that ‘to ensure the accountability of local authorities, people in particular, local government areas shall be afforded the opportunity to participate effectively in their governance’. Citizens resident in a district are expected to select 70% of members of their assembly as a practical expression of this constitutional clause. The remaining 30 % are appointed by the president in consultation with traditional authorities and other interest groups in the districts. Furthermore, Clause 41 (g) also enjoins every citizen to contribute to the development of the community where (s)he lives. Similarly, the Local Government Act 462 (1993) adequately provides for citizens to participate in the administration of their localities through such opportunities as election of district assembly membership, power of revocation of the mandate of member of district assembly, petition, referendum, establishment of complaints committees, and access to information among others. In addition, as required by the bottom-up planning process of the National Development Planning System (Act 480, 1994), local communities are expected to participate in the preparation of sub-district or local plans through public hearing sessions where the views expressed are incorporated.

In the 2014 NGHDR Field Survey, community participation was measured in the following areas: attendance to town meetings, political rallies, voting in the last presidential and parliamentary elections and volunteering in community development work. **With the exception of voting during elections, participation was found to be generally low.**

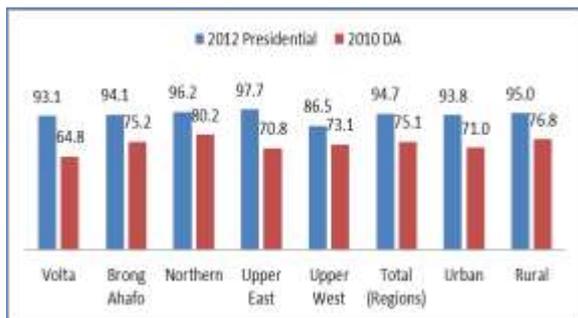


FIGURE 6.7 HOUSEHOLDS VOTING IN 2012 PRESIDENTIAL AND 2010 DISTRICT ASSEMBLY ELECTIONS

Source: NGHDR Survey (2014)



FIGURE 6.8 HOUSEHOLDS ENGAGED IN COMMUNITY DEVELOPMENT ACTIVITIES IN NSEZ

Source: NGHDR Survey (2014)

not represent their demands (9.1%), or that they did not think that it was worth voting (21.2%).

Over a year, 77.7% of households reported volunteering or helping in community development initiatives. More households (82.9%) in rural areas volunteered as compared to households in urban areas (64.9%). Fewer households (55.6%) indicated to have volunteered in the Brong Ahafo Districts as compared to the others. Figure 6.8 provides an illustration of the percentage of households engaged in community development activities. Although the western governance system within the current democratic dispensation is acclaimed as championing voice and accountability, in practice, there is a long way to go.

The degree of participation and accountability also varies for traditional governance systems. See Atuoye and Odame (2013). The findings of the 2014 survey found that traditional institutions could be further demystified and opened up for participation of vulnerable community members. With respect to the western governance system, the survey found that vulnerable community members would be better placed to engage duty bearers on accountability when they have the capacity and necessary empowerment to do so.

In the current human development discourse, focusing on gender dimensions is very important. In health education, agriculture and economic development interventions, there are discussions about potentially different priorities and differential impacts. In the NSEZ as elsewhere in Ghana, patriarchy is largely the dominant social orientation.

However, participation was higher in rural than in urban communities: e.g., non-attendance to town meetings was 72.2% in urban and 50.7% in rural); and non-attendance to political rallies was 73.9% in urban and 69.2% in rural communities.

In terms of voting behaviour, 94.7% of households in the savannah zone were found to have voted in the 2012 presidential and parliamentary elections, with slightly more households voting in rural (95.0%) than urban areas (93.8%). When we compare the number of households who voted in the 2012 Presidential and Parliamentary elections to the 2010 District Level Election, the data show that fewer households (75.1%) voted in the district level elections. See Figure 6.7.

The major reasons for households who did not vote in the 2012 presidential and parliamentary elections were either that the person did not register (32.4%), the voter could not be verified (11.4%), candidate did not represent their demands (9.1%), or that they did not think that it was worth voting (21.2%).

Considering the various negative effects of this social arrangement for women, there is the need for a reorientation of the two governance systems with the aim of repositioning women as equal partners in development.

For instance, the creation of queen mother position in traditional councils, that

initially did not have it as part of their culture, is a good step to increase women participation in governance. There have been interventions initiated by governance structures to address gender gaps in development. See Box 6.2 for examples of initiatives by the two governance systems. There is the urgent need for human development agenda in the zone to continue to place emphasis on gender equity. Access to land and assets is an important issue (Bacho, 2005) particularly where land has been highly commoditized, as most women do not have money to acquire it, even if the culture (male dominated) allows it. Active and meaningful participation of youth, women, local farmers, persons with disabilities and other excluded groups of people in governance is very critical if human development is to be equitable and sustainable (UNDP, 2013). Gender is also treated as a cross-cutting issue and addressed throughout the report and in the recommendations.

Box 6.2 Existing Actions for Gender and Development

Tradition Governance

- Inclusion of queen mothers in traditional councils
- Institution of girls' education programmes
- Removal of cultural practices affecting the dignity of females

Political Governance

- Free maternal health
- Implementation of CHPS with a maternal health face
- Promotion of girls' education
- Gender representation on local governance structures

Source: NGHDR Survey (2014)

6.3 Governance of Land and Natural Resources and Emerging Issues

It's important to look the interplay of the two sets of governance arrangements with regard to land with regard to chieftaincy conflicts as well as productive and equitable access.

6.3.1 Land

Table 6.1 Modes of land Acquisition by Region

District	Family land	Free from the chief	Rented	Leased	Purchased	Other
Upper East	92.7	2.6	0.5	1.3	0.4	2.6
Upper West	88.3	6.2	0.0	1.6	0.5	3.5
Northern	64.6	22.3	3.8	3.2	4.4	1.9
Brong Ahafo	35.7	37.3	21.3	1.1	2.9	1.7

Source: NRGP (2012)

Before colonization, the *land priest (tendanba/tindana)* and chiefs were viewed as having had the sole authority of managing land, including its resources. The *tindana* were particularly important in the

allocation of land to individuals, particularly in the Upper West and Upper East Regions. Land was held in trust or custodianship for the people, i.e., not commoditized, and was freely given out to members of a community and individuals from outside the community for the purpose of non-commercial use (Ubink and Amanor, 2008; Kasanga & Kotey, 2001).

With the introduction of colonial rule, government and chiefs in some parts of Upper West, Upper East and Northern Region gained part of the rights to management of lands and its resources. Land in the Northern, Upper East and Upper West Regions is now mostly under control of families. The *skins* are still important for endorsement of allocations.¹²¹ (Tsikata and Seini, 2004; Yaro, 2010). Land for farming is not typically acquired by purchase; an indigene needs to visit the chief (Naa) or the landowner to make a formal request (with a present of a drink and cola) to be granted a portion of land to use. The indigene in turn makes available some produce to the landowner on a seasonal basis. Farmers also secure land from relations or family, or through inheritance. See tables 6.1 and 6.2.

In the Northern, Upper East and Upper West regions and parts of northern Volta, societal rules and practices that regulate access to use of, and rights in land *effectively* discriminate against women. A woman’s access to land is tied to that of her husband. Landed property is inherited by men through the patrilineal system and wives and daughters do not inherit landed property (Djokoto & Opoku, 2010; Kotey, 1995).

Table 6.2 Modes of land Acquisition by Modality

Mode of Acquisition	Full Sample	Small	Medium	Large
Given free by chief/land owners	18.1	15.1	18.1	28.0
Given free by relative	65.9	67.1	65.1	65.3
Purchased with title	1.9	1.8	1.2	4.9
Inherited the land	22.6	19.3	25.4	23.6
Sharecropping-agreement with landowner	1.9	1.2	2.2	3.1

Source: Chapoto *et al.*, (2014)

Policies related to the land tenure system, such as those being implemented by the Customary Land Secretariat, which initially aimed at streamlining the purchase and renting of land, have not always achieved their intended aims. The constitutional powers given to chiefs appear to have enabled them to commercialize land or to lease it to investors or for mining without any necessary accountability, with varying implications for the welfare of locals.

Chiefs and *tendanba* were, on occasion, noted to be selling land at the expense of family and community (Ubink & Amanor, 2008; Kasanga & Kotey, 2001). With the growing commoditization of land, community members have to pay ‘rent’ for land use under the new phase of customary land management system, limiting access by individuals and populations that are unable to pay. Inheritance rights over land under customary land tenure regimes also appear to no longer serve as guarantees to access land among land owning families (Kasanga & Kotey, 2001). Marginalized groups such as disadvantaged women, poor indigenes, poor settlers and migrants who depend on land for their survival are becoming increasingly removed from their livelihoods as land is “traded in the capital market” (Hauck & Youkhana, 2010).

Land disputes are increasing in some parts of the zone, including the urban areas, where the value of land as a commodity is appreciating. The negative consequences of these land conflicts affect the investment climate of the area and widen the poverty gap as livelihoods options for poor households become limited (Lefore, 2012).

¹²¹ Skin is the authority of the chief.

Some would argue that competing governance systems and the role of chieftaincy in Ghana's land administration system have also created complexities.¹²² Many 'ethnic conflicts' appear to revolve around the ownership of land (Tsikata and Seini, 2004) and often start when there is the need to enskin or enstool a new chief. These problems are believed to be emanating from uncertain land markets, indeterminate boundaries of customarily-held lands, a weak land administration system, the problematic articulation of statutory and customary land tenure systems, and confusion over the status of derived interests and customary tenancies. As alluded to earlier, the growing commercialization of land in both rural and urban contexts is sparking conflicts in some areas. There is also the perception that it is easy for young unemployed youth to become enmeshed in traditional chieftaincy and land conflicts at the service of others as well as to push for entitlements for themselves.

6.3.2 Water Resources

The governance of water and natural resources has gone through a lot of reforms from the colonial period to the present. In the water sector, the turning point that gave rights and management responsibilities to users and communities happened with the enactment of the Water Resources Commission Act (Act 522) in 1996 (Laube and Giesen, 2005). Small dams and water bodies developed for irrigation and other livelihood activities were handed to communities to manage.

Also, decentralization took place in the drinking water subsector, particularly potable water (boreholes mostly) with the adoption of a community-based management approach in the National Community Water and Sanitation Programme (NCWSP) in 1998 (Eguavoen, 2008). These two reforms shaped water resources management in Northern Ghana. The framework in the NCWSP transfers the responsibility of providing potable water to MMDAs. Communities are expected to contribute about 5% towards the cost of a borehole before the District Assembly provides the rest of the cost. Community members who contribute towards the drilling of the facility own and manage it. It can be argued that the reforms did not recognize already existing structures such as the *land priest (tendana)* who was responsible for managing land and its resources including water (Kasanga and Kotey, 2001) and that seemingly led to the emergence of new leaders in communities superintending over the management of water.

The 2014 field study found that the changing leadership, coupled with the blurred nature of guidelines on the management of water facilities is creating potential situations of conflict. Community members also expressed worry that they may not be able to maintain water systems when they break down.

¹²² For example, see Imam (2015) for insights into the complexities unleashed by colonial rule. The Colonial Administration appropriated all the land and in practice used chiefs to implement their system of Indirect Rule in the Northern Territories. The Tindaamba were often deliberately undermined in favour of chiefs and in areas where there were no known chiefs, the British Administration appointed what was then referred to as 'warrant chiefs'. Post-Independence, even as the 1979 (Art. 188) and the 1992 [Art. 257 (3)] constitutions declared that, all lands under the control of the Government be returned to the 'original owners' the laws did not specify who the original owners were. This could effectively provide the opportunity for various groupings and individuals to claim land rights from the government and contest an order that had developed in the 20th century.

6.3.3 Mineral Resources

Similarly, before colonial era, the management of natural resources such as minerals also lay within the mandate of the *land priest (tindana)*. However, as alluded to earlier, these land priests were sidelined by the colonial government, and chiefs were rather promoted with the implementation of the *Indirect Rule* system of governance (Hauck and Youkhana, 2010).

In the current dispensation, the Minerals Commission is responsible for managing the exploitation of mineral resources. In the 2014 NGHDR field study, it was found that there is little consultation of community members *before licenses for mining of minerals are given*.

Box 6.3 Consequences of Natural Resource Management in NSEZ

- There is an emerging phenomenon, in some parts of the Upper West and Upper East and Northern Regions in particular, of poor farming communities losing their farmland to mining undertaken by medium and large mining companies;
- Mining companies engage in surface mining in the NSEZ which could quicken land degradation
- Poor collaboration between governance structures reduces the benefits of mining activities to communities
- Mistrust between communities and mining companies creates tension and conflict tendencies in the zone

Overall: Poor communities in the zone risk being impoverished by poor management of natural resources

Source: NGHDR Survey 2014

Further, the Commission is not decentralized to the district level, in which case, there is limited monitoring of the execution of mining licenses. As a result, there is likely to be mistrust between community members and mining companies, which could explode into conflict situations. Further, poor collaboration between the mineral commission, land commission, and community leaders in the management of natural resources generates negative repercussions for vulnerable communities (see Box 6.3). Also see Chapter 4 for the emergence of unsustainable and often illegal mining in parts of the zone.

6.4 Conflicts, Threats and Human Security

Human security is broadly defined as freedom from fear, want and indignity. A threat of any kind to the integrity and dignity of humans, including “under-development, poverty and deprivation” (Thakur and Newman, 2004) is considered a human security issue. Newman (2010) identifies four main strands of human security definitions that have emerged over the years. The first is the conception of human security as a human development issue which was popularized in the 1990s by the 1994 Human Development Report. According to the 1994 report, human security:

Means, first, safety from such chronic threats as hunger, disease and repression. And second, it means, protection from sudden and hurtful disruptions in the patterns of daily life—whether in homes, in jobs or in communities (p.23).

In supporting this approach to human security, the Commission on Human Security defines it as the protection of:

The vital core of all human lives in ways that enhance human freedoms and human fulfillment. Human security means protecting fundamental freedoms—freedoms that are the essence of life. It means protecting people from critical and pervasive threats and situations. It means using processes that build on people’s strengths and aspirations. It means creating political, social, environmental, economic, military and cultural systems that together give people the building blocks of survival, livelihood and dignity (p.4).

Under this approach, the policy drive is for human development that ensures the guarantee of basic and fundamental rights of human beings to life and dignity. The second strand is narrower and situates the definition of human security on the repercussions of armed conflicts, authoritarian government and state failure. The effects of these on civilian population are considered human security issues. The third strand defines human security in the context of “non-conventional” security issues such as HIV/AIDS, drugs, terrorism, small arms, inhumane weapons such as anti-personnel landmines, and trafficking in human beings. Newman asserts that the objective of this definition is to articulate silent and emerging human security issues for attention. The last strand concerns the understanding of human security as a product of power dynamics in society, and as a gendered issue. For instance, women and children are mostly vulnerable owing to unbalanced power structure of most societies.

Notwithstanding the diverse definitions and considerations of human security, the analysis here focuses mainly on simmering and emerging sources of conflict/violence, as well as theft and robbery, and the safety situation in the zone.

6.4.1 Extent and Drivers of Conflict

Freedom from fear should reflect in low rates of conflict/violence. Data from the 2014 NHDR NGHDR Field Survey report show that about 16% (15.6%) of household respondents in the NSEZ were reported to have experienced tensions/conflict in their communities at the time of the survey.

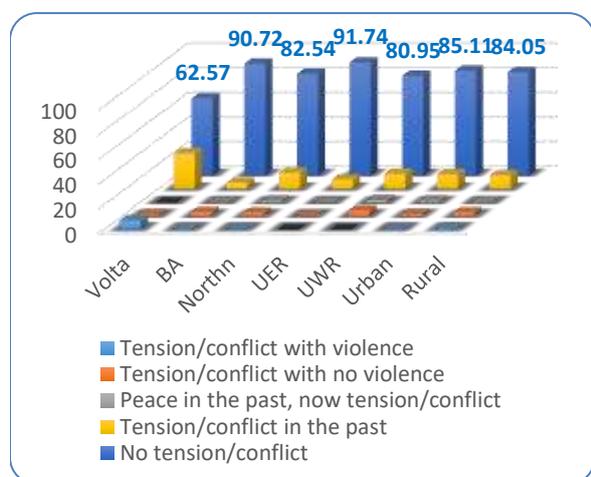


FIGURE 6.9 CONFLICT SITUATION IN COMMUNITY BY REGION AND LOCATION

Source: NGHDR Survey (2014)

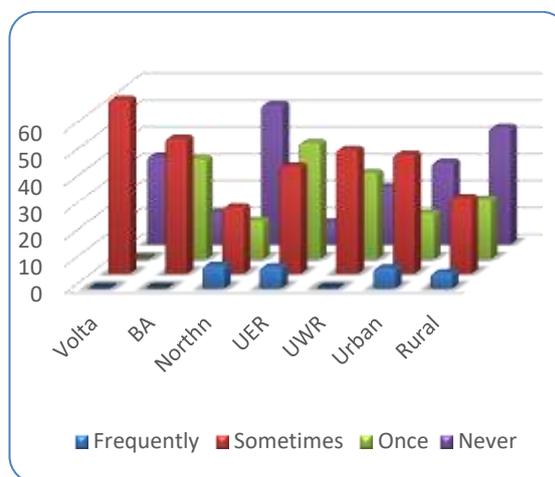


FIGURE 6.10 GROUP CONFLICTS OVER PAST 12 MONTHS BY REGION AND LOCATION

Source: NGHDR Survey (2014)

In the immediate past, 4.2% were noted to have experienced conflicts/tensions in their communities, with the majority in northern Volta (8.5%) and Upper West (6.6%) regions. About 11.4% reported conflict/tensions in the past, most households being in the northern Volta (28.9%) and Northern Region (13.2%). In terms of the incidence of conflict in the communities surveyed for the previous 12 months, about 61% of households (60.6%)

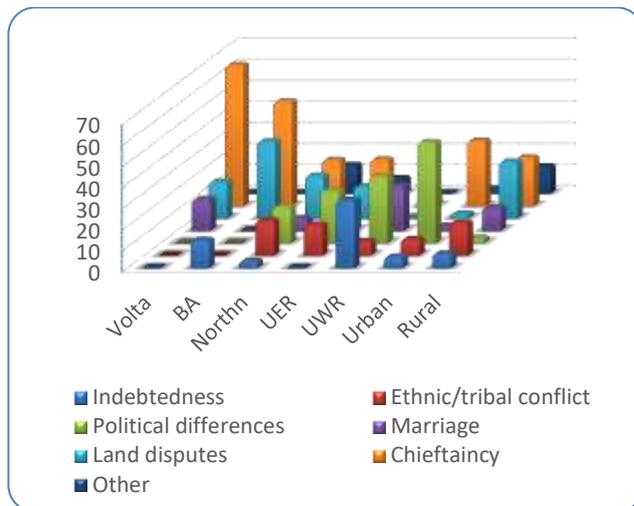


FIGURE 6.11 MAJOR CAUSES OF CONFLICT BY REGION AND LOCATION

Source: NGHDR Survey (2014)

indicated that conflicts were frequent (6.4%), this was mainly in the Upper East (8.0%) and Northern (8.6%) regions, or occurred sometimes (33.5%), or happened once a while (20.6) as shown in Figure 6.10. Major causes of conflicts identified by households in the zone included: chieftaincy issues (25.7%), land disputes (19.2%), political differences (17.1%) and issues bordering on ethnicity (13.3%) as shown in Figure 6.11. The incidence of land-related disputes according to the NGHDR Field Survey was highest in the northern parts of the Brong Ahafo region

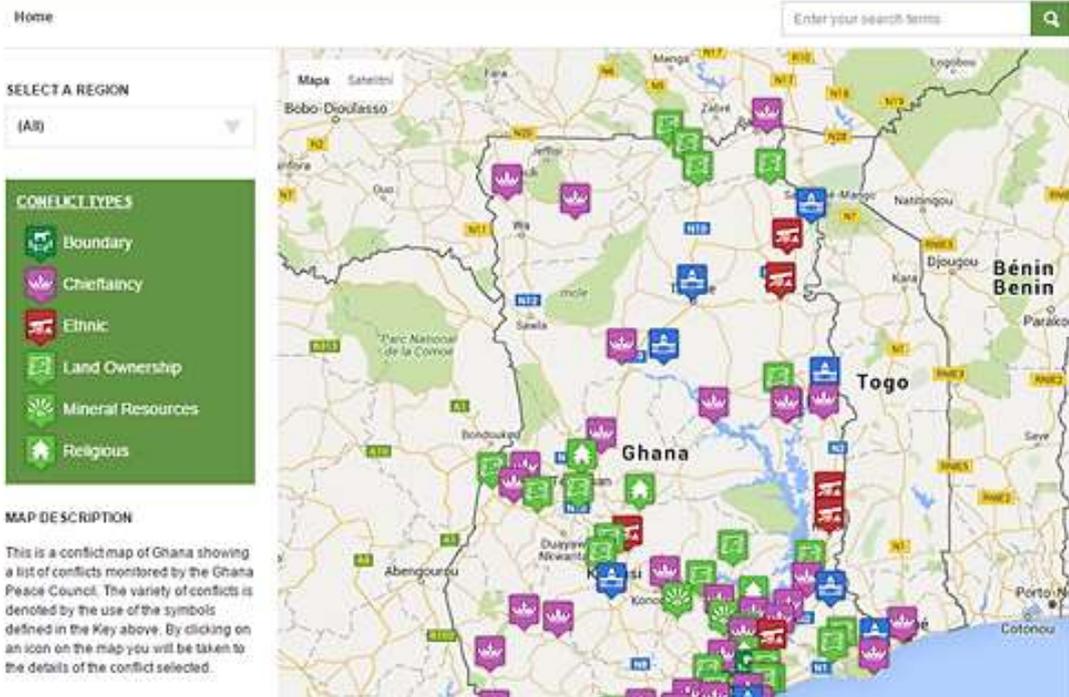
(36.7%), followed by Northern Region (20.5%) and then Upper East Region (15.3%).

There is thus a spatial dimension to this. [There appear to be a number of conflict hot spots in the Northern and Upper East regions.](#) E.g., a study commissioned by the National Peace Council suggests that about two-thirds of conflicts it mapped in the three Northern regions were clustered on the eastern corridor, with the highest recorded incidences in the Northern region while the Upper West Region recorded the least (National Peace Council, 2014). See Map 6.1. The 2014 NGHDR Field Survey reported political differences as the major cause of community conflicts/tensions in the Upper West and Upper East regions. However, the National Peace Council's study identified political conflicts to be more prevalent in the Northern region. Some of the conflicts in Northern Ghana appear to have be over land ownership issues but most often start when there is the need to enskin or enstool a new chief.

Besides the destruction of human and material resources in the NSEZ, violence/conflict has been found to erode confidence in future development prospects and damage investment climate. Violence/conflicts have also resulted in brain drain from affected districts/communities or the diversion of funds available for social services to security initiatives. The 2014 NGHDR Field Survey also assessed peoples' confidence in public security system in the Northern Savannah Ecological Zone.



Map 6.1 Ghana Conflict Map



Source: <http://www.conflictmap.mint.gov.gh>

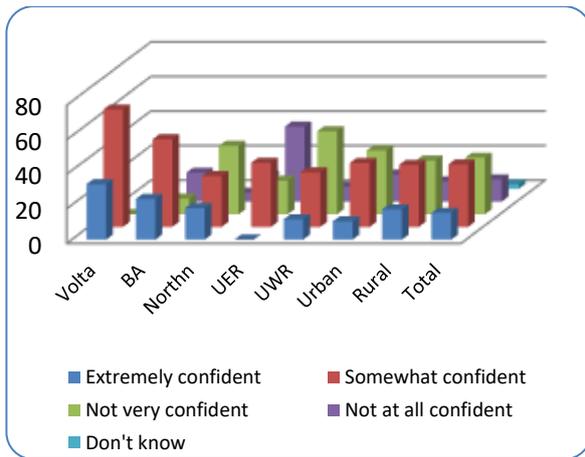


FIGURE 6.12 CONFIDENCE IN PUBLIC SECURITY BY REGION AND LOCATION

Source: NGHDR Survey (2014)

Confidence in the public security seems to be low in the NSEZ; (see figure 6.13). Close to 46.0% of households indicated they are either not very confident (32.7%) or not at all confident (12.8%) in the public security system. Many more households were not very confident or not at all confident in the public security system in the Upper East (62.8%) and Upper West (56.7%) regions, while confidence is overall high in the Volta region (32.1% extremely confident or 67.9% somewhat confident).

In terms of access to dispute resolution mechanism at the community level, 58.0% indicated that they have a dispute resolution mechanism in their communities; 14% had organized policing; 18.2% were active in neighbourhood watch; and 8.0% organized a joint policing and neighborhood system. The overall confidence in community dispute resolution mechanism was extremely high (68.7%) or somewhat high (25.3%).

6.4.2 Emerging Threats

There are a number of challenges which are increasing in importance that need to be addressed to ensure that peace is maintained. Reference has already been made to conflicts over ownership of land. Another area is conflict over land and resource use. These include conflicts in some parts of Northern Ghana between farmers and mostly nomadic pastoralists (Fulani) over land use, including intrusion in crop lands and water bodies.¹²³ At the same time, there is a growing use of Fulani herdsmen by locals to replace local herd boys but often no distinction is made by locals between the different types of Fulanis.¹²⁴

In some contexts, both farmers and Fulani groupings have become armed leading to deadly clashes and with the potential for these clashes to escalate. There are few or no fora which provide the spaces for education and dialogue nor do there appear to be mechanisms in place to regulate activities to ensure the reduction of crop destruction and conflicts. There needs to be a more holistic response: more focused attention on managing land use between crop and livestock more generally to encourage synergy rather than unplanned incursions, corridors for livestock, as well as mediation and conflict prevention. Not enough policy attention has been paid to the importance of livestock for the regions in the North.

Some have argued that migrations are only likely to increase in the context of climate change whereby the traditional patterns of transhumance practiced by the Fulani are changing. Fulani who may have previously passed through a region or stayed for a limited and defined period of time every year, now stay for longer periods of time and move into areas they have not used before. The farmer-pastoralist clashes are a sub-regional challenge and the ECOWAS has been moving to operationalize its decision on the ECOWAS Transhumance Protocol of 1998.¹²⁵

¹²³ See 2012 Report on Conflict Mapping with regard to resource-based conflicts it notes “Land conflicts were mostly inter-ethnic struggles over access to, control over and ownership of land. Resource based conflicts especially land related ones were noted in Kpandai, Bimbilla, Bunkprugu Yooyuo and Gushegu. The Kpandai conflict was between the Gonjas and the Nawuris over land ownership. The Bimbilla conflict is an inter-ethnic conflict between the Konkomba and Nanumba ethnic groups. The conflict dates back to 1994 and it is about recognition and respect as well as control over resources including political resources. The Bunkprugu Yonyuo conflict happened in many villages such as Kpamale, Terma, Jimbale, Kambatia and Bakoni due to competing claims over land ownership among the Manprusis, Bimobas and Konkombas. The violent conflict between Fulanis and the Kokombas occurred in Zamashegu in the Gusheigu District of the Northern region due to competition over land use.”

¹²⁴ Three categories of Fulanis are noted: The first group are those that have settled and integrated into the Ghanaian society, including through intermarriage. The second group are those that migrated to Ghana and tend the cattle of Ghanaians who have lost their animal husbandry skills as a result of change in occupation. This group of pastoralists have local knowledge of their environment and try, as much as possible, to avoid farmlands and sacred places for grazing of their livestock. The third group of Fulanis are those that are nomads who cross borders with the cattle in search of pasture for grazing. It is this group which tends to graze wherever there is pasture including the farmlands...

¹²⁵ Cross border transhumance refers to the seasonal movement of flocks and their shepherds, looking for water and pasture, and which brings them to use pastoral areas of several countries. Proposed measures include International Transhumance Certificate (ITC) for the herders, three ECOWAS Transhumance zones known as the Western, Central and Eastern corridors with the Central Corridor running through Mali, Burkina Faso, Cote d’Ivoire, Ghana, and Togo with surveillance along the corridors and ECOWAS supporting the member states with surveillance technologies where possible. See ‘ECOWAS wants International Transhumance Certificate for herdsmen’, Friday 31st March, 2017

This allows for herders to move across borders in search of pasture upon fulfilling the conditions laid down. Countries are experimenting with different measures ranging from setting of national ‘grazing reserves’ including settlement of pastoralists in such reserves, although this could be politically controversial in some instances.¹²⁶

More generally, there needs to be a focus on identifying how to address competing uses of land and forested natural resources for agriculture, common lands for growing fodder as well as grazing for commercial livestock production and potentially for use by transhumant pastoralists. Conservation is also increasingly pitted against deforestation for charcoal, mining and agriculture. Grasses are being advocated for by Prof. Millar and others as a game-changer for the production of fodder, fertilizer, charcoal and to assist with carbon sequestration.

New types of land conflicts which are emerging on account of the commercialization of land in both rural and urban areas. As land acquires commercial value there are not only emerging conflicts around ownership and sale, but this is increasingly being accompanied by the use of vigilante groups – sometimes associated with an individual politician or party to take over/protect land particularly in urban contexts.

In the context of new programmes such as ‘**One District One Factory**’, ‘**One village One Dam**’ where investors will likely seek to acquire additional land as a means to tapping into the opportunities, there is a need to proactively address infrastructure, land use issues, imminent domain and compensation policies.¹²⁷

The issue of political vigilantism has also emerged as a general concern across the country. According to the results of Afrobarometer’s 5th round survey in 2012, 59% of Ghanaians agreed or strongly agreed that “Political party foot soldiers in Ghana toil for their parties because they expect material rewards after winning political election”. There is often understanding or even tacit support for this type of expectation.

Citing results from the Afrobarometer (2012), a recent policy brief from CDD-Ghana indicates “At the national level, a little over half of Ghanaians (56%) in the 2012 Afrobarometer survey in Ghana “strongly agree” or “agree” with the statement that “*the demands of foot soldiers who toiled to get their parties elected into office are legitimate and should be satisfied by government*”. Regional averages for seven of Ghana’s regions were higher than the national average including for the Upper West (71%), Upper East and Northern Regions (66%). This did not however translate into support for violent activity by such groups.

¹²⁶ Grazing Reserve Bill in Nigeria.

¹²⁷ Some of these issues are clearly recognized in Government of Ghana (2018: 21): “With a view to engendering a more enabling environment such that rural and agro-investments can respond to market demand and overcome supply bottlenecks, Government will ensure the provision of (i) critical public infrastructure such as feeder roads, electricity and water; (ii) customised agricultural financing; (iii) need-based technical assistance or extension support; and (iv) fiscal incentives. Government will strengthen the relevant institutions to ensure effective implementation of the yield improvement programme.”

Further, 82% agreed or strongly agreed that “Some activities of political party foot soldiers that border on criminality must be prosecuted by the Police” whereas 81% agreed or strongly agreed that “Political interference has made efforts of the Police to arrest and prosecute party foot soldiers who indulge in criminal acts an impossible task.”¹²⁸

The Coalition of Domestic Election Observers (CODEO) notes that these phenomena have been rising over time. In a brief for CDD-Ghana, Daniel Armah-Attah writes: “Over the years, the level of violence that has characterized the activities of party vigilante groups during each phase of the electoral cycle has increased, especially since the 2000s. The 2016 Presidential and General Elections of Members of Parliament were without exception. The immediate post-election phase also witnessed some incidents around the political transition, nearly marring the almost smooth process. Unfortunately, the manifestations of political party vigilante groups have continued from the transition and into the governing period.”¹²⁹ Bob-Milliar (2014) points out that seizure and unlawful occupancy of state properties is often widespread among the foot soldiers of the main parties.¹³⁰ Following the recent 2016 election, in the Northern Region, there were reports of some vigilante groups seeking to take over offices of the National Health Insurance Authority, the Youth Employment Authority in Sagnarigu, and the office of the Savannah Accelerated Development Authority in Tamale. Bob-Milliar notes that many of the party foot-soldiers tend to have below-average levels of education and to be without secure employment (surviving on the basis of casual or “by-day” jobs) making them available to be easily manipulated. Given the high un- and under-employment rates in various parts of the North, this issue needs focused attention.

6.4.3 Crime and Safety

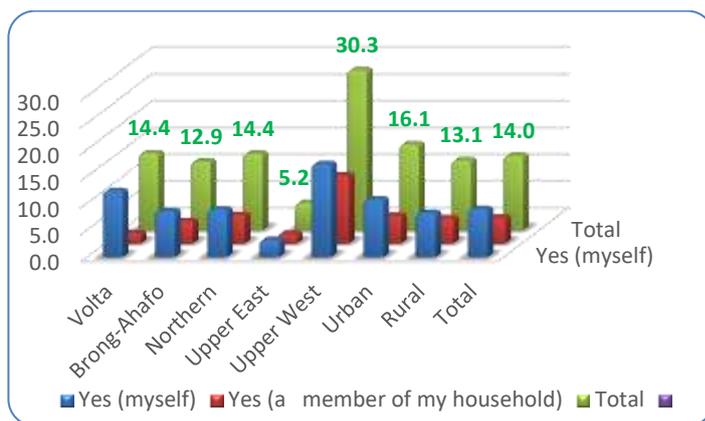


FIGURE 6.13 PERSON FALLEN VICTIM TO THEFT OR ATTEMPTED THEFT BY REGION AND LOCATION

Source: NGHDR Survey (2014)

The 2014 NGHDR Field Survey assessed the incidence of theft, robbery and burglary in the Zone. See Figure 6.13. close to 14% of households indicated to have either experienced thievery personally (9.0%) or indirectly through a household member (4.95%). More households (30.3%) in the Upper West region either experienced it personally (17.45%) or through a member of the household (12.84%).

¹²⁸ Afrobarometer 2012 and CDD-Ghana (May 2017)

¹²⁹ Also see, e.g., CDD-Ghana (May 2017)

¹³⁰ See Bob-Milliar, G.M. (2014)

Cases of theft were reported to have occurred either at home (63.1%), on the farm/bush (17.1%) or within the neighbourhood. As to the incidence of theft, robbery and burglary cases in communities, 66% of households indicated it was either very common (29.7%) or common (37.2%). About 78.7% of household respondents, mainly in the Brong Ahafo, indicated that theft cases were either very common (57.4%) or common (21.3%). Furthermore, many more urban (73.3%) than rural (64.5%) households reported it was either very common or common in their communities. Commonly stolen items reported by households include farm produce/livestock (56.02%), money (18.04%), mobile phone (7.8%) bicycle (5.5%) and motor bike (3.3%). Many more households in the Northern (62.5%) and Upper West regions (61.8%) reported farm produce/livestock as commonly stolen items. Household respondents indicated the majority of theft cases (81.2%) are not reported to the police because of the drudgery involved in pursuing cases with the police.

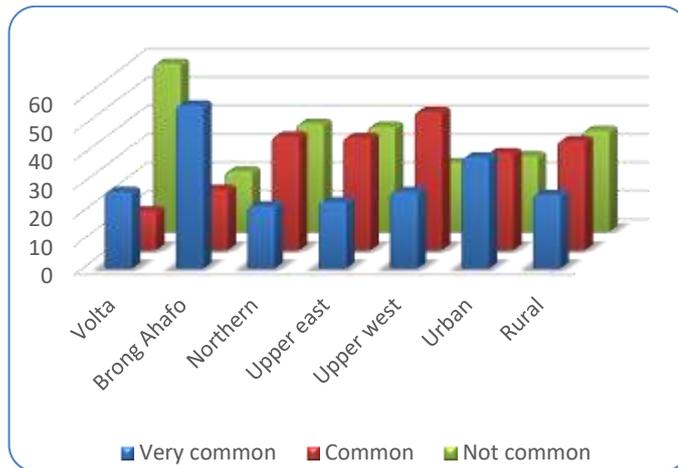


FIGURE 6.14 OCCURRENCE OF ROBBERY AND BURGLARY BY REGION AND TYPES OF RESIDENCE

Source: NGHDR Survey (2014)

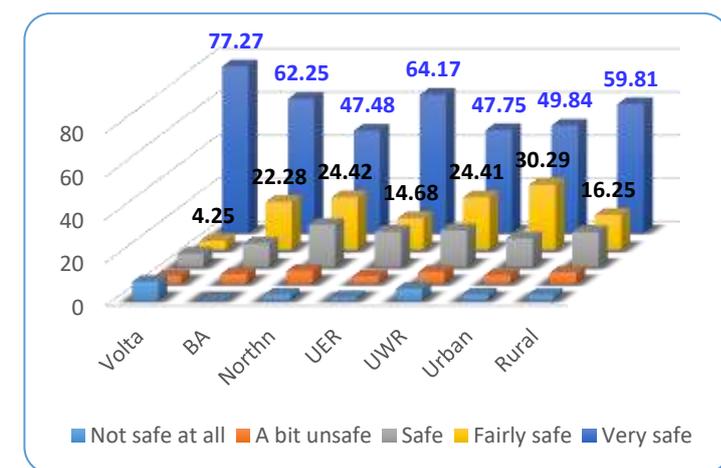


FIGURE 6.15 HOW SAFE PEOPLE FEEL WALKING ALONE AT NIGHT IN NEIGHBOURHOOD

Source: NGHDR Survey (2014)

households indicated they were either a bit unsafe (3.4%) or not safe at all in the Upper East Region (1.5%). See Figure 6.15.

According to findings of the NG-HDR survey, poverty remains the major threat (93.3%), followed by unemployment (89.5%), hunger (83.2%), road accidents (78.7%), health hazards (77.5%), natural disasters (73.3%), fire outbreaks (70.6%), criminal violence (59.1%), wars/conflicts (58.8%), water spillage (39.1%) and mining (31.1%).

The perceptions of households regarding safety from crime and violence at home were also ascertained by the 2014 NHDR survey. The findings indicated that 5.8% of households felt either a bit unsafe (3.1%) or not safe at all (2.7%). Many more households felt 'not safe' at all in the Volta (17.6%) and Upper West (2.5%) regions. Furthermore, 7.5% of households felt a bit unsafe (4.8%) or not safe at all (2.7%) walking at night in their neighbourhood. Relatively fewer

Road traffic accidents, criminal conflicts/violence and mining are emerging threats to safety in the zone. Threats to safety in the NSEZ have negative implications including insecurity for vulnerable people.

6.4.4 Trust and Social Cohesion

Perceived Threats	Volta		Brong Ahafo		Northern		UER		UWR		Urban	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Criminal Violence	66.1	33.9	55.3	44.8	55.6	44.4	70.8	29.2	55.3	44.7	59.1	40.9
Wars/conflict	83.3	16.7	47.9	52.1	57.8	42.2	69.8	30.2	49.8	50.2	58.8	41.2
Natural Disaster	89.7	10.3	63.8	36.2	71.4	28.7	93.5	6.5	55.2	44.9	73.3	26.7
Health Hazards	92.3	7.7	67.3	32.7	77.1	22.9	93.4	6.6	63.7	36.3	77.5	22.5
Galamsay/Mining	49.3	50.7	36.0	64.0	14.0	86.0	46.1	53.9	39.0	61.0	31.1	68.9
Quarrying	46.4	53.6	33.9	66.1	13.3	86.7	41.5	58.5	36.9	63.1	29.0	71.0
Water spillage	60.7	39.3	41.0	59.0	27.0	73.0	47.3	52.7	45.1	54.9	39.1	60.9
Fire Outbreak	79.5	20.5	69.2	30.8	61.9	38.1	85.6	14.4	71.7	28.3	70.6	29.4
Road Accidents	91.9	8.1	71.4	28.6	70.8	29.2	94.0	6.1	82.1	17.9	78.2	21.8
Poverty	85.5	14.6	90.1	9.9	96.3	3.7	97.8	2.2	89.4	10.6	93.3	6.7
Unemployment	84.0	16.0	85.1	14.9	90.5	9.6	97.2	2.8	88.5	11.5	89.5	10.5
Hunger	80.1	19.9	66.8	33.2	89.5	10.5	97.0	3.0	79.1	20.9	83.2	16.9

Source: NGHDR Survey (2014)

The 2014 NGHDR Field Survey points to high level of trust within the family with only 6% of households indicating they do not trust their family members at all. Slight variations were found across rural (5.8%) and urban (6.4%) areas in the zone with respect to trust within the family.

As expected, the level of trust in people decreases outside the family, with 11.6% of households reporting not having trust at all in members of their village/ neighbourhood; members of their ethnic group (11.5%); members of other ethnic groups (15.9%); people from other religions (14.4%), people who belong to the same club (13.6%), businessmen (17.3%) and politicians (51.6%). In terms of interpersonal/group trust, trust in politicians is least with over three quarters (78.4%) of households in the Volta region indicating not to have trust at all in politicians. The data seem to suggest a generally high community spirit or “we feeling” as only 17.8% of households indicate they will would like to relocate from their present communities; but in Brong Afaho, this was higher - 25.6% of households surveyed wanted to relocate.

Chapter 7: Reflections and Recommendations

7.1 Insights from Human Development Reports and Selected Country Experiences

Before outlining specific recommendations for the zone, it may be useful to explore insights and lessons from the experiences of other countries including learning how human development outcomes have been addressed in low income and growth contexts.

The Human Development approach has been applied in a variety of contexts to analyze the issues which are the subject of this report, i.e., the impact of spatial inequalities and the implications of 'geography', and the imperative to promote transformation and shared growth (including through an emphasis on infrastructure and agriculture). Among others, National Human Development Reports of interest include the Zambia Human Development Report 2016: *Industrialisation and Human Development, Poverty Reduction through Wealth and Employment Creation*; the Tanzania Human Development Report 2014: *Economic Transformation for Human Development*; Ethiopia's National Human Development Report 2014: *Accelerating Inclusive Growth For Sustainable Human Development In Ethiopia*; the Liberia National Human Development Report 2010: *Promoting Human Development Through Shared Growth: A Special Focus On Infrastructure and Agriculture*; National Human Development Report 2015: *Unlocking the Development Potential of Northern Uganda*; the Sri Lanka Report 2012: *Bridging Regional Disparities for Human Development*; and the Nepal Human Development Report 2014: *Beyond Geography - Unlocking Human Potential*.¹³¹

Sri Lanka's (2012) and Nepal's (2014) Human Development Reports both explore the patterns and the implications of spatial disparities for human development and peace. The report for Nepal makes for some important recommendations which may also be of interest in this context. Amongst others, the [Nepal NHDR outlines some concrete proposals for using human development-centred metrics to better tackle and track progress on mitigating disparities, including:](#)

- (i) Assigning budget allocations to improve access to facilities commensurate with the percentage gaps in the access index;
- (ii) Incorporating the Human Development Index (HDI) as an important element in the allocation of development (block and sectoral grants) budgets at the district level.
- (iii) Incorporating capability improvements as a basic feature of district and local level periodic plans; and
- (iv) Expanding the scope and reach of inclusive policies to include both social and economic/productive dimensions.

It is not simply a question of ensuring equitable investments in human capital but also ensuring that the development of infrastructure and investments in productive resources are job-friendly.

The *Human Development Report 2015 for Northern Uganda* uses a multidimensional approach to vulnerability, amongst others, to unpack the challenge of development in the region. It highlights the linkages between vulnerabilities and drivers of conflict.

¹³¹ See UNDP Human Development Report Office.

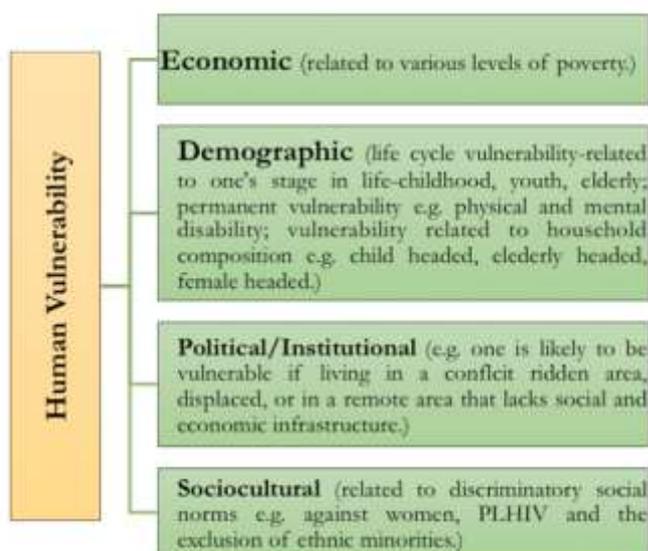


FIGURE 7.1 DIMENSIONS OF HUMAN VULNERABILITY

Source: Uganda NHDR 2015

The Uganda HDR highlights how the different drivers of human vulnerability can be mutually reinforcing. Its focus on demographic sources of vulnerability is also a useful reminder in the context of this report. To the above list should be added environmental and climate change drivers. *The Uganda report comes to an interesting conclusion that, to date, the long-term development initiatives that sought to address the root causes of vulnerability in Northern Uganda did not benefit from a deeper analysis of issues that explained the consistent vulnerabilities in the particular region. The conflict in the region is found to have served to exacerbate vulnerability rather than cause it.* The report could be seen to point to the importance of tackling structural vulnerabilities, vulnerabilities that have persisted and compounded over time as a result in various factors, including institutional failures, in a timely fashion to avert conflicts and threats which could in turn undermine inclusive transformation.

The NHDRs from Tanzania and Zambia point to the limits of growth without diversification or structural transformation of the economy and the need for both social and spatial equity enhancing policies for growth. Equitable growth is found to entail improving (i) the ability of the poor to access productive assets, (ii) addressing geographic disparities and (iii) ensuring equal and universal access to public services. These are all necessary for promoting human development and ensuring that the poor are in fact able to benefit from the opportunities that are generated by growth and investment.

McKinley's (2010) triple-pronged policy framework is also very useful in this regard. It encompasses **Pro-poor macroeconomic** policies, **Structural (Transformation) Policies** complemented by **Equity-Enhancing Policies**. He points out that while structural policies can promote employment-intensive sectors or increasing employment intensive activities within sectors or value-chains (see Gatune, 2015 here) such policies are not enough; i.e., *opportunities can be expanded without necessarily providing access to poor or unemployed workers*. Specific measures need to be taken to improve the access of poor to expanding employment opportunities including through facilitating access to business, social and financial services.

Even in largely agrarian sub-national contexts such as the Northern Ghana, it may be useful to consider the type of broad-based transformation agenda articulated by these other HDRs with regard to making the transformation process self-sustaining and diversified.¹³²

Box 7.1 NHDR Tanzania: Requirements for Achieving Economic Transformation for Human Development

Tanzania's economy needs more than growth in order to transform in the right direction; it needs growth with diversity in production, which makes its exports competitive, increases productivity in agriculture (which most people depend on for their livelihoods), firms and government offices/operations, and uses upgraded technology throughout the economy. This is all necessary to promote inclusive growth, thereby improving human development and human wellbeing.

Making transformation work for human development requires the following related interventions:

- Creating opportunities for productive jobs and securing livelihoods that make growth inclusive and reduce poverty and inequality; this calls for raising productivity to accelerate and sustain growth everywhere by intensifying agriculture, developing industry and expanding services;
- Creating meaningful employment outside agriculture as a condition for successful economic transformation;
- Improving the quality of social provisioning;
- Human capital and skills development;
- The production of wage goods for domestic markets;
- The promotion of exports for economic transformation and human development;
- Creating a link between export promotion, economic transformation and human development.

Source: Tanzania NHDR 2014

At a sub-national level, an often-cited model of social transformation and human development is that of the state of Kerala in south India. Scholars have long underscored the import of the so-called Kerala Model. "Public action, including both progressive state intervention and popular movements, has brought about high levels of social development and improved living conditions-particularly for lower classes, in spite of low per capita income and nearly stagnant economic growth rates" (Veron, 2001, p.601).

The life expectancy at birth in Kerala, which is over 73 years, is well above the rest of India and compares favourably with other Asian tigers in terms of their higher levels of economic achievement. The State is estimated to rank first among major Indian States in the Human Development Index (HDI), although its per capita income lagged well behind the all-India average till recently. Kundu (2015) points out that if Indian states were countries, their rankings would range from 104 (Kerala) to 163 (Bihar) with Kerala being the only state to have a high human development ranking (score greater than 0.7 in a scale of 0-1).

Interestingly, the Kerala model experienced its own share of challenges and evolved to address them. In the recent literature, there are references to phases or old and new models. The first phase offers important lessons on how appropriate public action can enhance human capabilities and quality of life including in low income settings. However, this model was not sustainable as stagnant growth rates made continued investment in human capital challenging. It also took time for the human capital investments to bear fruit. In the "new" Kerala Model, "human development and economic growth seem to have started reinforcing one another positively, in contrast to the earlier experience of 'human development lopsidedness' (with weak economic growth)" (Government of Kerala, 2006, p.2). Over time, unlike the case of the 'old Kerala model', emphasis of state policies has, to some extent, shifted from welfare to participatory growth, and from top-down directive planning to bottom-up planning (Veron, 2001, p.607).

¹³² Tanzania NHDR 2014.

“In sum, the new Kerala model has pursued objectives of productive development, social improvement and environmental sustainability, thus representing a serious attempt to make development sustainable” (Veron, 2001, p.607). *While improvements in human development have been possible notwithstanding economic setbacks in countries, the experience of Cuba and the Indian state of Kerala suggest that such improvements may reach their limits without economic recovery and inclusive growth as “slower growth eventually becomes a constraining factor on financing welfare expenditure: the state cannot generate enough revenue to finance and maintain its social development”* (Government of Kerala, 2006, p.3).

7.2 Integrated Set of Recommendations

The strategic recommendations put forward in this section thus seek to address the interlocking **economic, social and environmental constraints that underpin spatial disparities**. While the recommendations are organized according to these themes, there are in fact overlaps and synergies. The intersecting economic, social and environmental vulnerabilities that drive the very low level of human development in the zone need to be **addressed in tandem** to unleash a transformation agenda that is inclusive and sustainable. Investments in **productive side** need to be complemented with **investments in social development**. An **Equity-Enhancing Policy lens** needs to be applied across all the areas as **structural transformation and productive investments**, which could expand economic opportunities without the poor or unemployed in the zone necessarily benefiting, reinforcing or putting in place new drivers of inequities. Specific measures will need to be taken to improve access and capabilities to benefit from emerging and expanded productive opportunities, including through facilitating **access to business, social and financial services**, especially for women, and identifying **inclusive business/service delivery and capacity building approaches and models** that put them at the center of the transformation agenda.

7.2.1 Investments to improve social development outcomes



Address institutional and financial challenges for service delivery and scale up promising approaches

Investment in health and education is central to improving human development outcomes. Poverty in the zone is deep and often inter-generational. A critical issue in this regard, aside from livelihoods challenges, is the unequal access to key services such as health and education.

The Northern Region appears to suffer the most from the sparsely scattered nature of its population and the relative paucity of health facilities, though it has the largest population and the largest land area in the zone. Not only are there relatively fewer health and educational facilities, but these face institutional challenges in attracting and retaining staff. This needs to be addressed, for example, through facilitating access to housing for health and education staff and incentives and identifying innovative approaches.

Various initiatives piloted in the North or in similar contexts that were found to be successful, could benefit from being scaled up. E.g., the Community-based Health Planning and Services (CHPS) that were initiated as a strategy by Ghana to bridge the equity gap for communities in rural areas which are far away from health facilities.

Given the significant service delivery gaps in the zone, the official plan for expansion of the CHPS compounds is welcome. Scale-up could also be underpinned by innovative Public Private Partnerships. Further, there are few hospitals in the North and this needs to be remedied.

Another innovative intervention is the Community Health Worker (CHWs) initiative. CHWs are trained to provide basic healthcare information and services to community members through regular household visits. In Northern Ghana, this model has been tested and found to be successful in the West Mamprusi and Builsa districts. Recent innovations promoted by Last Mile Health and Living Goods, which have tested in countries such as Liberia, Kenya and Uganda, include the use of digital mobile technologies and apps to enable the CHWs to be more effective in diagnosing and treating common diseases in remote areas. In Northern Ghana too, it would be useful to tap into such philanthropic and partnership to take the existing CHW initiative to the next level.

Enhance investments in education for equity and transformation

Given the largely rural nature of the zone, measures to scale up programmes that address out of school children and facilitate integration and inclusion (complementary basic education) are important. In addition to addressing the gaps in primary and early childhood development it is imperative to expand the number of junior and senior high schools and to adopt measures to retain staff. The ratio of junior high schools (JHS) to primary schools in the zone is much lower than the national average (42% compared to 62%). The numbers are particularly low for the Northern Region (28%) and the Upper West Region (43%). Children have to travel long distances to access JHS education since more than half the primary schools do not have them attached. This is an issue that urgently needs to be addressed including with regard to senior high schools (SHS) so that the North does not lose out, including on the important new national initiative for **free SHS**.

The minimum population threshold required to provide services (e.g., 150 for the provision of primary school) is typically not reached in many instances in the zone. This contributes to deficits in service delivery compared to the southern part of Ghana. [To the extent that resource allocations follow such population thresholds, and are not adjusted, they can effectively reinforce inequities.](#) LUSPA (2015b) proposes a comprehensive set of measures to improve quality and access to health and education service delivery in the zone.¹³³

Further, in the recent stocktake on health and education, Blampied et.al. (2018) make an eloquent and an evidence-based case for applying an equity lens to the allocation of funding within the health and education sectors. In health, this would involve more funding for CHPS in districts with the lowest levels of provision per capita and per area. In education, this would include redressing the growing imbalance between funding for the primary and pre-primary sectors compared to the secondary and tertiary sectors.

[They also recommend prioritising the most glaring gaps in provision \(e.g., in Northern region\). This is in line with the principle of the Sustainable Development Goals \(SDGs\) to leave no one behind \(LNOB\) and to reach those left furthest behind first.](#)

¹³³ See LUSPA (previously TCPD) (2015b) SDF for NSEZ, vol II, section 2.4.1 I

The report also underscores consideration of innovative measures to promote a better learning environment for students as the area has some of the lowest numbers of trained teachers. In addition to measures to attract and retain more trained staff, as with health, the focus could be making use of technologies for education.

Enhance access to improved sanitation

Limited access to improved sanitation is a deprivation experienced by most households. Poor sanitation exposes households to the risk of morbidity due to diarrhea, malaria and typhoid for example, which has negative multiplier effects on the well-being of the population such as days lost to work and school attendance. Hence, it's important to focus on behavioral change and facilitate investment in sanitation facilities. Sanitation is one of the areas where the zone and Ghana lagged in the case of the MDGs.

Promote livelihood diversification strategies

A shift to non-farm activities needs to be focused on in addition to improving productivity in agriculture and agro-processing. Investment in skills development is needed including the scaling up informal apprenticeships, formal and on the job skills training, including in emerging areas such as ICT skills are critical for young people. The findings in this report pointed to low levels of on-the-job skill training. With the regional and twin city master planning exercises that have been underway, there is the opportunity to undertake a more focused approach to skill development, including identifying priorities as well as an assessment of providers and new partners for forward-looking TVETs and training institutions.

Scale up social protection and public works to address deep poverty

While poverty is not limited to the North and there are areas of deep poverty in some of the more well-to do regions such as Greater Accra, the Northern, Upper East and Upper West regions have long had the highest poverty headcount ratios in the country, exceeding the national average by large margins. The Upper West Region had the highest incidence of poverty for the country with many districts having poverty headcount ratios of over 80%.

In addition to interventions to tackle hunger, promote inclusive access to education and to finance etc., specific social protection measures could include: (i) scaling up of LEAP cash transfers in areas where the majority of the population is poor and poverty is structural in nature; (ii) *Labour intensive public works*: it could be useful to consider the scaling up of the labour intensive public works (LIPW) initiative *particularly during the hunger season* and broadening its scope beyond infrastructure; e.g., water conservation, greening/tree planting and agricultural asset development (storage facilities/warehouses, community boreholes, etc.) and maintenance to complement the IPEP initiatives and Nation Builders Corps (NABCO). (iii) *Protection services for migrants*: it's also important to address the security and empowerment issues of migrants, particularly the *kayayei* (head loaders) and street children, through initiatives in the places where the migrants locate to and in terms of linkages with their home regions as well as alternative livelihood possibilities in their home towns.

Mainstream Gender Equity into Development Policies and Interventions

Gender equity concerns cover the whole spectrum. Measures involve range from addressing dropout rates in schools and addressing child marriage to promoting equal access to training including on issues related to farming to addressing social issues, amongst others to addressing issues related to access to land, credit and economic opportunities and enhancing voice and participation. While the focus below is on the economic opportunities, the other areas remain critical.

Given the prevailing gendered division of labour and access to assets, women's economic involvement is also often limited to low productivity activities which provide little opportunity for them to move up the ladder. There needs to be a proactive focus on ensuring *enhanced access by women to control of resources such as land, livestock, markets, information and credit, which are pivotal for poverty reduction and their economic empowerment.*

The introduction of appropriate technologies, especially for harvesting and processing can help to free up their time and improve productivity; designing livestock development programs to include a focus on the animals reared by women (local poultry, guinea fowls, small ruminants) is important for both poverty reduction and food security.

While women play a key role in processing and distribution they are often involved in the lower rungs of the value chain (market women as opposed to medium and large traders) where margins are quite low. A concerted strategy is needed to identify how to help women add more value, integrate into higher rungs of the value chains and secure more affordable and scalable finance.

7.2.2 Transformational investments in productive infrastructure and services



Promote sustainable urbanization and growth poles to ensure provision of social services and economic transformation

Critical to addressing the significant disparities in the delivery of services are urban growth poles. These can provide critical services to rural areas in the surrounding hinterland as well as stimulate jobs to reduce poverty.

Detailed master plans have been prepared for major hubs such as Tamale and Buiepe. Well-resourced spatial plans for tier 2 and 3 cities can also help to ensure that urbanization can more catalytic and sustainable from the start.

Address infrastructure gaps and improve road and water transport networks

It is clear from the report, that transportation networks are key for poverty reduction, service delivery and economic transformation. While significant progress has been made in terms of improving road infrastructure much of the road and transportation networks run north to south and often stops short of the border towns. Horizontal and W-E connections are much less developed making connectivity within the zone a huge challenge. Enhancing mobility in the form of transportation connectivity between these urban centres and smaller settlements could enhance urban-rural economic interactions and facilitate the access to markets, inputs and services necessary for the agricultural transformation and poverty reduction.

Improved transportation and logistical and other support services for transit trade could help to further deepen zonal and regional markets and stimulate the setting up of production and service centres to service cross-border traffic.

In addition, the report underscores the importance of developing water transport networks. The case for investing in water transport network (Volta river) has been cited. It includes proposals for a harbor at Ada, deepening and widening the estuary linking Akosombo and constructing locks over the dam to facilitate un-interrupted transport from seas to Yapei/Buipe. This could make for more cost-effective transport and trade in agricultural and bulky goods and stimulate economic clusters at the dry ports.

Invest in ICT infrastructure, leverage community networks and address cost of services

Access to affordable information and communication infrastructure is key for facilitating new ways of doing things and underpinning voice and transformation. While cell phone ownership has been on the rise, the infrastructure and regulatory framework to support affordable access to ICTs is not adequate and there are significant gaps in coverage. Promoting infrastructure sharing, community maintenance of masts and towers and deployment of new technologies could help to address 'last-mile' (final leg of the network) connectivity. Further, the relatively high data costs are a significant constraint to the use of ICT and may also need regulatory incentives/policy action at the national level.

Focus on irrigation and integrated water management as game changers

Several irrigation opportunities, including through multi-purpose dams (to assist with flooding and/or hydro energy), have been identified. Some are at the feasibility stage and could benefit from speedy action given the dependence of over 70% of the population on rain-fed agricultural livelihoods.

Given the prolonged dry seasons of about 7 months, with very high evaporation losses which lead to drying up of many surface water bodies, it is also important to look at options other than expansion of surface water alone. Some of the critical issues in this regard include the need to secure technologies to undertake a mapping of the deep underground aquifers in the zone. Integrated planning for the management of both surface and groundwater resources, including through integrated flood plain management for the entire river basin and recharge of aquifers in the zone, is needed as well as mainstreaming of an adaption and resilience approach.

At the community level, community engagement on sustainable land and water use is needed for communities to adapt to climate impacts and consider risks to water resources in Northern Ghana. There are a number of initiatives already underway in the zone, ranging from community-driven solar irrigation and boreholes to water harvesting and conservation (riparian buffers along water bodies and underground cisterns/tanks in local communities) to community resilience projects including that can offer lessons and provide building blocks in terms of capacities for the new programme initiatives. The Government's programmes such as the *One village, One Dam* initiative can enhance the development of local water resources and networks. Where possible these should be combined with water conservation, strengthening of local construction and maintenance capacities and approaches to ensure sustainability and adaptation to climate change.

Support investments in processing and warehousing to increase value added and reduce post-harvest losses

The report highlights the importance of reducing post-harvest losses through investment in warehousing, cold chains and processing infrastructure. It also underscores the need to assess prevailing management models as many facilities are in a state of disrepair and new ones may face the same challenges. Incentives for farmers, including small farmers, to store produce in improved warehousing also needs to be explored as well as measures to enhance linkages between smaller/satellite storage facilities and larger warehouses.

It is important to promote specific investments in free trade logistical, processing and manufacturing hubs which could be particularly important in and around Tamale, Buipe as well as border towns and in agricultural growth poles. This is opportune as there is growing interest in commercial agricultural opportunities which could benefit from such growth poles and processing hubs.

Promote game changers for sustainable agriculture, livestock and processing.

Right from the first chapter, the report has argued for a diversification of the focus areas for agriculture. Many in the zone agree that there needs to be a focus on a second and third priority crop to cocoa. Proposals range from promotion of shea (a cocoa butter substitute and an ingredient in cosmetics) to crops such as groundnuts which have multiple uses; also high on the list is a focus on livestock where the zone has significant comparative advantage.

One of the key findings from surveys of private sector and from research is that many of Ghana's processing facilities face challenges in securing adequate inputs, i.e., agricultural outputs. Without a coordinated focus on improving productivity in agriculture and livestock, the viability of investments in processing facilities will be sub-optimal.

Access to markets and integration in value chains is also a challenge for small holder farmers. Promoting 'structured demand' for products of small farmers has been effective in some countries (e.g. Brazil). Small farmers typically face difficulties in integrating into value chains. Home-grown school feeding programmes can help. One of the challenges in Ghana has been that when resources to local authorities don't come in on time for school feeding programmes, it is difficult to engage small contractors (and those along the chain) who cannot afford delays in payment. Thus, the opportunity to link to local agriculture has been effectively missed. Innovative solutions are required to address this issue while fiscal space constraints are addressed.

The government has outlined several welcome measures to raise agricultural productivity (e.g., Planting for Food and Jobs) and address local gaps in local infrastructure for agro-processing and industry (e.g. Infrastructure for Poverty Eradication Programme (IPEPs) which seek to direct capital expenditure towards local, constituency-level specific infrastructure and economic development priorities with emphasis on rural and deprived communities through programs such as *One Village, One Dam; One District, One Warehouse; Small Business Development; Agricultural inputs, including equipment; 'Water for all' project; Sanitation projects*). There is a need to ensure coherence and synergies across these initiatives as well as sustainability.

7.2.3 Promote sustainable resource management and resilience



Sustainability principles need to be mainstreamed in agriculture, energy, resource use, water management and livelihood strategies amongst others.

Conservation and climate change adaptation strategies

Measures urgently need to be put in place to tackle land degradation, deforestation (from charcoal production, farming, mining etc.) and unsustainable agricultural practices. Some examples include: planting trees and bamboo, as well as grasses to facilitate grazing, reduce soil degradation and help with water conservation particularly along streams and waterways (riparian buffers); development and enforcement of a clear policy on the use of fire for clearing land for agriculture, hunting or festivals; promotion of fodder and/or the creation of reserves to facilitate grazing and proactively mitigate conflicts over this issue as the migration of regional herdsmen is only likely to increase because of climate change; placing savannah forests/woodlands under self-financing community management where possible and restoring degraded forest reserves, and promoting sustainable agricultural practices. There is also the need to ensure that development plans (at both national and local levels) and other policies, strategies and initiatives geared towards the development of the zone, adequately take into consideration the long-term impacts of climate change.

Sustainable agriculture

This is particularly important given the high dependence on the climate and the fact that it is one of the main drivers of deforestation. This calls for a diversification of the sector and the introduction of climate smart measures, such as testing the use of drought resistant and pest resistant crop varieties as well encouraging local innovation, including through appropriate R&D and extension services and promotion of local community seedbanks and nurseries; in addition, environmentally friendly practices such as agroforestry and integrated agri-aquaculture systems should be supported. Where commercial agriculture is being promoted, it's important to address the sustainability issues upfront. It's also important to consider the promotion of crops which are well-adapted and relatively low on water use – e.g., groundnuts.

Focus on enhancing sustainable livelihoods

There is a need to support the improvement of existing livelihoods as well as diversification. Additional measures, as alluded to above, include the adoption of innovative public works during the hunger season, promotion of community-based resource management and resilience; as well as plantations and support for sustainable/greener charcoal production in the short term. There also needs to be a forward-looking approach to skill development.

Sustainable mining and focus on mapping minerals

Small-scale and artisanal mining, often illegal and most often unsustainable, has emerged as a coping livelihood strategy and needs to be addressed. A focus on the following priorities is also needed to leverage minerals in Northern Ghana: (a) address the poor geological information base for minerals in the zone; (b) pay equal attention to non-precious and industrial minerals which offer opportunity for industrial and agricultural development e.g.

large clay deposits that can be tapped for building materials for the construction industry and lime that can be used for enriching acidic soils, which are so prevalent in the zone; and (c) promotion of sustainable mining including testing the effectiveness and feasibility of using new approaches such as the borax method for gold extraction, which apparently does away with mercury and pollution of water.

Integrated Water Management

This has been alluded to earlier as well. Scaling up integrated water resources management is needed, not only to improve agricultural productivity as previously described, but also to increase the resilience of communities to floods and drought and diversify their livelihood options. Amongst others, this requires promoting integrated flood management for the main river basins (in stronger coordination with neighbouring countries), as well as the development of community water management plans which are linked to management plans at the catchment and sub-catchment levels. This is also expected to ensure a more sustainable use of underground water resources and diversification from surface water.

The development of basin wide water management and investment plans for the White Volta, Black Volta and River Oti should take into consideration climate change impacts and the vulnerability of key sectors and communities that depend on it as their primary source of water. This is to ensure that water as a natural resource can sustainably provide the range of goods and services required for social, economic and environmental adaptation. There is also the need to develop community level water management plans that take into consideration future climate change impacts and link to the higher-level management plans at the catchment and sub-catchment levels.

Proactive focus on fire prevention

Given the nature of agro-climatic conditions in the North, there is a need for a clear policy and enforcement on the use of fire for clearing land for agriculture, hunting or festivals. However, burning to put in place fire belts is in fact necessary in the lead up to the dry/fire season to stop wanton bushfires from destroying crops and vegetation. This could be a focus area for labour intensive public works as in South Africa.

Renewable Energy

Inadequate power network and unreliability of supply affects business growth and social lives of the people. New investments are needed to diversify energy sources (grid and off-grid) for households as well as to support the development of industry. Renewable energies are now more than cost-competitive and a strategy that develops solar – which is plentiful - as one of the main source of power in the zone's rural growth poles could facilitate the development of light industry and use of clean energy by households. The report points to various concrete proposals for the expansion of both multipurpose hydro and solar (industrial scale and decentralized off grid) amongst others. As put forward by Arent (2017), the dispersed nature of wind and solar resources, combined with the use of new technologies and business models, allows for bottom-up pathways for expanding energy access in rural areas and dispersed settlements.

7.2.4 Strengthen voice, participation and peace architecture



Promote Inclusive Governance for transformation and Conflict Prevention

Adequately resourced inclusive governance arrangements (both traditional and decentralized structures) combined with a focus on voice and social mobilization are critical to underpin the transformation in the North, to tackle long standing chieftaincy and land disputes and to address new threats and multi-dimensional land governance issues.

The transformation agenda needs to speak to the aspirations and cultural values of the people. Specific proposals need to be considered from an equity vantage point and endorsed by stakeholders.

Space needs to be created for participation of vulnerable populations in both traditional and modern governance mechanisms. While the Regional and National Houses of Chiefs have the powers to adjudicate a number of critical issues, matters before the House often lingers because basic logistical support such as transport is not available for members of the Judicial Committee to meet and determine matters before them expeditiously.

As a means to dealing with new (e.g., farmer-herdsmen and other land use conflicts) and long simmering conflicts, there is the need to strengthen the peace architecture and to consider dialogue platforms at the community levels. Bugri et.al (2016) point to the potential role for Community Land Management Committees (CLMCs), composed of a broad spectrum of stakeholders, with representatives from traditional authorities, youth, men, women, local government and others, to engage on sustainable land use and measures to ensure more equitable use of the benefits that accrue from land resources.

Commercial agriculture and investment holds potential for some areas in the zone. The promotion of land pooling, land banks/trusts and forward-looking lease agreements could assist with protecting the rights of local communities while ensuring land can be mobilized for investment and that such investments yield socially acceptable, environmentally sustainable and economically rewarding outcomes for all parties involved.

There is also strong competition emerging for mineral resources and water among community members and between outsiders. Growing contestations on these issues could also cause long-standing simmering conflicts to flare up and facilitate 'elite capture' of valuable resources. Licensing and allocation of mining plots to private mining companies should involve community members in the decisions, including through the use of mechanisms such as Community Land Management Committees (CLMCs) which can monitor developments. Mining communities critically need support on the enforcement of standards.

To address emerging political vigilantism, which is also venturing into control of lands, there is the need to build political consensus to de-escalate such activities and ensure that the police and authorities take action. At the same time, it's important to create employment avenues since unemployment has been identified as a key factor in leading young people to form and/or join these groups.

7.2.5 Planning and Financing the Transformation Agenda

Promote Regional Planning efforts to promote coherence across transformational initiatives and with local development programmes

Analyses, data collection and consultations are needed to identify how to best address regional market failures, infrastructure and service delivery gaps and how to incentivize investments that need to be urgently supported. One of the key challenges for regional or district level transformation planning has been the lack of systematic information on almost all facets of development in the North. However, now there are some potential building blocks to consider: LUSPA developed a Spatial Development Framework (SDF 2015) for the North; the precursor to the Northern Development Authority, SADA, launched a multi-faceted initiative to prepare a Regional Concept Plan for the NSEZ, Master Plans for the Cities of Tamale and Buipe; a Land Management System for Tamale, and an Agricultural Masterplan. The latter identifies 6 Agribusiness Development Zones for specialization in different agricultural value chains which could be used to promote investment in agriculture; it can also be used to incentivize investment in irrigation as the report presents the detailed findings of land and crop suitability assessments under rain-fed and irrigated conditions. [A portfolio of “ready-made” projects, including irrigation schemes, hydropower, fisheries and aquaculture were also pulled together in a Commercial Agricultural Investment Guide.](#) These plans and guides can be used by Northern Development Authority to facilitate investment at scale and to complement local development and bottom-up initiatives such as *One District, One Factory* (1D1F) and *Infrastructure for Poverty Eradication Programs* (IPEPs).

Financing of local development infrastructure

The government has articulated a strategy to provide all of Ghana’s constituencies with resources (USD 1 million per constituency) for local infrastructure and productive investments (e.g., *One village One dam*). These offer significant opportunities for poor districts in the North. [However, to the extent the regions of the North have relatively fewer constituencies, larger deficits in terms of infrastructure and services, and more dispersed populations, they may not benefit to the extent needed. These resources may need to be supplemented to ensure adequate financing for equitable outcomes at local levels.](#)

The question of what principles to use to enhance equity in outcomes through the allocating public spending is common to other countries as well. E.g., the NHDR for Nepal proposes measures that could also be considered in Ghana: e.g., incorporating the HDI as a criterion in the allocation of budget resources for districts as well as incorporating capability improvements as a basic feature of district plans. [In India and Brazil, the HDI has been deployed to promote increased allocation of resources to improve health and education in sub-national budgets.](#)

Mobilize financing, promote resource allocation for the transformation agenda and to address the deep human development deficits in Northern Ghana

The very low Human Development Index (HDI) for the zone reflects significant disparities in terms of education as well as quality of livelihoods as compared to the national average which requires investments at scale and access to financing by the private sector. [In fact, the transformation agenda calls for urgent attention to be paid to the financing question.](#)

Interest rates for the domestic private sector in Ghana continue to be high by sub-Saharan African standards. While improved macroeconomic fundamentals have led to a significant fall in the rate of inflation and the monetary policy interest rate, this is yet to trickle down into a fall in bank rates. Further, commercial banks have a low footprint in many parts of the North.

Financial inclusion

Rural finance and village savings associations have grown in recent years, but their capital base is not expanding which makes it difficult to access productive finance. Additional measures are necessary to help enterprises get to the next step in terms of finance.

Rural banks need assistance

Given the largely rural nature of the zone, Rural and Community Banks (RCBs) are particularly important. Measures to strengthen the banks and help them to adjust to the requirement for increased capital is critical to ensure that people in the North are not further marginalized.

Access to finance by women

Measures to facilitate increased access to finance by women, are critical. Innovative approaches such as connecting voluntary savings associations to banking system as well as measures to address collateral constraints need to be explored as do initiatives to use mobile banking and to make mobile payments.

Financing Mechanism for Transformational Investments

A more significant issue is how to finance major transformation initiatives in the zone. Financing is particularly a challenge for lumpy infrastructure and green field investments in the region, which, all other things being equal, attract a higher risk premium. Given the historical deficit in terms of infrastructure and services in the North, as well as the imperative to drive a transformation agenda at scale, the Northern Development Authority needs to be able secure the significant funding to catalyze investments and partnerships.¹³⁴ [In addition to proposing 'bankable' or priority projects to national authorities, a proposal for a financing mechanism or development bank to provide long term affordable finance has been made for the North and should be explored further.](#)

Public private partnerships and role of philanthropy in the scale up/provision of services

Whether it is support for the scaling up the community health worker initiative or exploring how to improve learning in schools through ICT there is a role for philanthropic and NGO capital. While Northern Ghana has large numbers of NGOs who are active in service provision and poverty reduction there is a need for greater coordination at local and regional levels.

Catalytic engagement of the local private sector

The report underscores the importance incentivizing sustainable and inclusive private sector investment, particularly in agriculture.

¹³⁴ See [SADA Act](#) 805, 2010 section on Financial Provisions, in particular, paragraphs 20 and 21 (pp 13-14) SADA was given the flexibility to use a variety of means to secure complementary development financing for priorities identified, with the approval of the Ministry of Finance. These measures included the power to potentially contract loans, issue bonds and enter into joint ventures, acquire interests in public private partnerships, provide the necessary infrastructural assistance to enable the private sector make investments

There is the need to explore how services could be provided by the local private sector across various elements to drive farm productivity and service provision.

7.2.6 Promote the use of disaggregated data and innovative approaches to track who is being left behind and how equity issues can be addressed

The SDGs and Ghana's own development strategies call for disaggregation of data for reporting on progress. Data gaps need to be addressed, including through the promotion of innovative approaches for the collection of various types of data and presentation of such data with geospatial information and mapping to highlight spatial patterns and potentials. New types of approaches can help to address data gaps. E.g., [earth observation data can assist with tracking deforestation, illegal mining and changes in land use patterns and is proving useful for climate change research](#). Poverty maps which combine census and living standards survey data to provide a [mapping of poverty at district levels](#) can be combined with other socio-economic data to better inform a range of targeted development policies. [A spatial atlas with various development indicators overlaid on it similar to Brazil's Human Development Atlas \(HDA\)](#), may also prove useful for planning and monitoring of results.¹³⁵

¹³⁵ See [Human Development Atlas in Brazil](#). The HDA encompasses both Municipal and the Metropolitan Regions Atlas. Along with the Municipal Human Development Index – MHDI, the Atlas presents over 200 indicators.

References

- Aaron, H. (2010). Introduction to Natural Resource Economics: Lecture 1 Natural Resource Exploitation: Basic Concepts, University of Portsmouth.
- Abdulai, A. (1999). International migration and Agricultural Development in Ghana *Scandinavian Journal of Development Alternatives* 18(1): 61–74.
- Abdulai, A. and C. Delgado (1999). Determinants of nonfarm earnings of farm-based husbands and wives in Northern Ghana *American Journal of Agricultural Economics* 81: 117–130.
- Abdul-Razak, I and S. Donkoh, and R. Yeboah (2015) “Effects of Organic Mango Outgrower Scheme on Participants’ Livelihood in Savelugu/Nanton Municipality, Northern Region, Ghana”
- Abotchie, C. (1996). *Social Control in Traditional Southern Eweland of Ghana*, Accra, Ghana: Ghana Universities Press.
- ACET (2017). *African Transformation Report 2017: Agriculture Powering Africa’s Economic Transformation* <http://acetforafrica.org/publication/african-transformation-report-2017/>
- ActionAid International (2014). “Climate Resilient Sustainable Agriculture: Experiences” <http://www.actionaid.org/publications/climate-resilient-sustainable-agriculture-experiences-actionaid-and-its-partners-0>
- Adaawen, Stephen A. and Boabang Owusu (2013). “North-South Migration and Remittances in Ghana”, *African Review of Economics and Finance*, Vol. 5, No.1, December 2013.
- Adams, J. (1995). Risk, University College London Press: London, p.228.
- Afghanistan Research and Evaluation Unit, “Natural Resource Management,” Afghanistan Research and Evaluation Unit.
- African Center for Economic Transformation (ACET) (2014). *African Transformation Report: Growth with Depth* (ACET, Ghana).
- African Economic Outlook (2015). *Regional Development and Spatial Inclusion, 2015*. Retrieved from: <http://www.africaneconomicoutlook.org/en/telechargements>
- African Economic Outlook (2016). *Sustainable Cities and Structural Transformation, 2015*. Retrieved from: <http://www.africaneconomicoutlook.org/en/telechargements>
- Afrobarometer (2012) Ghana Round 5 Summary of Results
- Aghazadeh, N., and Mogaddam, A. A. (2010). Assessment of Groundwater Quality and its Suitability for Drinking and Agricultural Uses in the Oshnavieh Area, *Northwest Iranian Journal of Environmental Protection*, 1: 30–40.
- Agricultural Science and Technology Indicators (ASTI) (2014). Agricultural R&D Indicator Factsheet, Ghana.
- Agyemang-Duah, B (2002, April–June). Overview of Decentralization in Ghana, *Ghana Local Government Information Digest*, 15(2): 20–30.
- Akudugu, M., Dittoh, A. S., and Mahama, E. S. (2012). The Implications of Climate Change on Food Security and Rural Livelihoods: Experience from Northern Ghana *Journal of Environment and Earth Science*, 2(3): 21–30.
- Anang, Benjamin Tetteh, Margaret Atosina Akuriba and Aaron Adongo Alerigesane (2011). “Charcoal Production in Gushegu District, Northern Region, Ghana: Lessons for Sustainable Forest Management” Anayah., and Kaluarachch (2009). <http://gw-africa.iwmi.org/Data/Sites/24/media/pdf/fieldreport-usu.pdf> 25.07.2014

- Apambire, W. B., Boyle, D. R., and Michel, F. A. (1997). Geochemistry, Genesis and Health Implications of Fluoriferous Ground Waters in Upper Regions of Ghana, *Environmental Geology*, 33(1): 13–24.
- Amponsah, Jonah (2009) “Improving the Management and use of Water Resources for Small-Scale Irrigation Farming and its contribution of Poverty Reduction in Garu-Tempene District; A study of Irrigation Schemes in Bugri and Gagbiri” Dissertation, KNUST
- Andrianaivo, M. and K.i Kpodar (2011) “ICT, Financial Inclusion, and Growth: Evidence from African Countries” IMF Working Paper WP/11/73
- Apt, N. A., Agbenyiga, D. L., and Ame, R. K. (2012). Confronting the Challenges: Optimizing Child Rights in Ghana: In R. K. Ame, D. L. Agbenyiga and N. A. Apt (pp. 3–11). *Children’s Rights in Ghana: Reality or Rhetoric?* London: Mot Juste Limited.
- Apusigah, A. Atia (2009). “The Gendered Politics of Farm Household Production and the Shaping of Women’s Livelihoods in Northern Ghana.” *Feminist Africa* 12: 51-68
- Arent, Douglas (Ed.); Arndt, Channing (Ed.); Miller, Mackay (Ed.); Tarp, Finn (Ed.); Zinaman, Owen (Ed.) (2017) *The Political Economy of Clean Energy Transitions*, UNU-WIDER Studies in Development Economics, <http://dx.doi.org/10.1093/oso/9780198802242.001.0001>
- Armah, F. A., Odoi, J. O., Yengoh, G. T., Obiri S., Yawson, D. O., and Afrifa, E. K. A. (2011). Food Security and Climate Change in Drought-sensitive Savannah Zones of Ghana, *Mitigation and Adaptation Strategies for Global Change*, 16(3): 291–306.
- Arthur, R., Baidoo, M. F., Antwi, E. (2011). Biogas as a Potential Renewable Energy Source: A Ghanaian Case Study, *Renewable Energy* 36: 1510–1516.
- Aryee, J. A. (2000). Decentralization and Good Governance in Ghana, Accra, Ghana: unpublished paper of May 2000 prepared for the Canadian High Commission.
- Assimeng, J. M. (1981). *Social Structure of Ghana: A Study in Persistence and Change*, Accra: Ghana Publishing Corporation.
- Assimeng, J. M. (2007). *Social Structure of Ghana: A Study in Persistence and Change* (Second Ed.) Accra: Ghana Publishing Corporation.
- Atuoye, N. K., & Odame, S. F. (2013). ‘Queenmother’ concept in the Upper West Region of Ghana: Is this advancement or an emerging conflict with tradition in patriachal society *European Scientific Journal* , 9(35): 222–239.
- Auty, R. M. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis* Routledge, London.
- Awumbila, M. (2008). “Who Gains, who is Drained? From Worst Cases to Best Practices”, *Migration & Entwicklung Dossier*, pp. 55–59.
- Awumbila M., Owusu, G. and Teye, J. (2014). *Can Rural-Urban Migration into Slums Reduce Poverty? Evidence from Ghana*, Working Paper 13, Migrating out of Poverty Research Programme Consortium.
- Awumbila, M. and Ardayfio-Schandorf, E. (2008). “Gendered Poverty, Migration and Livelihood Strategies of Female Porters in Accra, Ghana”, *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography*, Vol. 62, pp. 171–179.
- Bacho, F. Z. (2005). Can I Sell One of My Cows? Institutions Assets and Gender-based Poverty *Ghana Journal of Development Studies*, 1(1): 25–48.

- Baffoe, M., & Dako-Gyeke, M. (2013) Social Problems and Social Work in Ghana: Implications for Sustainable Development, *International Journal of Development and Sustainability*, 2(1): 347–363.
- Baland, J. and Platteau, J. (1994). Halting Degradation of Natural Resources: Is there a Role for Rural Communities? Namur, France: Universitaires Notre-Dame de la Paix, Facultes des Sciences Economiques et Sociales Oxford University Press Forthcoming.
- Bank of Ghana (2013) “Minimum Capital Requirements For Banks and Non-Bank Financial Institutions” Notice No. BG/GOV/SEC/2013/08
https://www.bog.gov.gh/privatecontent/Public_Notices/minimum%20capital%20requirement%20-%20banks-%20non%20banks%20%20rural%20community.pdf
- Basu, Aridam (2014) [NAMA Study for a Sustainable Charcoal Value Chain in Ghana](#), UNDP
- Batiir, B. B. (1987). “Education in Northern Ghana: Challenges and Strategies”, paper delivered at the Easter School held at Wa from 7–11 April.
- Bening, R. B. (1990). *The History of Education in Northern Ghana 1907–1976*, Ghana Universities Press, Accra.
- Bening, R. B. (1971). *The Evolution of Administrative Boundaries of Northern Ghana, 1898–1965*, Ph D Thesis, London School of Economics and Political Science.
- Bening, R. B. (1975). “Colonial Development Policy in Northern Ghana, 1898–1950”, *Bulletin of the Ghana Geographical Association*, Vol. 17, pp. 65–79.
- Blampied, Catherine with Soumya Chattopadhyay, Romilly, Greenhill, Imran Aziz, Christine Ellison, Rachel Thompson, Abdul-Gafaru Abdulai and Adam Salifu (2018) “Leaving no one behind in the health and education sectors: a SDG stocktake in Ghana”
- Blocher, Joseph (2006). “Building on Custom: Land Tenure Policy and Economic Development in Ghana”,
- Boakye, K. (2009). Culture and Nondisclosure of Child Sexual Abuse in Ghana: A Theoretical and Empirical Exploration, *Law & Social Inquiry*, 34(4): 951–979.
- Bob-Milliar, G.M. (2014) Party Youth Activists and Low-Intensity Electoral Violence in Ghana: A Qualitative Study of Party Foot Soldiers’ Activism *African Studies Quarterly* | Volume 15, Issue 1| December 2014 <http://www.africa.ufl.edu/asq/v15/v15i1a7.pdf> page 132
- Boone, L. E. and Kurtz, D. L. (2004). *Contemporary Marketing*, Tomson: South Western, Australia.
- Bortei-Doku Aryeetey, E., D. Doh and P. Andoh (2011). *From Prejudice to Prestige: Vocational Education and Training in Ghana*, City & Guilds Centre for Skills Development and Council for Technical and Vocational Education, Ghana.
- Bottomley, B. R. (1998). *Mapping Rural Land Use & Land Cover Change In Carroll County, Arkansas Utilizing Multi-Temporal Landsat Thematic Mapper Satellite Imagery* University of Arkansas, Arkansas.
- Breisinger, C., Diao, X, Kolavalli, S. (2017). The Role of Cocoa in Ghana Growth and Poverty Reduction. Retrieved from : <http://gssp.ifpri.info/files/2007/12/breisinger-role-of-cocoa.pdf>
- Brew-Hammond, A. E. (2013). Relationships between Energy Use and Income Levels, For Households in Ghana, *European Scientific Journal*, 19(16).
- Brew-Hammond, A. (2010). Energy Access in Africa: Challenges Ahead, *Energy Policy*, 2291–2301.

- Bromfield, L., and Higgins, D. (2005). National Comparison of Child Protection Systems, *Child Abuse Prevention Issues* No. 22 Melbourne: Australian Institute of Family Studies Retrieved on March 23, 2013, from www.aifs.gov.au/nch/pubs/issues/issues22/issues22.html
- Bromley, D. B. and Cernea, M. M. (1989). *The Management of Common Property Natural Resources Some Conceptual and Operational Fallacies*, Washington, DC: World Bank.
- Brown, C. K. (2002). *A Study on Sexual Abuse in Schools in Ghana*, Cape Coast: University of Cape Coast/UNICEF Ghana.
- Brunnschweiler, C. N. (2006). Cursing the blessings? Natural Resource Abundance, Institutions, and Economic Growth, ETH Zurich, Economics Working Paper Series 06/51.
- Bugri, John Tiah and Eric Yeboah (2017) "Understanding changing land access and use by the rural poor in Ghana" IIED <http://pubs.iied.org/pdfs/17595IIED.pdf>
- Bugri, John Tiah and Jennifer Duncan, Leslie Hannay, Michael Lufkin, and Dr. Eric Yeboah (2014) "Model Commercial Agriculture Lease : Project of the Ghana Commercial Agriculture Project" <http://gcap.org.gh/wp-content/uploads/2017/04/Model-Commercial-Agriculture-Lease-Agreement-2.pdf>
- Cancian, M., Slack, K. S., and Yang, M. (2010). The Effect of Family Income on Risk of Child Maltreatment Madison, WI: Institute for Research on Poverty Retrieved on March 15, 2014, from <http://www.ssc.wisc.edu/irpweb/publications/dps/pdfs/dp138510.pdf>
- Cardona, O. D. (2003). The Need for Rethinking the Concept of Vulnerability and Risk from a Holistic Perspective: A Necessary Review and Criticism for Effective Risk Management In E. Bankoff, Frerds, G., and D. Hillhorst, *Mapping Vulnerability: Disasters, Development and People* (pp. 37–51), London: Earthscan Publishers.
- Carpenter, S. R., Caraco, N. F., Correll, D. L., Howarth, R. W., Sharpley, A. N., and Smith, V. H. (1998). Nonpoint pollution of surface waters with phosphorous and nitrogen *Ecological Applications*, 8(3): 559–568.
- Carrier, M.-A., Aubut, R., Lefebvre, R., Racicot, J., Asare, E. B., Fontaine, R., and Rivera, A. (2009). *Interim Hydrogeological Atlas*, Hydrogeological Assessment Project of the Northern Regions of Ghana, Accra, Ghana.
- Cawson, P. (2002). *Child Maltreatment in the Family: The Experience of a National Sample of Young People*, London: NSPCC.
- CDD-Ghana (May 2017) "[Political party vigilantism: A growing fox worth killing before it mutates into a monster](#)"
- Center for Economic Policy Analysis (n.d.) Socioeconomic Development of the Upper West Region https://www.cepa.org.gh/resources/Upper_West_Socioeconomic_Development_WRP17.pdf
- Chapoto Antony, Nazaire Houssou, Athur Mabiso and Frances Cossar (2014). Medium and Large Scale farms and Agricultural Mechanisation in Ghana, Survey Results, Ghana Strategy Support Programme, Accra.
- Child Welfare Information Gateway (2008). Long-term Consequences of Child Abuse and Neglect Retrieved on February 15, 2014, from www.childwelfare.gov/pubs/factsheets/long_term_consequences.cfm
- Child, Youth and Family (2010). Why you should care? Wellington: Child, Youth and Family Retrieved on June 10, 2014, from <http://www.cyf.govt.nz/documents/about-us/publications/cyf-why-you-should-care-19-08.pdf>.

- Chowdhury, M. J. A. (2008a). "Does the Participation in the Microcredit Programmes Contribute to the Development of Women Entrepreneurship at the Household Level? Experience from Bangladesh", *CDM Working Paper 04*, Center for Microfinance Development, University of Dhaka, Bangladesh, pp. 1–21.
- Clements, P. T., Speck, P. M., Crane, P. A., & Faulkner, M. J. (2004). Issues and dynamics of sexually assaulted adolescents and their families *International Journal of Mental Health Nursing*, 13: 267–274.
- Coker-Appiah, D. & Cusack, K. (1999). *Breaking the Silence and Challenging the Myth of Violence Against Women and Children in Ghana*, Report of a National Study on Accra, Ghana: Gender Studies and Human Rights Documentation Centre.
- Collier, P., and Hoeffler, R. (2006). "Beyond Greed and Grievance: Feasibility and Civil," Working Paper 10, *World Development* 33: 1029–1044.
- Commission on Human Security (2003). *Human Security Now-A Report of the Commission on Human Security*, New York: UN Publications.
- Coulombe, H. and Wodon, Q. (2007). "Poverty, Livelihoods, and Access to Basic Services in Ghana: An Overview", Ghana CEM Technical Review Growth Workshop in Accra, May 2–3 (draft).
- Crichton, D. (1999). The Risk Triangle, in Ingleton, J. (ed.), *Natural Disaster Management*, Tudor Rose, London, pp. 102–103.
- Cyr, C., Euser, E. M., Bakermans-Kranenburg, M. J., and Van Ijzendoorn, M. H. (2010). Attachment Security and Disorganization in Maltreating and High-risk Families: A Series of Meta-analyses, *Development and Psychopathology*, 22: 87–108.
- Davidson-Arad, B. and Benbenishty, R. (2010). Contribution of Child Protection Workers' Attitudes to their Risk Assessments and Intervention Recommendations: A study in Israel, *Health and Social Care in the Community*, 18(1): 1–9.
- De Pinto, Alessandro, Ulaş Demirag, Akiko Haruna, Jawoo Koo, Marian Asamoah (2014). Climate Change, Agriculture, and Food Crop Production in Ghana, *Policy Note No 3*, Ghana Strategy Support Programme, Accra.
- De Soysa, I. (2002b). "Ecoviolence: Shrinking Pie, or Honey Pot?" *Global Environmental Politics*, 2(4): 1–34.
- De-Soysa, I. (2002a). "Paradise Is a Bazaar? Greed, Creed, and Governance in Civil War, 1989–99," *Journal of Peace Research*, 39(4): 395–416.
- Dessus, Sébastien; Jackson, Chris; Charles, Ackah; Gamil Boutros, Iris; Goldstein, Markus; Medvedev, Denis; Norton, Andrew; Simler, Kenneth; Steel, William; Subbaro, Kalandi; Wodon, Quentin, (2011). "[Republic of Ghana: Tackling Poverty in Northern Ghana](#)"
- Diao, X. and Peixun Fang, Eduardo Magalhaes, Stefan Pahl, Jed Silver (2017). "Cities and rural transformation: A spatial analysis of rural youth livelihoods in Ghana" IFPRI Discussion Paper 1599. <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/131053>
- Diamond, L. J. (2007). A Quarter-century of Promoting Democracy, *Journal of Democracy* (18): 188–120.
- Dietz, A. J., Ruben, R., and Verhagen, A. (Eds.) (2004). The Impact of Climate Change on Drylands; with a Focus on West Africa, *Environment and policy* Kluwer Publishers; Netherlands.
- Dietz, T. and Millar, D. (eds), (1999). Copping with Climate Change in Dryland Ghana: The Case of Bolgatanga Netherlands Research Programme on Climate Change, Amsterdam.

- Djankov, S., Montalvo, J. G. and Reynal-Querol, M. (2008). "The curse of aid", *Journal of Economic Growth* (Springer) 13 (3): 169–94.
- Djokoto, G., and Opoku, K. (2010). *Land Tenure in Ghana: Making a Case for Incorporation of Customary Law in Land Administration and Areas of Intervention by the Growing Forest Partnership*, International Union for the Conservation of Nature and Growing Forest Partnership.
- Domenico, P. A., and Schwartz, F. W. (1990). *Physical and Chemical Hydrogeology*, John Wiley and Sons, New York, p.824. Freeze and Cherry, 1979.
- Downing, T. E., Butterfield, R., Cohen, S., Huq, S., Moss, R., Rahman, A., Sokona, Y. and Stephen, L. (2001). *Vulnerability Indices: Climate Change Impacts and Adaptation*, UNEP Policy Series, UNEP, Nairobi.
- Downs, S. W., Moore, E., McFadden, E. J., Michaud, S. M., and Costin, L. B. (2004). *Child Welfare and Family Services: Policies and Practice* (7th ed.) Boston, MA: Allyn and Bacon.
- Dubowitz, H. and Bennett, S. (2007). Physical Abuse and Neglect of Children, *Lancet*, 369: 1891–1899.
- ECOWAS wants International Transhumance Certificate for herdsman, Friday 31st March, 2017 <http://www.ghananewsagency.org/social/ecowas-wants-international-transhumance-certificate-for-herdsman-115031>
- Eguavoen, I. (2008). *The Political Ecology of Household Water in Northern Ghana*, LIT Verlag Münster.
- Egyir, I. and Akudugu, M. A. (2009). "Rural Women and Microfinance in Ghana: Challenges and Prospects", Unpublished, pp. 1–16.
- Ellis, F. (2000). The Determinants of Rural Livelihood Diversification in Developing Countries, *Journal of Agricultural Economics* 51(2): 289–302.
- Energy Commission Ghana (2013). *National Energy Statistics (2000-2012)*. Accra, Ghana
- Engel, G. L. (1977). The Need for a New Medical Model: A Challenge for Biomedicine, *Science*, 196(4286): 129–136.
- Environmental Protection Agency (EPA) (2015) Ghana's Third National Communication Report to the UNFCCC. <http://unfccc.int/resource/docs/natc/ghanc3.pdf>
- Environmental Protection Agency (EPA) (2011) Ghana's Second National Communication Report to the UNFCCC. <http://unfccc.int/resource/docs/natc/ghanc2.pdf>
- Environmental Protection Agency (EPA) (2003). *National action programme to combat drought and desertification*, EPA, Accra.
- Erdogan, B., and Bauer, T. N. (2009). Perceived Overqualification and its Outcomes: The Moderating Role of Empowerment, *Journal of Applied Psychology*, 94(2): 557–565. [doi:10.1037/a0013528](https://doi.org/10.1037/a0013528)
- Esman, M. J. and N. Uphoff (1984). *Local Organizations: Intermediaries in Rural Development*, Ithaca, New York: Cornell University.
- Etsey, K. and T. Smith, E. Gyamera, J. Koka, J. de Boer, E. Havi, S. Heyneman (2009) "Review of Basic Education Quality in Ghana: Basic Education in Ghana: Progress and Problems" Mitchell Group for USAID.
- Farnworth, Cathy and Alima Mahama (2012) "Gender Analysis of the Maize Value Chain, Ghana". For GIZ MOAP, Ghana, and BMZ
- Fianko, J. R., Nartey V. K., and Donkor, A. (2010). The Hydrochemistry of groundwater in rural communities within the Tema District, Ghana *Environmental Monitoring Assessment*, 168: 441–449.

- Fianu, F. K., Fialor, S. C., Asante, M. S. (2001). *Commercialisation Channels of Distribution of Forage Seeds in Ghana*, Consultancy Report UK Department for International Development/Ministry of Food and Agriculture, Accra, Ghana.
- Finkelhor, D. (2008). *Childhood Victimization: Violence, Crime, and Abuse in the Lives of Young People*, New York, NY: Oxford University Press.
- Foell, W., Pachauri, S., Spreng, D., and Zerriffi, H. (2011). Household Cooking Fuels and Technologies in Developing Economies, *Energy Policy* 39, pp. 7487–7496.
- Food and Nutrition Security Unit, University for Development Studies (FNSU-UDS) (2011). *Three Country (Burkina Faso, Ghana and Mali) Case Studies on the PASS Value Chain Strategy/Approach and its Effect on Smallholder Farmer Yields in Africa*, Alliance for Green Revolution in Africa [Accessed at: file:///C:/Users/DELL/Downloads/pass-evaluation-case-studies-west-africa%20\(1\).pdf](file:///C:/Users/DELL/Downloads/pass-evaluation-case-studies-west-africa%20(1).pdf)
- Frankenberger, T. R., Caldwell, R. M., and Mazzeo, J. (2002). *Empowerment and Governance: Basic Elements for Improving Nutritional Outcomes Paper for the 15th Report on the World Nutrition Situation*, UN Standing Committee on Nutrition.
- Friedman, T. L. (2006). “The First Law of Petro-politics” *Foreign Policy* Retrieved 2009–06–29.
- G. K., J. A. (2006). The Judicial Role of the Chief in Democratic Governance In O. I. A. K. (Ed.), *Chieftaincy in Ghana: Culture, Governance and Development*, Accra: Sub Saharan Publishers.
- G. S., P. R. (Vol. 1, 2011). Good Governance and Human Development: Evidence from Indian States, *Journal of Social and Development Science*, pp. 1–8.
- Galaa, S. Z. (2012). *Community Participation in Health Care Delivery and Management in Northern Ghana*, Accra: Woeli Publishing Service.
- Galaa, S. Z., and Bandie, B. R. (2004). Pump Management Committees and Sustainable Community Water Management in the Upper West and East Regions of Ghana, *Ghana Journal of Development Studies*, 1(1): 72–90.
- Galaa, S. Z. (2004). Public-Private Partnerships for Improved Agriculture Services Delivery: How Do We Make Them Work? *Journal of Social Development in Africa*, 49–67.
- Gatune, J. (2016) “Can Agriculture Be The Engine for Economic Transformation and Inclusive Development: Insights From 20 Value Chains Studies in 5 countries” ACET Presentation at Inclusive Development Conference, International Conference Centre May 10, 2016
- Gatune, J. (2015) “Kenya as a services hub: the role of services in economic transformation”
- Ghana 2018 State of the Nation Address <http://citifmonline.com/2018/02/09/2018-state-nation-address-full-text/>
- Ghana Districts www.ghanadistricts.com
- Ghana National Communication on Climate Change (2012).
- Ghana Statistical Service (2009). Ghana Time Use Survey: How Ghanaian women and men spend their time
- Ghana Statistical Service (2011). GHANA Multiple Indicator Cluster Survey with an enhanced Malaria Module and Biomarker, Ghana Statistical Service: Accra.
- Ghana Statistical Service (2013a). “2010 Population and Housing Census, National Analytical Report” Ghana Statistical Service: Accra.
- Ghana Statistical Service (2013b). “2010 Population and Housing Census, Regional Analytical Report: Brong Ahafo Region” Ghana Statistical Service: Accra.

- Ghana Statistical Service (2013c). "2010 Population and Housing Census, Regional Analytical Report: Northern Region" Ghana Statistical Service: Accra.
- Ghana Statistical Service (2013d). "2010 Population and Housing Census, Regional Analytical Report: Upper East Region" Ghana Statistical Service: Accra.
- Ghana Statistical Service (2013e). "2010 Population and Housing Census, Regional Analytical Report: Upper West Region" Ghana Statistical Service: Accra.
- Ghana Statistical Service (2008). *Ghana Living Standards Survey: Report of the Fifth Round*, Accra: Ghana Statistical Service.
- Ghana Statistical Service (2013f). "2010 Population and Housing Census, Regional Analytical Report: Volta Region" Ghana Statistical Service: Accra.
- Ghana Statistical Service (2014). *Ghana Living Standards Survey (GLSS6) 2014*, Accra, Ghana.
- Ghana Statistical Service (GSS), Ghana Health Service (GHS) and ICF Macro (2009). *Ghana Demographic and Health Survey 2008*, Accra: GSS, GHS and ICF Macro.
- GSS, GHS & ICF Macro (2014). *Ghana Demographic and Health Survey 2008*, Accra: Ghana Statistical Service.
- Gilbert, R., Spatz Widom, C., Browne, K., Fergusson, D., Webb, E., & Janson, S. (2009). Burden and Consequences of Child Maltreatment in High-Income Countries, *The Lancet*, 373, 68–81.
- Goetz, A. M., and Gaventa, J. (2001). *Bringing Citizen Voice and Client Focus into Service Delivery: IDS Working Paper No. 138*, Brighton: Institute for Development Studies.
- Goetz, A. M., and Jenkins, R. (2005). Introduction In Goetz, & Jenkins, *Re-inventing Accountability: Making Democracy Work for Human Development, International Political Economy Series* Basingstoke: Palgrave Macmillan.
- Government of Ghana (2018a). "The Coordinated Programme of Economic and Social Development Policies (2017-24)" [https://s3-us-west-2.amazonaws.com/new-ndpc-static/CACHES/PUBLICATIONS/2018/04/11/Coordinate+Programme-Final+\(November+11,+2017\)+cover.pdf](https://s3-us-west-2.amazonaws.com/new-ndpc-static/CACHES/PUBLICATIONS/2018/04/11/Coordinate+Programme-Final+(November+11,+2017)+cover.pdf)
- Government of Ghana (2018b). "2018 Electricity Supply Plan for the Ghana Power System" http://www.gridcogh.com/media/photos/forms/supplyplan/2018_Electricity_Supply_Plan.pdf
- Government of Ghana (2014). "Economic and Financial Policies for the Medium-Term", Ministry of Finance and Economic Planning, Accra.
- Government of Ghana (2014). *Ghana Shared Growth and Development Agenda (GSGDA II), 2014-17*, Accra. Retrieved from: <https://s3.amazonaws.com/ndpc-static/pubication/GSGDA+II+2014-2017.pdf>
- Government of Ghana (1992). *Constitution of the Republic of Ghana 1992*, (Ghana Publishing Corporation, Accra).
- Government of Ghana (2005). *Ghana Poverty Reduction Programme* NDPC, Accra
- Government of Ghana (2010). *Medium-Term National Development Policy Framework: Ghana Shared Growth and Development Agenda (GSGDA), 2010–2013* Volume 1, National Development Planning Commission, Accra Accessed at: www.mofep.gov.gh/?q=content/economic-financial-policies-for-the-medium-term-gog on 9th August 2014.
- Government of Ghana (2010). *An Agenda for Shared Growth and Accelerated Development for a Better Ghana; The Coordinated Programme of Economic and Social Development Policies*,

2010-2016 ,(Presented By H.E Prof John Evans Atta Mills, President of the Republic of Ghana to the 5th Parliament of the 4th Republic, (Accra).

Government of India (2002). *National Human Development Report: 2001*, (Planning Commission, New Delhi).

Government of Kerala (2006). *Kerala Human Development Report 2005*, New Delhi, India.

Greenstreet, Miranda (1972). "Labour Conditions in the Gold Coast during the 1930s with Particular Reference to Migrant Labour and the Mines (Part 1)", *The Economic Bulletin of Ghana*, Vol. 2, No. 2, Second Series, pp. 32–46.

Grischow J., and Weiss, H. (2012). Colonial famine relief and development policies: Towards an environmental history of Northern Ghana, *Global Environment*

GTZ (2011). Curse or Blessing—Development or Misery .Scrambling to the Bottom or Scrambling to the Top Natural Resources, Economic Growth, and Conflict: A Literature Review, Africa Department.

Gyau-Boakye, P. and S. Dapaah-Siakwan (1999). Groundwater: Solution to Ghana's rural water supply industry? *The Ghana Engineer*.

Hauck, J., & Youkhana, E. (2010). *Histories continuities of water governance in Northern Ghana* Emerald Group Publishing Limited.

Hauge, W. and Tanja, E. (1998). "Beyond Environmental Security: Causal Pathways to Conflict," *Journal of Peace Research*, 35 (3), pp. 299–317.

Homer-Dixon, T. (1994). "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security*, 19(1), pp. 5–40.

Homer-Dixon, T. (1999). *Environment, Scarcity, and Violence*, Princeton University Press. <http://nrc.nsw.gov.au/content/documents/Brochure%20-%20Resilient%20landscapes.pdf> The United States' Environment Agency.

Houssou, N. and P. Ohene Aboagye, and S. Kolavalli (2016) "Meeting Ghanaian farmers' demand for a full range of mechanization services" IFPRI/GSSP Policy Note

Howes, M. (1990). *Linking Paradigmes and Practices: Key Issues in the Appraisal Monitoring and Evaluation of British NGOs* Unpublished.

[http://www.cepa.org.gh/researchpapers/Upper West Socioeconomic Development WRP17.pdf](http://www.cepa.org.gh/researchpapers/Upper_West_Socioeconomic_Development_WRP17.pdf) accessed August 7, 2014.

Hunter, C., and Price-Robertson, R. (2012). Family structure and child maltreatment: Do some family types place children at greater risk? Retrieved February 13, 2014, from http://www.academia.edu/3536364/Family_structure_and_child_maltreatment_Do_some_family_types_place_children_at_greater_risk

IFPRI, 2007 (ed) Diao, X., and Sarpong, D. B. (2007). Cost Implications of Agricultural Land Degradation in Ghana An Economywide, Multimarket Model Assessment IFPRI Discussion Paper 00698 May 2007.

ILO (2000). *World Labour Report 2000: Income security and social protection in a changing world*. Geneva, Switzerland

Imam, Haruna Abdallah (2015) "State and Non-State Actors in Land Appropriation: Colonial Land Policy and the Role of the Tindana in Northern Ghana" Research on Humanities and Social Sciences. www.iiste.org/Journals/index.php/RHSS/article/viewFile/19848/20558

Institute for Economic Affairs Ghana (IEA) (2016) "Dealing With The Winner-Takes All Politics in Ghana:

The Case For Effective Decentralization” Governance Newsletter, Vol. 21 No. 2 May/June 2016
<http://ieagh.org/wp-content/uploads/2017/04/DEALING-WITH-THE-WINNER-TAKES-ALL-POLITICS-IN-GHANA-THE-CASE-FOR-EFFECTIVE-DECENTRALIZATION.pdf>

- International Monetary Fund (2005). *The IMF's Approach to Promoting Good Governance and Combating Corruption: A Guide*, IMF: Washington.
- International Monetary Fund (2005). *World Economic Outlook*, IMF: Washington.
- International Water Management Institute (2010). Groundwater in sub-Saharan Africa: Implications for food security and livelihoods Annual progress report to the Rockefeller Foundation-Narrative Aspects.
- IPCC (2001). *Climate Change 2001: Impacts, Adaptation and Vulnerability, Summary for Policymakers*, WMO.
- Jain, C. K., Bandyopadhyay, A., and Bhadra, A. (2009). Assessment of groundwater quality for drinking purpose, District Nainital, Uttarakhand, *Indian Environmental Monitoring Assessment*, DOI: 10.1007/s10661-009-1031-5.
- Jayne, Thomas with Shashidhara Kolavalli, Kofi Debrah, Joshua Ariga, Pierre Brunache, Chance Kabaghe, Walter Nunez-Rodriguez, Kwaku Owusu Baah, Andre A. Bationo, Elzo Jeroen Huising, Isabel Lambrecht, Xinshen Diao, Felix Yeboah, Samuel Benin, Kwaw Andam (2015) “Towards a sustainable soil fertility strategy in Ghana: Report submitted to the Ministry of Food and Agriculture Government of Ghana”, IFPRI
<http://www.ifpri.org/cdmref/p15738coll2/id/130118/filename/130329.pdf>
- Jedwab, R. and Moradi, A. (2012). *Revolutionizing transport: modern infrastructure, agriculture and development in Ghana*, (LSC Research Online).
- JMP (2008). *The Water and Sanitation Sector Monitoring Platform*, UNICEF.
- Jones, R. and Boer, R. (2003). Assessing current climate risks Adaptation Policy Framework: A Guide for Policies to Facilitate Adaptation to Climate Change, UNDP, in review, see <http://www.undp.org/cc/apf-outline.htm>).
- Junner (1940). Quoted in *Soil Classification in Ghana*, Ghana Selected Economic Issues No. 3; 2000; CEPA, Accra.
- Kabeer, N. (2005). “Is Microfinance a ‘Magic Bullet’ for Women’s Empowerment? Analysis of findings from South Asia”, *Economic and Political Weekly*, October 29: 4709-18.
- Kasanga, R. K., & Kotey, N. A. (2001). *Land Management in Ghana: Building on Tradition and Modernity*, London: International Institute for Environment and Development.
- Kasei, C. N. (1988). The Physical Environment of Semiarid Ghana In: Unger, P. W., Sneed, T. V., Jordan, W. R., Jensen, R. (eds.) (1988). *Challenges in Dryland Agriculture—A Global Perspective*, Texas Agricultural Experiment Station, pp. 350–354, TAES Texas.
- Kaufmann, D., Kraay, A., and Mastruzzi, M. (2003). *Governance Matters III: Governance Indicators for 1996–2002*, Policy Research Working Paper No 3106, The World Bank.
- Kees, M., and Feldman, L. (2011). The Role of Donor Organizations in Promoting Energy-efficient Cooking Stoves *Energy Policy*, 39(12), 7595–7599.
- Kendie, S. B., and Guri, B. Y. (2010). *Indigenous Institutions and Contemporary Development in Ghana: Potentials and Challenges*, UNU-IAS Publication on Traditional Knowledge.
- Kendie, S. B., Osei-Kufuor, P., Boakye, K. A., Abeasi, E., & Addo-Tufuor, K. (2013). *Mapping Conflicts in Ghana* National Peace Council Unpublished .

- Killick, Tony (2011). *The Washington Consensus rules still? Ghana's shrinking poverty despite rising inequalities* - [Presentation, at](#) an International conference on "From Structural Adjustment to Human Development: Impact on Poverty and Inequality", November 17-18, 2011—Institute For Development Studies, UK- <https://www.ids.ac.uk/impact-poverty>.(accessed on 4th august, 2014).
- Killick, Tony (2010). *Development Economics in Action: A Study of Economic Policies in Ghana* (2ndedn) London: Routledge.
- Kolavalli Shashi, Robinson Elizabeth, Diao Xinshen, Alpuerto Vida, Folledo Renato, Slavova Mira, Ngeleza Guylain, Asante Felix (2011). Economic Transformation in Ghana: Where Will the Path Lead International Food Policy Research Discussion paper No 01161, Washington DC.
- Kollmorgen, Ray (2010). "Transformation theory and socio-economic change in Central and Eastern Europe A conceptual framework", *Employment and economy in Central and Eastern Europe*, (emecon.eu 1/2010).
- Kortatsi, B. (1994). Groundwater utilization in Ghana: Future Groundwater Resources at Risk Proceedings of the Helsinki Conference, International Association of Hydrological Sciences, 222: 149-156.
- Kotey, N. A. (1995). Land and tree tenure and rural development forestry in Northern Ghana *University of Ghana Law Journal* , 102–132.
- KPMG (2012). Doing Business in Ghana available at: <https://www.kpmg.com/GH/en/Documents/Doing%20business%20in%20Ghana%20-2012.pdf> Accessed 7/08/2014.
- Kundu, Tadit (2015). "Why Kerala is like Maldives and Uttar Pradesh, Pakistan: Three findings regarding India's states using the Human Development Index methodology" <https://www.livemint.com/Politics/3KhGMVXGxXcGYBRMsmDCFO/Why-Kerala-is-like-Maldives-and-Uttar-Pradesh-Pakistan.html>
- Kwankye, S. O. and J. K. Anarfi, C. A. Tagoe and A. Castaldo (2009). "Independent North-South Child Migration in Ghana: The Decision Making Process" Development Research Centre on Migration, Globalisation and Poverty Working Paper T-29.
- Ladouceur, P. A. (1979). *Chiefs and Politicians: The Politics of Regionalism in Northern Ghana*, Longman: London.
- Lall, S. (1995). "Structural Adjustment and African Industry" *World Development*, Vol. 23, No. 12, 2019–2031, 1995.
- Land Use and Spatial Planning Authority (LUSPA, previously Town and Country Planning Department, TCPD) (2015a) Spatial Development Framework for the Northern Savannah Ecological Zone (2015-2035) Volume I: Situational Analysis and Major Issues
- Land Use and Spatial Planning Authority (LUSPA, previously Town and Country Planning Department, TCPD) (2015b) Spatial Development Framework for the Northern Savannah Ecological Zone (2015-2035): Volume II Vision and Spatial Development Strategy
- Laube, W., and Giesen, N. V. (2005). Ghanaian water reforms: Institutional and hydrological perspectives In J S Wallace et.al (eds), *Hydrological information in water law and policy:current practice and future potential*, Kluwer.
- Lazenbatt, A. (2010). The impact of abuse and neglect on the health and mental health of children and young people Retrieved June 15, 2014, from <http://www.nspcc.org.uk/Inform/research/briefings/impactofabuseonhealthpdfwdf73369.pdf>

- Le Billon, P. (2001). "The Political Ecology of War: Natural Resources and Armed Conflicts," *Political Geography*, 20, pp. 561–584.
- Le Billon, P. (2008). "Diamond Wars? Conflict Diamonds and Geographies of Resource Wars," *Annals of the Association of American Geographers*, 98 (2), pp. 345–372.
- Lefore, N. R. (2012). *The Politics of Land (and) Violence in Ghana* Virginia: University of Virginia.
- Lise, N. R. and Ruth, M. (1995). Local Organizations for Natural Resource Management: Lessons From Theoretical and Empirical, Eptd Discussion Paper No 11.
- Marchetta, Francesca (2011). "On the Move: Livelihood Strategies in Northern Ghana", CERDI, Etudes et Documents, E 2011.13.
- McKinley, Terry (2010) "[Pro-Employment Macroeconomic Policies](#)"
- McPherson, M. (1996). "Growth of Micro and Small Enterprises in Southern Africa", *Journal of Development Economics*, Vol. 48, pp. 253–277.
- McSweeney, C., New, M., and Lizcano, G. (2012). UNDP Climate Change Country Profiles—Ghana Retrieved from http://www.geog.ox.ac.uk/research/climate/projects/undpcp/UNDP_reports/Ghana/Ghana_lores.report.pdf (accessed on 10.5.2013)
- Mersky, J. P., and Topitzes, J. (2010). Comparing early adult outcomes of maltreated and non-maltreated children: A prospective longitudinal investigation *Children and Youth Services Review*, 32, 1086–1096.
- Millar, D. (2013). "Concept paper on commercialization of groundnut production for cash/export and foreign exchange for the three Northern Regions, northern Brong Ahafo and northern Volta regions"
- Millar, D. (2012) "Grass for Carbon" opinion <https://www.ileia.org/2012/12/23/opinion-grass-carbon/>
- Ministry of Energy (2010). Energy Sector Strategy and Development Plan, Republic of Ghana: Accra.
- Ministry of Education (2010). *Report on Basic Statistics and Planning Parameters for Technical and Vocational Education in Ghana 2009/2010* EMIS.
- Ministry of Education (2016). Ghana 2016 National Education Assessment: Report of Findings USAID http://pdf.usaid.gov/pdf_docs/PA00MHMR.pdf
- Ministry of Education (2014). Ghana 2013 National Education Assessment Technical Report, Accra.
- Ministry of Finance and Economic Planning, Budget Statements (2011, 2012, 2013, 2014), Accra. Accessed at www.mofep.gov.gh
- Ministry of Food and Agriculture (2007). Food and agriculture Sector Development Policy, MoFA, Accra.
- Ministry of Food and Agriculture (MoFA) (Bawku West) (2005). Bawku West District Assembly District Agricultural Development: Unit District Profile MoFA Bawku West, Zebilla.
- Ministry of Food and Agriculture (MoFA) (2006). Regional Agricultural Review; MoFA, Bolgatanga.
- Ministry of Health (2014). *Holistic Assessment of the Health Sector Programme of Work, 2013*. Accra: Government of Ghana.
- Ministry of Local Government and Rural Development (1996). *The new local government System* Accra: Ghana.
- Ministry of Youth and Sports (2010). *National Youth Policy of Ghana: Towards an Empowered Youth, Impacting Positively on National Development*.

- Miranda, Ana Carla and Mario Gyori and Fábio Veras Soares (2017) “Phase II of the PAA Africa programme: results and lessons learned” http://www.ipc-undp.org/pub/eng/OP343_Phase_II_of_the_PAA_Africa_programme.pdf
- Miranda, Mario and Francis Mulangu, Francis H. Kemeze, Shashi L. Kolavalli (2018) “Does warehouse receipt financing benefit Ghanaian smallholders?” <http://www.ifpri.org/publication/does-warehouse-receipt-financing-benefit-ghanaian-smallholders>
- Morgan, M. G. and Henrion, M. (1990). *Uncertainty: A Guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis*, Cambridge University Press, p.332.
- Nabi, I. (1984). Village-end Considerations in Rural-urban Migration, *Journal of Development Economics* 14: 129–45.
- Nair, P. M. (2010). *Human Trafficking: Dimensions, Challenges and Responses*, Konark Publishers Pvt Ltd: New Delhi, pp. 1–20.
- Narayan-Parker, D. (2002). *Empowerment and Poverty Reduction: A Sourcebook*, World Bank Publications.
- National Development Planning Commission (2005). Poverty and Social Impact Analysis of Transformation of Agriculture, NDPC: Accra.
- National Peace Council (2014, November 20). *Conflict map of Ghana* Retrieved November 20, 2014, from <http://ghanaconflictmap.explainerdcghana.com>
- NDPC (2005). *Growth and Poverty Reduction Strategy (GPRS II), (2006–2009), Vol. I, Policy Framework*, National Development Planning Commission (NDPC): Accra.
- Newman, B. (2010). Critical Human Security Studies, *Review of International Studies* , 36, 77–94.
- Northern Rural Growth Project (2012). Baseline Data, Tamale.
- O Siochrú, S. and B. Girard. (2005). *Community-Based Networks and Innovative Technologies: New models to service and empower the poor*. New York: UNDP
- Oakerson, R. (1985). A Model for the Analysis of Common Property Problems, National Research Council, USA Paper for Common Property Steering Committee.
- Obeng, H., (2000) ‘Soil Classification in Ghana’ Center for Economic Policy Analysis, Selected Economic Issues, No. 3 , <http://www.cepa.org.gh/publications/Issues%20Paper%20Series%20385.pdf>
- ODI and CEPA (2005). *Economic Growth in Northern Ghana*, Revised Report for DFID Ghana, ODI and CEPA: Accra.
- Odotei, K. I. and Awedoba, A. K. (2006). *Chieftaincy in Ghana : Culture, Governance and Development* Accra: Sub Saharan Publishers.
- Oduro, A. D. (2001). “A Note on Public Expenditure and Poverty Reduction”, In Ernest Aryeetey and Ravi Kanbur, (eds), *Macroeconomic Stability, Growth and Poverty Reduction in Ghana*, Woeli Publishing Services: Accra.
- OECD (2009). Glossary of Environment Statistics, Studies in Methods, Series F, No 67, United Nations, New York.
- Oelbaum, Jay (2010). “Spatial poverty traps and ethnic conflict traps: Lessons from Northern Ghana’s ‘Blood Yams’”, ODI Working Paper 324/CPRC Working Paper 164.
- Ofosu-Addo, D., Jianmei, C., and Dong, S. (2008). Groundwater development and evaluation of the White Volta basin (Ghana) using numerical simulation, *Journal Amount Science*, 4(4): 1545–1003.

- O'Neil, P. (2004). *Essentials of Comparative Politics*, New York London: Norton and Company, Inc, p.147.
- O'Neill, T., Foresti, M., and Hudson, A. (2007). *Evaluation of Citizens' Voice and Accountability: Review of the Literature and Donor Approaches*, London: DFID.
- Onuoha, B. (2011). The state of Human Trafficking and Human Rights issues in Africa, *Contemporary Justice Review*, Vol. 14, No. 2.
- IPC-IG (2013) "Structured Demand and Smallholder Farmers in Brazil: the Case of PAA and PNAE" <http://www.ipc-undp.org/pub/IPCTechnicalPaper7.pdf>
- Osei-Asare, Y. (2004). *Household Water Security and Water Demand in the Volta Basin of Ghana*, Doctoral thesis, University of Bonn.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge, UK: Cambridge University Press.
- Owusu, A. B. (2012). Farmers Coping with the Threat of Desertification: A Case Study of the Upper East Region, Ghana, *Wudpecker Journal of Agricultural Research* Vol. 1(8), pp. 317–330.
- Owusu, A. B., Cervone, G., and Beach S. L. (2013). Analysis of Desertification in the Upper East Region (UER) of Ghana Using Remote Sensing, Field Study, and Local Knowledge, *Cartographica* 48: 1, 2013, pp. 22–37.
- Owusu, K., and Waylen, P. (2009). Trends in Spatio-Temporal Variability in Annual Rainfall in Ghana (1951–2000) *Weather*, 64(5): 115–120.
- Owusu, K., Waylen, P., and Qiu, Y. (2008). Changing rainfall inputs in the Volta basin: implications for water sharing in Ghana, *GeoJournal*, 7, 201–210.
- Parliament of Ghana (1971). *Chieftaincy Act, Act 370*, Accra: Government Printer, Assembly Press.
- Parliament of Ghana (1993). *Local Government Act, Act 462*, Accra: Government Printer, Assembly Press.
- Parliament of Ghana (1995). *Ghana Education Service Act, Act 505*, Accra: Government Printer, Assembly Press.
- Parliament of Ghana (1996). *Ghana Health Services Act, Act 525*, Accra: Government Printer, Assembly Press.
- Parliament of Ghana (2008). *Chieftaincy Act, Act 759*, Accra: Government Printer, Assembly Press.
- Parliament of Ghana (2010). *Savannah Accelerated Development Authority Act, Act 805*, Accra: Ghana.
- Pereda, N., Guilera, G., Forns, M., and Gómez-Benito, J. (2009). The Prevalence of Child Sexual Abuse in Community and Student Samples: A meta-analysis, *Clinical Psychology Review* 29(4), 328–38.
- Peters, J., Shackelford, T. K., and Buss, D. M. (2002). Understanding Domestic Violence Against Women: Using Evolutionary Psychology to Extend the Feminist Functional Analysis, *Violence and Victims*, 17(2), 255–264.
- Petit, M. and JC Debar (2014) "Small vs Large farms: an old debate which remains open today" Foundation for World Agriculture and Rurality (FARM) <http://www.fondation-farm.org/spip.php?%20article931&lang=fr>
- Pickbourn, Lynda Joyce (2011). "Migration, Remittances and Intra-Household Allocation In Northern Ghana: Does Gender Matter? Dissertation (unpublished?)

- Plange, Nii-K. (1976). *Colonialism and Underdevelopment in Northern Ghana: The Political Sociology of the Colonial Situation 1900–1950*, PhD Dissertation, University of Toronto.
- PNDC Law 207 of 1988, Government Printer, Assembly Press: Accra.
- Price-Robertson, R. (2012). Child Sexual Abuse, Masculinity and Fatherhood, *Journal of Family Studies*, 18(2–3), 130–142.
- Princeton, N. J., Collier, Paul (2003). “Natural Resources, Development and Conflict: Channels of causation and Policy Interventions,” World Bank.
- Qurtey, P. (2006). *The Impact of Migrant Remittances on Household Welfare in Ghana*. Final Report submitted to the African Economic Research Consortium (AERC), Nairobi, Kenya
- Quartey, P. (2003). Financing Small and Medium Enterprises (SMEs) in Ghana”, *International Business Press*, Binghamton, 4: 37–55.
- Quaye, W. (2008). Food Security Situation in Northern Ghana, Coping Strategies and Related Constraints, *African Journal of Agricultural Research* 3(5), 334–342.
- Quiñones Esteban J and DiaoXinshen (2011). Assessing Crop Production and Input Use Patterns in Ghana—What can we learn from the Ghana Living Standards Survey (GLSS5)? Ghana strategy support Programme, Working Paper no 24, Development, Strategy, and Governance Division, IFPRI.
- Quist, L. G., Bannerman, R. R., and Owusu, S. (1988). Groundwater in rural water supply in Ghana In: *Ground Water in Rural Water Supply*, Report of the West African Sub-Regional Workshop held in Accra, Ghana, 20–24 October 1986, UNESCO Technical Documents in Hydrology, Paris, pp. 101–126.
- Rashid, F. (2008). Natural Resources: Definition and Classification Available at: <http://rashidfaridi.com/2008/02/26/natural-resources-definition-and-classification>.
- Ratha, Dilip (2003). “Workers’ Remittances: An Important and Stable Source of External Development Finance.” Global Development Finance 2003 World Bank, Washington, DC.
- Ravikumar, P., Venkatesharaju K., and Somashekar, R. K. (2009). Majorion Chemistry and Hydrochemical Studies of Groundwater of Bangalore South Taluk, India, *Environmental Monitoring Assessment*, DOI: 10.1007/s10661-009-0865-1.
- Reale, D. (2008). *Away from Home: Protecting and Supporting Children on the move*, London: Save the Children.
- Reardon, T., C. Delgado, and P. Matlon (1992). Determinants and Effects of Income Diversification Amongst Farm Households in Burkina Faso, *Journal of Development Studies* 28(2): 264–296.
- Regional Coordinating Unit, Upper East Region (2003). Overview Bolgatanga: RCD Bolgatanga.
- Rennison, C. M., and Welchans, S. (2000). *Intimate Partner Violence*, Washington, DC: U.S Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
- Report of The Multi-Stakeholder Consultation (hosted by the Pan African Parliament and supported by the UN Millennium Campaign, UNDP and African civil society networks), 2013. *Structural Transformation in the African Context: Reflections on the Priorities for the Post-2015 Development Agenda*, (Midrand, South Africa), http://unctad.org/meetings/en/Contribution/PS2013_c01_en.pdf
- Richter L, Higson-Smith C. (2004). The many kinds of sexual abuse of young children In L Richter, A Dawes & C Higson-Smith (pp. 21–35). *Sexual abuse of young children in Southern Africa* HSRC Press: Cape Town.

- Rosen, S., and Vincent, J. R. (1999). *Household Water Resources and Rural Productivity in Sub-Saharan Africa: A Review of the Evidence*, Development discussion paper No. 673, Harvard Institute for International Development, Harvard University.
- Rosenberg, J. P., and Yates, P. M. (2007). Schematic representation of case study research designs *Journal of Advanced Nursing*, 60(4): 447–452.
- Ross, M. L. (2004). What do we know about Natural Resources and Civil War? *Journal of Peace Economics*, 41: 337–356.
- Ross, M. L. (2003a). Nigerias Oil Sector and the Poor, Paper prepared for UK Department for International Development, Nigeria Drivers for Change.
- Ross, M. L. (1999). The Political Economy of the Resource Curse, *World Politics* 51: 297–322.
- Rothstein, B. (2011). *The Quality of Government: Corruption, Social Trust and Inequality in a Comparative Perspective* Chicago: University of Chicago.
- Ryan, G. (1997). Sexually abusive youth: Defining the population, In G. Ryan and S. Lane, *Juvenile Sexual Offending* (pp. 3–9) San Francisco: Jossey-Bass.
- Sachs, J. and Warner, A. (2001). “The curse of natural resources”, *European Economic Review* 45(4–6): 827–838. Doi:10.1016/S0014-2921(01)00125-8.
- Sachs, Jeffrey (2012). Tackling Extreme Rural Poverty in Northern Ghana Source: http://www.huffingtonpost.com/jeffrey-sachs/tackling-extreme-rural-po_b_1835615.html(Posted: 08/28/2012) Accessed on 4th august, 2014.
- SADA (2016a) Northern Savannah Ecological Zone Concept Master Plan Report
- SADA (2016b) “Toward Inclusive Agriculture led Economic Transformation of the Northern Savannah Zone of Ghana: Lifting the Savannah”
- SADA (2016c) Commercial Agriculture Investment Guide: The Northern Savannah Ecological Zone of Ghana
- SADA (2015) “What is SADA doing in the Renewable Energy Sector?”
- SADA (2010). *SADA Strategy and Work Plan (2010-2030) Main Document*, (Savannah Accelerated Development Authority SADA), Accra.
- Sanneh, Lamin (1997). *The Crown and the Turban: Muslims and West African Pluralism*, Boulder and Oxford: Westview.
- Sarbah, C. J. E. (2010). A Critical Study of Christian-Muslim Relations in the Central Region of Ghana with Special Reference to Traditional Akan Values, University of Birmingham, PhD thesis.
- Savannah Accelerated Development Authority (2014). *About SADA* Retrieved July 15, 2014, from sada-ghana.org: <http://sada-ghana.org/about-sada>
- Sen, A (2004) *5th Report on the World Nutrition Situation: Nutrition for Improved Development Outcomes* United Nations System.
- SEND-Ghana (2006). “Where did Ghana HIPC Funds Go? Assessing HIPC Expenditures on Poverty Alleviation 2002–2004”.
- Shepherd, A. and Gyimah-Boadi, E. (2004). *Bridging the North-South Divide in Ghana*, Background Paper for the WDR 2006 on Equity and Development.
- Shepherd, A., C. Jebuni, R. Al-Hassan, A. McKay, C. Poulton, A. Whitehead and J. Kydd (2005). “Economic Growth in Northern Ghana”, Report prepared for DFID Ghana, Overseas

- Development Institute and Centre for Policy Analysis, London/Accra, October 2005, World Bank (1992) "Ghana 2000 and Beyond", Washington DC.
- Singh, A. (1984). *Tropical Forest Monitoring Using Landsat Data in Northeastern India*, Ph.D Thesis, University of Reading, Reading, England.
- Smith, K. (1996). *Environmental Hazards*, Routedledge, London, p.389.
- Songsore, J. (2001). The Decline of Rural Commons in Sub-Saharan Africa: The Case of Upper West Region of Ghana In A Saaka, *Regionalism and Public Policy in Northern Ghana Society and Politics in Africa*, Vol. 10.
- Songsore, J. and Denkabe, A. (1995). *Challenging Rural Poverty in Northern Ghana: The Case of the Upper-West Region*, (CED, University of Trondheim, Report No.6/95, Trondheim).
- Songsore, J. (2011). *Regional Development in Ghana: The Theory and Reality*, Woeli Publishing Services, Accra.
- Songsore, J. (1979). *Structural Crisis, Dependent Capitalist Development and Regional Inequality in Ghana*, (ISS Occasional Papers, No 71, July 1979, The Hague).
- Songsore, J. (1992). "The ERP/Structural Adjustment Programme: Their Likely Impact on the 'Distant' Rural Poor in Northern Ghana", In: Ernest Aryeetey (ed), *Planning African Growth and Development: Some Current Issues*, ISSER/UNDP: Accra.
- Songsore, J. (2006). "Poverty, Wealth Creation and Distribution: The Ghanaian Experience", paper prepared for GAAS/FES Public Forum on the Theme: *Addressing Poverty in National Development*, Accra June 12–14.
- Songsore, J. (2011b). *Special Development Zones in Support of Ghana's Shared Growth and Development Agenda*, Concept Note Prepared for the NDPC: Accra.
- Songsore, J., Denkabe, A., Jebuni, C. D., and Ayidia, S. (2001). "Challenges of Education in Northern Ghana: A Case for Northern Ghana Education Trust Fund (NETFUND)", In: Yakubu Saaka, (ed), *Regionalism and Public Policy in Northern Ghana*, Peter Lang Publishing Inc.: New York.
- Staatz John (1998). What is Agricultural Transformation? Workshops on Structural Transformation in Africa, Michigan University
- Stein, H. (2003). "Rethinking African Development", in Ha-Joon Chang (ed), *Rethinking Development Economics*, Anthem Press: London.
- Stenchion, P. (1997). Development and disaster management, *Australian Journal of Emergency Management*, 12(3), 40–44.
- Sulemana, M., I. Ngah, and M. Rafee Majid (2013). "The Challenges and Prospects of the School Feeding Programme in Northern Ghana", *Development in Practice*, 23(3): 422–432.
- Sustainable Development Knowledge Platform (2015). "Sustainable Development Goals". Available at <https://sustainabledevelopment.un.org/sdgs>
- Tang, S. Y. (1991). Institutional arrangements and the management of common-pool resources, *Public Administration Review* 51 (1): 42–51.
- Thakur, R., and Newman, E. (2004). Introduction: Non-Traditional Security in Asia, In: R Thakur, E Newman, & eds (Ed.), *Broadening Asia's Security Discourse and Agenda: Political, Social, and Environmental Perspectives* (pp. 1–15) Tokyo: UN University Press.
- The Natural Resources Commission of Wales, Resilient landscapes and communities managing natural Resources in new south wales

- Thomas, R. G. (1973). "Forced Labour in British West Africa: The Case of the Northern Territories of the Gold Coast 1906–1927", *Journal of African History*, X IV, No. 1, pp. 79–103.
- Tıraş, U., Dilli, D., Dallar, Y. & Oral, R. (2009). Evaluation and follow-up of cases diagnosed as child abuse and neglect at a tertiary hospital in Turkey *Turkish Journal of Medical Sciences*, 39(6): 969–977.
- Torring, J. (2012). *Interactive Governance: Advancing the Paradigm*, Oxford: Oxford University Press.
- Tornell, A., and Philip, L. (1999). "The Voracity Effect", *American Economic Review* 89: 22–46.
- Truong, T. (2006). *Poverty, gender and human trafficking in Sub-Saharan Africa: Rethinking best practices in migration management* Paris: UNESCO Project to Fight Human Trafficking in Africa.
- Tsegai, D. (2007). "Migration as a household decision: What are the roles of income differences? Insights from the Volta Basin of Ghana". In *European Journal of Development Research, Volume 19, No. 2*.
- Tsey, Christian E. (1986). "Gold Coast Railways: The Making of a Colonial Economy, 1879–1929". PhD Thesis <http://theses.gla.ac.uk/2799/>
- Tsikata, D. and Seini, W. (2004). *Identities, Inequalities and Conflicts in Ghana*. University of Oxford, UK
- Tutu, K. (1995). Determinants of internal migration, In: Twum-Baah, K., J. Nabila, and A. Aryee (eds) *Migration Research Study in Ghana*, Vol. 1, Accra: Ghana Statistical Services.
- Twumasi-Ankrah, K. (1995). Rural-urban migration and socioeconomic development in Ghana: Some discussions *Journal of Social Development in Africa* 10 (2): 13–22.
- Ubink, J. M., and Amanor, K. S. (2008). *Contesting Land and Custom in Ghana: State, Chief and the Citizen*, Leiden: Leiden University Press.
- UN (2000). Protocol to prevent, suppress, and punish trafficking in persons, especially women and children: Supplementing the United Nations convention against transnational organized crime Retrieved February 15, 2009, from http://www.uncji.org/documents/...2/Convention_%20traff_eng.pdf .
- UN (2002). *Economic Development in Africa: From Adjustment to Poverty Reduction: What is New?* United Nations (UN): New York and Geneva.
- UN Environment Programme, Environmental Law Institute & IUCN (2009). *Managing Natural Resources in Post-Conflict Societies: Lessons in Making the Transition to Peace Meeting Report: 17–18 September, 2007* Geneva.
- UNDHA (1992). *Internationally Agreed Glossary of Basic Terms Related to Disaster Management*, United Nations Department of Humanitarian Affairs, Geneva.
- UNDP (2015) "NAMA Study for a Sustainable Charcoal Value Chain in Ghana" <http://www.undp.org/content/undp/en/home/librarypage/environment-energy/mdg-carbon/NAMAs/nama-study-for-a-sustainable-charcoal-value-chain-in-ghana.html>
- UNDP (2014). *Western Region Human Development Report, 2013*, Accra, Ghana.
- UNDP (2014). *Human Development Report 2014*, New York.
- UNDP (2013). *Human Development Report 2013: The Rise of the South: Human Progress in a Diverse World*, New York: United Nations Development Programme.
- UNDP (2012b). *African Human Development Report 2012, Towards a Food Secure Future*, New York.

- UNDP (2012a). *2010 Ghana Millennium Development Goals Report*, Accra, Ghana.
- UNDP (2011). *East Mamprusi Human Development Report 2011*, Ghana.
- UNDP (2007). *Ghana Human Development Report 2007*, Accra, Ghana.
- UNDP (2004/5). *Ghana Human Development Report 2004/5*, Accra, Ghana.
- UNDP (2004) *UNDP Human Development Report 2012*, New York.
- UNDP (2000). *Human Development Report: Human Rights and Human Development: Summary—2000*, New York: Oxford University Press.
- UNDP (2000). *Human Development Report 2000: Human Rights and Human Development*, New York: Oxford University Press.
- UNDP (2000). *Ghana Human Development Report 2000*, Accra, Ghana.
- UNDP (1998). *Ghana Human Development Report 1998*, Accra, Ghana.
- UNDP (1997). *Ghana Human Development Report 1997*, Accra, Ghana.
- UNDP (1996). *Human Development Report*, New York.
- UNDP (1994). *Human Development Report 1994*, New York: Oxford University Press.
- UNDP (1990). *Human Development Report*, New York.
- UNDP Evaluation Office (2006) *The Brazilian system of human development products*
- UNDP India (2010) *Human Development in India: Analysis to Action*;
- UNDP India *Human Development – Towards Bridging Inequalities*
- United Nations Economic Commission for Africa (2013) *African Economic Outlook 2013*.
- UNECE (2010). *Developing Gender Statistics: A Practical Tool* UNECE and World Bank Institute.
- UNICEF (2005). *The state of the world's children 2005: Childhood under threat* New York: UNICEF.
- UNICEF (2006). *Behind closed doors: The Impact of domestic violence on children* Retrieved November 11, 2013, from <http://www.unicef.org/protection/files/BehindClosedDoors.pdf>
- UNICEF (2006). *The state of the world's children 2006: Excluded and invisible* New York: UNICEF.
- Uphoff, N. (1986). *Local Institutional Development: An Analytical Sourcebook with Cases*, West Hartford, CT: Kumarian Press.
- Urdal, H. (2008). "Population, Resources, and Political Violence," *Journal of Conflict Resolution*, 52(4), pp. 590–617.
- USAID-EAT (2012) "The Market for Maize, Rice, Soy, and Warehousing in Northern Ghana"
- US Environmental Protection Agency (EPA): www.epa.gov.
- Veron, Rene (2001). "The 'New' Kerala Model: Lessons for Sustainable Development", *World Development*, Vol. 29, No. 4, pp. 601–617.
- Vivian, F. and Nataliya, P. (2011). *Ghana's Infrastructure: A continental perspective*
- Watkins, Kevin and Woubedle Alemayehu (2012) "Financing for a Fairer, More Prosperous Kenya: a Review of the Public Spending Challenges and Options for Selected Arid and Semi-Arid Counties" Center for Universal Education at BROOKINGS. <https://www.brookings.edu/research/financing-for-a-fairer-more-prosperous-kenya-a-review-of-the-public-spending-challenges-and-options-for-selected-arid-and-semi-arid-counties/>

- Weinthal, E and Luong, P. J. (2006). "Combating the Resource Curse: An Alternative Solution to Managing Mineral Wealth," *Perspectives on Politics*, 4(1), pp. 35–53.
- Welsing, Kobina (February 3, 2017) "[Chaos in Tamale as NPP boys attack gov't agencies](#)"
- Wijers, M., and Lap-Chew, L. (1997). *Trafficking in Women, Forced Labor and Slavery-like Practices in Marriage, Domestic Labor and Prostitution*, Utrecht: Foundation Against Trafficking.
- Wikipedia, the free encyclopedia.
- World Bank (2017) "Implementation Completion and Results Report (Tf-13140) on a Global Partnership for Education Fund Grant in the Amount of US \$75.5 Million to the Republic of Ghana for a Ghana Partnership for Education Grant Project. February 28, 2017 <http://documents.worldbank.org/curated/en/781501489074241771/pdf/ICR-Main-Document-P129381-2017-02-27-19-23-002-03062017.pdf>
- World Bank (2013). "Does Urbanization Affect Rural Poverty? Evidence from Indian Districts" Policy Research Working Papers Available at <http://elibrary.worldbank.org/doi/book/10.1596/1813-9450-6338>
- World Bank (2011). *Republic of Ghana: Tackling Poverty in Northern Ghana* (Report No.53991-GH).
- World Bank (2000). Natural Resources Management Discussion Paper World Bank, Washington DC.
- World Bank Institute (2007). "Governance matters 2008: Worldwide Governance Indicators, 1996-www.govindicators.org.
- World Food Programme (2014) "Improving links between smallholder farmers and school feeding programmes" <https://www.wfp.org/purchase-progress/news/blog/p4p-improves-links-between-small-scale-farmers-and-school-feeding-progra>
- World Food Programme (2012). *Comprehensive Food Security & Vulnerability Analysis, Ghana 2012: Focus on Northern Ghana* (Rome).
- World Health Organization (1999). Geneva,
- World Health Organization (2005). *Multi-country Study on Women's Health and Domestic Violence*, Geneva: World Health Organization.
- World Health Organization (2006). *Preventing child maltreatment: A guide to taking action and generating evidence*, Geneva: WHO.
- World Health Organisation (2011)
- World Health Organization (2012). *World Health Statistics: A Snapshot of Global Health*, Geneva: World Health Organization.
- World Trade Organization (2010). World Trade Report.
- Yankson, P. K. (2000). *Decentralisation and Tradition in Ghana: A Decade of Decentralisation in Ghana: Retrospect and Prospects* (pp. 157–180), Accra: EPAD Research Project/Ministry of Local Government and Rural Development.
- Yaro, J. A. (2010) Economics of Adaptation to Climate Change (Social Component) National Synthesis Report for Ghana Retrieved from <http://climatechange.worldbank.org/sites/default/files/documents/EACCSynthesisReport.pdf> (accessed on 5.16.2013).
- Yifan, D. (2003). Impacts of Affluence and overexploitation of natural Resources Environment and Development Volume 1, pp. 1–30. www.eolss.net/Sample-Chapters/C13/E4-25-04-03.pdf

Appendix 1: Human Development Related Indices

A1.1 The Human Development related indices and their estimation

Modifications were introduced in 2010,¹³⁶ and in 2014.¹³⁷ Currently, four indicators are used to capture the three dimensions: life expectancy at birth (long and healthy life); mean years of schooling of population of ages 25 and over (knowledge), expected years of schooling for children (knowledge); and Gross National Income (GNI) per capita adjusted by purchasing power parity (PPP) (standard of living). The knowledge dimension uses two indicators, while the others use just one. As a summary measure of (average) human development, the HDI, which is typically calculated at the national level, can mask disparities and inequalities within regions and across groups within countries. Thus, increasingly, disaggregation of the HDI are also being undertaken in terms of regions, gender, race/ethnicity to unmask such disparities. The UNDP/HDRO (2015) paper recognizes that the HDI indicators (particularly GNI per capita and life expectancy at birth) are not available sub-nationally and that countries (or regions) may go on to assess context-specific aspects of human development and adapt by using an alternative set of indicators. E.g., the life expectancy category could use other health indicators such as the daily caloric intake as a percentage of recommended intake, access to health services, under-five mortality rates or maternal mortality rates. The standard of living component could be adjusted to reflect unemployment, the incidence of income poverty or wealth, and the knowledge component could be adapted to include indicators of the quality of education or skills. Several National *HDRs* (*NHDRs*) have in fact extended and adapted the global HDI to include country-specific indicators. Others have assessed broader aspects of well-being at the national level, creating their own *indices*.¹³⁸ A country may assign a greater weight to education or health. Moreover, minimum and maximum values can be altered to better reflect national data and priorities.

¹³⁶The UNDP/HDRO (2015) notes the changes introduced in 2010: Knowledge was previously measured by a combination of the adult literacy rate and school enrolment rates (for primary through university years), now the expected years of schooling—the years of schooling that a child can expect to receive given the current enrolment rates—is combined with the mean years of schooling for adults aged 25 and older. Now equal weights are assigned to both indicators (one-half), as compared to the previous HDI, which weighted the previous educational sub-indices differently, with adult literacy weighing one-third and enrolment two-thirds. As regards the decent standard of living dimension, it was formerly measured by GDP per capita adjusted for PPP US\$ and now Gross National Income (GNI) per capita adjusted for PPP is used. Further, the 2010 HDI used the geometric mean of the three dimension indices.

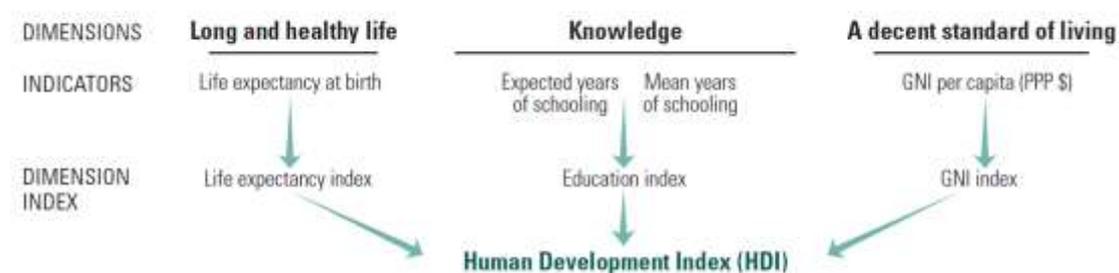
¹³⁷ The 2014 HDR did not introduce changes to indicators or changes to the aggregation method to the HDI. It did however introduce one important modification. Changes to minimum and maximum values are now fixed rather than set at the observed values as follows: (i) Life expectancy: the minimum value is still set at 20 years. The maximum value is now fixed at 85 years; (ii) The minimum value for both education variables are still set at 0. The maximum values for mean years and expected years of schooling are currently fixed at 15 and 18 years, respectively. (iii) GNI per capita (2011 PPP): the minimum value stayed at \$100; this low value is justified by the considerable amount of unmeasured subsistence and nonmarket production in economies close to the minimum. The maximum value is capped at \$75,000 since there is virtually no gain in human development and well-being from annual income beyond that amount. The arithmetic (instead of the geometric) mean is used to calculate the education index from the mean years of schooling and expected years of schooling indices.

¹³⁸ See UNDP (March 2015) Training Material for Producing National Human Development Reports. Human Development Report Office Occasional Paper.

The Human Development Index (HDI)

This is a composite index which draws on achievements in three aspects of human development: health, education and living standards. Since 1990 the HDI has had three dimensions: a long and healthy life, knowledge, and a decent standard of living.

FIGURE A1.1 HDI DIMENSIONS AND INDICATORS



Source: UNDP (2016) [see Technical Notes p.1]

There are two main steps involved in computing the HDI. The first step is to create the separate indices for each of the three dimensions. These dimension indices (one for long and healthy life, one for knowledge and one for decent standard of living) are then used to calculate the HDI. In each of the three dimension indices, the zone's achievements are normalized to a score between 0 and 1 using minimum and maximum values.

The second step involves taking the geometric mean of the normalized indices which measured achievements in each dimension to compute the overall HDI. The minimum value is set at 20 years for life expectancy, at zero years for both education variables and at \$100 for per capita GNI. The life expectancy minimum is based on long-run historical evidence from Maddison (2010) and Riley (2005). Societies can subsist without formal education, justifying the education minimum. A basic level of income is necessary to ensure survival: \$100 is the lowest value attained by any country in recorded history (UNDP, 2015).

Inequality-adjusted Human Development Index (IHDI)

Starting in 2010, the *Inequality-adjusted Human Development Index (IHDI)*, was put forward to take inequality into account in the measurement of the HDI. The difference between the IHDI and HDI is the human development cost of inequality, also termed – the loss to human development due to inequality.¹³⁹ In addition, supplementary indices such as **Gender-related Development Index (GDI)**, **Gender-equality Index (GEI)**, **Human Poverty Index (HPI)**, **Multi-dimensional Poverty Index (MPI)**, etc., have been introduced to measure empowerment and deprivations.

¹³⁹ The IHDI combines a country's average achievements in health, education and income with how those achievements are distributed among country's population by "discounting" each dimension's average value according to its level of inequality. Under perfect equality the IHDI is equal to the HDI, but falls below the HDI when inequality rises.

The Global 2016 Human Development Report puts forward two dashboards for consideration.

FIGURE A1.2 DASHBOARD 1: LIFE-COURSE GENDER GAP INDICATORS

Childhood and youth					Adulthood				Older age				
Gross enrolment ratio, female					Youth unemployment rate	Maternal mortality ratio	Population with at least some secondary education	Total unemployment rate	Share of paid employment in non-agriculture, female	Female legislators, senior officials and managers	Share of seats in parliament	Life expectancy at age 50, female	Old-age pension recipients
Sex ratio at birth ^a	Adolescent birth rate	Pre-primary	Primary	Secondary									
(male to female births)	(births per 1,000 women ages 15–19)	(% of preschool-age female population)	(% of primary school-age female population)	(% of secondary school-age female population)	(female to male ratio)	(deaths per 100,000 live births)	(female to male ratio)	(female to male ratio)	(% of total paid employment in non-agriculture)	(% of total)	(% held by women)	(years)	(female to male ratio)

Source: UNDP (2016)

The indicators refer to health, education, labour market and work, leadership, seats in parliament and social protection. Some indicators are presented only for women, and others are presented as a ratio of female to male values. Countries with values of a parity index concentrated around 1 form the group with the best achievements in that indicator. Deviations from parity are treated equally regardless of which gender is overachieving. The intention is not to suggest thresholds or target values for these indicators.

Dashboard 2 - Sustainable development: this contains a selection of indicators that cover environmental, economic and social sustainable development. A mix of level and change indicators is related to renewable energy consumption, carbon-dioxide emissions, forest areas and fresh water withdrawals. Economic sustainability indicators look at natural resource depletion, national savings, external debt stock, government spending on research and development, and diversity of economy. Social sustainability is captured by changes in income and gender inequality and by the old-age dependency ratio.

FIGURE A1.3 DASHBOARD 2: SUSTAINABLE DEVELOPMENT INDICATORS

Environmental sustainability				Economic sustainability				Social sustainability					
Renewable energy consumption	Carbon dioxide emissions	Forest area		Fresh water withdrawals	Natural resource depletion	Adjusted net savings	External debt stock	Research and development expenditure	Concentration index (exports)	Income quintile ratio	Gender Inequality Index	Population in multi-dimensional poverty	Old-age (ages 65 and older) dependency ratio
(% of total final energy consumption)	Per capita (tonnes)	Average annual change (%)	(% of total land area) ^a	Change (%)	(% of total renewable water resources)	(% of GNI)	(% of GNI)	(% of GDP)	(value)	Average annual change (%)	Average annual change (%)	Average annual change (%)	(per 100 people ages 15–64)

Source: UNDP (2016)

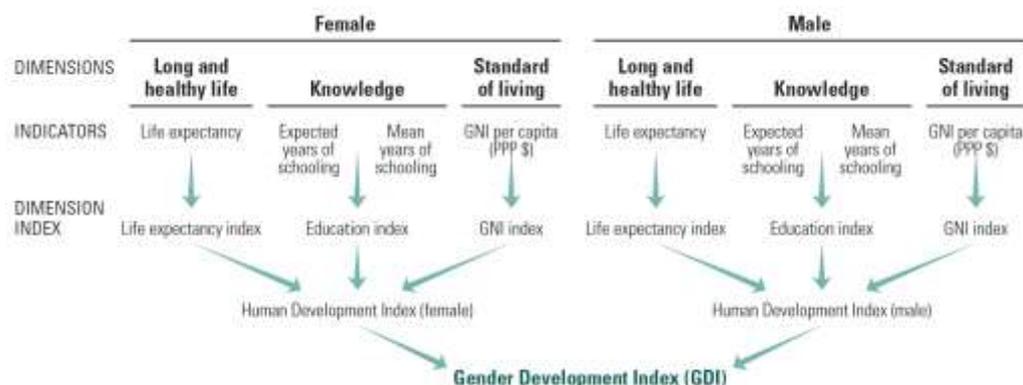
Three-colour codes are used to visualize a partial grouping of countries by indicator. For each indicator, countries are divided into terciles - top third, the middle third and the bottom third.

Gender-related Development Index (GDI)

The GDI was first presented in the Human Development Report in 1995. The primary aim was to include gender-sensitive dimensions to the HDI and address issues of gender inequality. Women face a higher probability of low human development relative to men mainly because of limited opportunities available to them. Marginalization of women is evident in areas such as income distribution, labour force participation, health care, and education. Women are daily exposed to the dangers and risks associated with the state of reproductive health with many women dying from often preventable pregnancy related risks.

GDI has three dimensions: a long and healthy life, knowledge, and a decent standard of living. Currently, four indicators are used to capture the three dimensions of the GDI namely: life expectancy at birth (long and healthy life); mean years of schooling of population of ages 25 and over (knowledge), expected years of schooling for children (knowledge); and Gross National Income (GNI) per capita adjusted by purchasing power parity (PPP) (standard of living). The knowledge dimension uses two indicators for each sex, while the others use just one (Figure 2.9).

FIGURE A1.4 GDI DIMENSIONS AND INDICATORS



Source: UNDP (2016) [see Technical Notes p.1]

A1.2 Construction of the Multidimensional Poverty Index

In 2010, the MPI was developed by Oxford Poverty and Human Development in conjunction with the UNDP. The purpose for this index was to use varied factors to determine poverty beyond income. The MPI has had three dimensions: a long and healthy life, education, and a decent standard of living. Since its development until today, 10 indicators have been used to capture the three dimensions: nutrition (BMI for adults and Height-for-age-Z-score for children); child mortality (under 5-mortality); mean years of schooling of population of ages 25 and over (education), expected years of schooling for children (education); and access to clean cooking fuel, access to improved sanitation facilities, access to improved water supply, access to electricity, access to assets related to livelihood (standard of living). The standard of living dimensions uses six indicators, while the others use just two (Figure 2.10).

FIGURE A1.5 MPI DIMENSIONS AND INDICATORS



Source: UNDP (2016) [see Technical Notes p.1]

The ten indicators of multidimensional poverty—two for health, two for education and six for living standards are linked to eight of the ten indicators of the Millennium Development Goals (MDGs). Therefore, the selected deprivation cut-offs for each indicator are backed by international consensus as they follow the MDG indicators as closely as data permit Table A3.5 summarizes the dimensions, indicators, thresholds and weights used in the Multidimensional Poverty Index (MPI).

Table A1.1: The dimensions, indicators, deprivation thresholds and weights of MPI

Dimensions	Indicator	Household deprived if...	Related To	Relative weight
Education	Years of Schooling	No household member has completed five years of education	MDG 2	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8 (i.e. from kindergarten to Primary 6)	MDG 2	1/6
Health	Child Mortality	Any under-5 year old child died in the household during past 12 months preceding census	MDG 4	1/6
	Nutrition	Any child is underweight or malnourished	MDG 5	1/6
Living Standard	Electricity	The household has no electricity (i.e. the household is not connected to the national grid)	MDG 7	1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households.	MDG 7	1/18
	Safe Drinking Water	The household does not have access to safe drinking water	MDG 7	1/18
	Flooring	The household has an earth, mud or dung floor	MDG 7	1/18
	Cooking Fuel	The household cooks with wood, charcoal, crop residue, saw dust or animal waste	MDG 7	1/18
	Asset Ownership	The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck	MDG 7	1/18

Source: Adapted from Alkire and Santos (2010).

Education

The two indicators are the number of completed years of schooling of household members, and whether children of school-going age are attending school. Years of schooling acts as a proxy for the level of knowledge and understanding of household members. These indicators are imperfect proxies because they do not capture the quality of schooling and the level of knowledge attained or skills. However they are robust indicators, which are easily available. In terms of deprivation cut-offs for this dimension, the MPI requires that at least one person in the household has completed five years of schooling and that all children of school age are attending primary school, or have completed primary education. Households where there is at least one member with five years of schooling is considered non-deprived or otherwise deprived. Analogously, someone living in a household where there is at least one child not attending school is considered deprived in this indicator, even though she may have completed schooling. Households with no school-aged children are considered non-deprived on this indicator. Hence the incidence of deprivation in this indicator will reflect the demographic structure of the household and country, as well as the educational attainments.

Health

Two health indicators: nutrition and child mortality are used for the health dimension globally. The first indicator uses data on death of any child under 5 years. In the MPI all household members are considered to be deprived if there has been at least one observed child death (under 5 years) in the household during the past 12 months preceding the survey.

The nutritional indicator used for children relates to being under-weight (also called weight-for-age), which is used to track the MDGs.

A child is under-weight if she is two or more standard deviations below the median of the reference population. The MPI identifies a household as deprived in nutrition if any child under five years in their household is malnourished.

Living standards

The standard of living dimension uses six indicators, three of which are standard MDG indicators that are related to health and living standards, and which particularly affect women: clean drinking water, improved sanitation, and the use of clean cooking fuel. The justification for these indicators is adequately presented in the MDG literature. It also includes three non-MDG indicators: electricity, flooring material and household assets. The key indicators for standard of living are:

- *Drinking water:* A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater. If a household fails to satisfy these conditions, then it is considered deprived in access to water.¹⁴⁰
- *Improved sanitation:* A household is considered to have access to improved sanitation if it has some type of flush toilet (WC), or pit latrine, or ventilated improved pit (KVIP) provided that they are not shared. Otherwise it is considered as deprived in sanitation.¹⁴¹
- *Electricity:* A household is considered to be deprived if it does not have access or connected to the national electricity grid.
- *Flooring:* A household is considered deprived in flooring material if it is made of earth, mud or dung.
- *Cooking fuel:* If the main source of cooking fuel for the household is wood or charcoal or crop residue, or saw dust or animal waste, the household is considered deprived in cooking fuel.
- *Assets:* If a household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator, and does not own a car or tractor then each person in it is considered deprived.

Poverty cutoff: Identification of the MPI Poor

In the MPI, the three dimensions (health, education and living standards) are equally weighted, so that each receives a 1/3 weight. The indicators within each dimension are also equally weighted.

Thus, each indicator within the health and education dimensions receive a 1/6 weight while each indicator within the living standards dimension receives a 1/18 weight ($1/3 \div 6$).

Each household is assigned a deprivation score according to its deprivations in the component indicators. The deprivation score of each household is calculated by taking a weighted sum of the deprivations experienced, so that the deprivation score for each household lies between 0 and 1. The score increases as the number of deprivations of the household increases and reaches its maximum of 1 when the household is deprived in all ten indicators. A household, which is not deprived in any indicator, receives a score equal to 0.

¹⁴⁰ According to MDG guideline, improved water sources do not include vendor-provided water, sachet or bottled water, tanker truck or unprotected wells and springs.

¹⁴¹ Following the MDGs, unimproved toilet facility include: no facility, bucket/pan, public toilet or any facility that is shared

Formally, we have:

$$c_i = w_1 I_1 + w_2 I_2 + \dots + w_d I_d$$

Where $I_i = 1$ if the household is deprived in an indicator i and $I_i = 0$ otherwise, and w_i is the weight attached to indicator i with $\sum_{i=1}^d w_i = 1$.

A second cutoff or threshold is used to identify the multi-dimensionally poor, which in the Alkire-Foster methodology is called the poverty cutoff. The poverty cutoff is the share of (weighted) deprivations a household must have in order to be considered poor, and is denoted by k . A household is considered poor if its deprivation score is equal to or greater than the poverty cutoff, that is, if $c_i \geq k$. In the MPI, a household is identified as poor if it has a deprivation score higher than or equal to $1/3$. In other words, a household's deprivation must be at least a third of the (weighted) indicators to be considered MPI poor.¹⁴²

For those whose deprivation score is below the poverty cutoff, even if it is non-zero, their score is replaced by a '0' and any existing deprivations are not considered in the 'censored headcounts'. We refer to this important step as censoring the deprivations of the non-poor (see Alkire and Foster 2011b, Alkire Foster and Santos, 2011). To differentiate the original deprivation score from the censored one, we use the notation $c_i(k)$ for the censored deprivation score. Note that when $c_i \geq k$, then $c_i(k) = c_i$, but if $c_i < k$, then $c_i(k) = 0$, $c_i(k)$ is the deprivation score of the poor.

Computing the MPI (aggregation)

Following the structure of the Adjusted Headcount (M0) measure of Alkire and Foster (2011a), the MPI combines two key pieces of information: (1) the proportion or incidence of people (within a given population) whose share of weighted deprivations is k or more and (2) the intensity of their deprivation: the average proportion of (weighted) deprivations they experience.

Formally, the first component is called the multidimensional headcount ratio (H): $H = \frac{q}{n}$, where q is the number of people who are multi-dimensionally poor and n is the total population.

The second component is called the intensity (or breadth) of poverty (A). It is the average deprivation score of multi-dimensionally poor people and can be expressed as:

$$A = \frac{\sum_{i=1}^n c_i(k)}{q}$$

Where: $c_i(k)$ is the censored deprivation score of individual i , and q is the number of people who are multi-dimensionally poor.¹⁴³ MPI is the product of both: $MPI = H \times A$.

¹⁴² Household with a deprivation score between $1/5$ and $1/3$ are denoted 'vulnerable' due to their proximity to the poverty cut off.

¹⁴³ The formula of A differs from Alkire and Foster (2007, 2011a) in that it does not contain the number of indicators d in its denominator. This is because d is already included in the deprivation score $c_i(k)$, since it is weighted sum of the deprivations of each poor household, where the indicators' weights add up to 1.

APPENDIX 2: Data Sources, Boundaries & Household Sample Survey

A2.1 Introduction

A2.11 Northern Ghana: Boundaries and Issues

There is a difference in the ecological defined boundaries (used by GSS) and the administrative boundaries (based on the inclusion of contiguous districts in Brong Ahafo and the Volta). For the GSS, the Savannah belt is used as a boundary for the Northern Savannah Zone and this includes all the districts in Northern, Upper East, Upper West regions, as well as a number of districts in northern Brong Ahafo (12) and in (upper) Volta (4). **This definition was used in sampling the Northern Savannah Zone for the GLSS6 as well as the sampling for the NG-HDR Survey (NGHDRS).** Given that significant amount of the data used for the analysis in the report draws on the GSS and the NGHDRS, where disaggregation is feasible, the data is specified for the ecological zone. For SADA, the zone encompasses the Upper East, Upper West, Northern Region, and the *contiguous* districts in the northern parts of Brong Ahafo and Volta regions which share borders with and are in the same ecological zone. In November 2017, the bill for the Northern Development Authority (NDA) was passed and approved by the president in January 2018. **The NDA encompasses the Northern, Upper East and Upper West Regions.** As this report was conceived prior to the NDA, the more comprehensive scope is adopted.

Table A2.1 Districts of NSEZ (63 Districts)

<u>Upper East</u>	<u>Upper West</u>	<u>Northern</u>	<u>Brong Ahafo</u>	<u>Volta</u>
Bawku	Daffiama	Tamale	Kintampo North	Krachi North
Bolgatanga	Issa* Jirapa	Yendi	Kintampo South	Krachi South
Bawku West	Lambussie Karni	Bunkprugu-Yunyoo	Pru	Krachi East
Binduri *	Lawra	Bole *	Sene	Krachi West
Bongo	Nadowli	Central Gonja	Sene West *	Nchumuru *
Builsa	Nandom *	Chereponi *	Banda *	Nkwanta
Builsa South*	Sissala East	East Gonja	Tain	North
Garu Tempane	Sissala West	East Mamprusi	Atebubu Amantin	Nkwanta
Kassena Nankana	Wa East	Gushegu		South
West	Wa West	Karaga	Jaman North #	
Kassena Nankana	Wa Central*	Kpandai	Jaman South #	
East Nabdam *	Wa Municipal #	Kumbungu	Wenchi Municipal #	
Pusiga *		Mion	Techiman Municipal	
Talensi Nabdam;		Mamprugu Moaduri	#	
		Nanumba North	Nkoranza North #	
		Nanumba South		
		North Gonja		
		Saboba		
		Sagnarigu		
		Savelugu /Nanton		
		Sawla-Tuna-Kalba		
		Tatale Sangule		
		Tolon		
		West Gonja		
		West Mamprusi		
		Zabzugu Tatale		
SADA 13 GSS 9	SADA 11 GSS 9	SADA 26 GSS 18	8 SADA 11 GSS	6 SADA 4 GSS

Note: * included in SADA but not in GSS EA / # included in GSS but not in SADA

A2.12 Data Sources and issues of disaggregation

The NG-HDR drew on major secondary sources such as the Ghana Living Standards Survey (GLSS 5-6) and related reports, including the recent poverty mapping report (2015), the 2010 Population Census, the NGHDR survey and various administrative data. The Northern Ghana Human Development Report Survey (NGHDRS) that was commissioned for this report, is a household probability sample survey designed to cater for a variety of analyses at the various domains of interest. The major focus of the NGHDRS survey is to provide estimates with acceptable precision for a variety of indicators on various aspects of living conditions, livelihoods and vulnerability, inequality and exclusion, voice and accountability, environment and natural resource management, food security and opportunities for broad-based growth and development. The methodology used in the survey is outlined in more detail below. It should be noted that disaggregated district data is not always available, which often means that the data used then refers to the whole of the Brong Ahafo and Volta regions.

A2.13 Data Sources for specific areas of focus

Child labour

GLSS 6 adopts the following definitions: The term “child labour” does not encompass all economic activity undertaken by children but refers specifically to employment or work carried out by children that neither conforms to the provisions of national legislation, such as the Children’s Act, 1998 (Act 560), nor the provisions of international instruments such as ILO Convention Nos. 138 and 182, which define the boundaries of work undertaken by children that must be targeted for abolition. Ghana’s Children’s Act defines exploitative labour as “work that deprives the child of his/her health, education or development”. It sets the minimum age for admission into employment at 15 years for general employment, 13 years for light work and 18 years for hazardous work. The Act defines hazardous work as “work posing a danger to the health, safety or morals of a person”, and provides an inexhaustible list, including fishing, mining and quarrying, portage or carrying of heavy loads, work involving the production or use of chemicals, and work in places where there is a risk of exposure to immoral behaviour. For GLSS 6, the Labour Force Survey (LFS) module was expanded to include a section on Child Labour.¹⁴⁴ Further, the sample was also increased to address the inclusion of additional indicators pertaining to the NSEZ. The LFS provides information for assessing the child labour and labour force situation in Ghana and benchmark data needed for monitoring progress of labour policies, programmes and initiatives including for the elimination of the Worst Forms of Child Labour (WFCL) in Ghana. It provides estimates of:

- The number of child workers (or children in employment) aged 5-17 years, and their distribution by sex, age-group, educational status, geographical, ecological and rural/urban spread.
- For the children in employment, the distribution by status in employment, occupation and industry, as well as weekly hours worked, location of place of work, earnings, occupational injury and hazards at the work place, contractual status, and informal / formal sector employment status.
- The prevalence of child labour (as distinct from ‘children in employment’ of which child labour is a sub-set).

¹⁴⁴ See Child labour report for more details

Within the context of the SDGs Goal 8 focuses on promoting sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all. Target 8.7 states: *Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms.*¹⁴⁵

A2.2 2014 NGHDR Field Survey

A2.21 Frame and sampling units

The population living within the individual households in the Northern Savannah Zone (GSS definition) formed the sample universe for the NGHDRS. The sample design is a two-stage stratified cluster sample design. The cluster is defined as the Enumeration Area (EA) as used in the 2010 population and housing census. The 2010 population and housing census has an up-to date Enumeration Areas all of which have a well-defined identifiable boundaries on maps and these EAs, together with their regional and urban/rural characteristics and the population size served as the sampling frame for the first stage sampling. At the first stage, a sample of EAs was selected using systematic method with probability proportional to the number of households in each EA for each of the selected EA, a list of household was prepared using the Random Walk Method. This list of households then constituted the sampling frame for the second stage sampling out of which 15 households were selected systematically to be interviewed.

A2.22 Stratification

In order to take advantage of possible gains in precision and reliability of the survey estimates, the sampling units (EAs) from the first stage sampling frame were stratified into the five administrative regions or zones and within each region or zones the sampling units were stratified into urban and rural areas.

2.23 Domains and strata

A domain is part of a sampled universe for which separate and reliable estimates are required. From the survey plan, the acceptable domains were:

Northern Savannah operational area as a whole,

- Each of the five Administrative regions/zones under Northern Savannah, with a minimum sample size of 1242 households,
- Urban and Rural localities of Residence (each as a separate domain),

Each of the three ecological zones, namely:

1. Forest-Guinea Savannah Transitional Zone-covers Northern ends of Brong Ahafo and Northern Volta Regions lying within the Northern Savannah operational area.
2. Guinea Savannah covering Northern and Upper West Regions and parts of Upper East Region.
3. Sudan Savannah covering the north-eastern part of Upper East Region.

See Table A2.2 for characteristics of the sampled universe (2010 PHC Frame).

¹⁴⁵ See <https://sustainabledevelopment.un.org/?menu=1300>

Table A2.2: Regional/Zonal Distribution of Sampling Frame

Region/Zone	Urban/ Rural	Stratum code	EA Distribution		2010 Population	
			Number	Zonal Proportion	Size	Zonal proportion
Volta	Urban	41	159		102,886	
	Rural	42	665		313,719	
Zone Total			824	0.09	416,605	0.07
Brong Ahafo	Urban	71	696		496,710	
	Rural	72	1,327		764,901	
Zone Total			2,023	0.21	1,261,611	0.22
Northern	Urban	81	998		739,013	
	Rural	82	2,867		1,706,048	
Zone Total			3,865	0.40	2,445,061	0.42
Upper East	Urban	91	324		215,580	
	Rural	92	1,403		819,124	
Zone Total			1,727	0.18	1,034,704	0.18
Upper West	Urban	101	153		110,290	
	Rural	102	969		578,043	
Zone Total			1,122	0.12	688,333	0.12
Whole Northern Savannah	Urban	1	2,330		1,664,479	
	Rural	2	7,231		4,181,835	
Total			9,561	1	5,846,314	1

2.24 Sample Size Estimation

$$n^* = [4*(1-p)p*d*(1+nse)]/[((e*p)^2)*h*r]$$

Where:

e = Relative error (we will use 5% as in the case of the GLSS6)

p = Proportion of households with unimproved source of drinking water in 2010 Population and Housing Census

d = Design effect (deff) for the indicator in GLSS-6

nse = Non response rate for households in GLSS-6

h = Average household size in 2010 Population and Housing Census (2010 PHC)

r = All household members

n* = Minimum number of households to be interviewed for the indicator

To calculate the sample size using appropriate mathematical formula requires that several factors be specified and values for others be assumed or taken from previous or similar surveys. The factors used are:

- e, the precision or relative sampling error needed which is 5 percent;
- the level of confidence desired which is 95 percent;

- p , the estimated or known proportion of the population in the specified target group
- d , the sample deff (sample design effect);
- h , the average household size;
- $1+nse$, an adjustment for potential loss of sample households due to non-response of rate nse .

Technically, the sample size of a probability sample survey per domain is given by the relation Every indicator has its required sample size which is the minimum number of households that gives the precision needed. For good precision, the relative sampling error should not be greater than 5 percent of the predicated or anticipated coverage rate in this survey. Thus, the recommended strategy for calculating the sample size is to choose an important indicator that will yield the largest size. This meant first choosing a target population that constitutes the main objective of the survey.

The number of households within the SADA operational zone was defined as the target population for the SHDR Survey. Secondly, the particular indicator chosen for the target population is the proportion of households with unimproved source of drinking water as at 2010 Population and Housing Census. This indicator was chosen because its characteristics could be computed from the 2010 PHC at the zonal level. Moreover, poverty level which could be used was available at the regional level and could not be representative at the zonal level especially for Volta and Brong Ahafo zones. The required sample size for the whole SADA domain is more precise than the regional estimates since it is the Zonal average of the various deviations from the main indicator. For this reason, 1,242 households were chosen as the minimum number of households to be interviewed for each regional domain in order to measure the required indicator at 5 percent significance level. The total sample size of 1,242 was distributed across regions proportionally according to the population in each region A total number of 15 households would be selected from each selected EA. This brought the total number of EAs to be selected to 84 across the Northern Savannah Zone (Table A2.3).

Table A2.3: Required households sample size by Region

Proportion with unimproved drinking water as an indicator									
Code	Region Name	Variables						Population share	Proportional Allocation of Household (n)
		p	f	t	h	r	n*		
6	Volta	0.39	1.3	0.05	5.42	1	625	0.07	89
7	Brong Ahafo	0.23	1.0	0.05	4.88	1	1134	0.22	268
8	Northern	0.30	2.9	0.05	7.69	1	1441	0.42	519
9	Upper East	0.11	1.4	0.04	5.83	1	3112	0.18	220
10	Upper West	0.11	0.4	0.04	6.25	1	909	0.12	146
	Northern Savannah	0.23	1.4	0.05	6.21	1	1242	1.00	1242

2.25 Sample allocation

The allocation of the sample households is done in such a way that it would allow separate analysis in rural and urban areas. Table A2.3 shows some population characteristics of urban rural population within each region and gives the proportionate representation of the urban and rural population. This proportion is used in allocating the regional sample of households into sample urban households and rural households. The regional sample of households is then divided proportionally into urban and rural households. The regional sample of households is divided by 15 to determine the number of EAs to be sampled in each region. The number of EAs to be sampled is divided proportionally into urban and rural to determine the number of urban and rural EAs.

Table A2.4: Distribution of Sample Size and EAs (GSS)

Zone	Urban / Rural	Number of EA per stratum	population 2010 PHC	Population distribution by stratum inside regions %	Proportional distribution of the sample of 1242 HHs	Distribution of Household required/ EA	Distribution of the sample of 84 EA by region	EA sample distribution by stratum
Volta	Urban	159	102886	24.70				1
	Rural	665	313719	75.30				5
Sub-Total		824	416605	100.00	89	15	6	6
Brong Ahafo	Urban	696	496710	39.37				7
	Rural	1327	764901	60.63				11
Sub-Total		2023	1261611	100.00	268	15	18	18
Northern	Urban	998	739013	30.22				11
	Rural	2867	1706048	69.78				24
Sub-Total		3865	2445061	100.00	519	15	35	35
Upper East	Urban	324	215580	20.83				3
	Rural	1403	819124	79.17				12
Sub-Total		1727	1034704	100.00	220	15	15	15
Upper West	Urban	153	110290	16.02				2
	Rural	969	578043	83.98				8
Sub-Total		1122	688333	100.00	146	15	10	10
Whole SADA	Urban	2330	1664479	28.47				24
	Rural	7231	4181835	71.53				60
Sub-Total		9561	5846314	100.00	1242	15	84	84

2.26 Computation of Weights

The NGHDR survey is not a self-weighting sample design because selection of households were done proportional to population size. Therefore each sample household did not have the same chance of selection into the sample. Hence, weights will be computed to reflect the different probabilities of selection in order to obtain the true contribution of each selected EA in the sample based on the first and second stage probabilities of selection.

- Let
- M_{hi} = Number of 2010 Population Census households in the i^{th} selected EA (PSU) in the h^{th} stratum or region
 - M_{hi}^* = Number of households listed in the i^{th} selected EA in the h^{th} stratum (Urban or Rural in the region)
 - ΣM_{hi} = Total number of households in the i^{th} stratum (either Urban or Rural area in the region)
 - a_{hi} = Number of sample EAs allocated to the h^{th} stratum (either Urban or Rural area in the region)
e.g. $a_{91} = 3$ for urban areas in Upper East
and $a_{92} = 12$ for rural areas in Upper West
 - b = 15 (number of selected households per EA in each stratum)

Then the first and second stage probabilities of selection are:

$$P_{1hi} = \frac{a_h M_{hi}}{\sum M_{hi}} \quad \text{and} \quad P_{2hi} = \frac{b}{M_{hi}^*}$$

Where P_{1hi} is the probability of selecting the i^{th} EA in the h^{th} stratum, and P_{2hi} is the probability of selecting a household in the i^{th} EA of the h^{th} stratum. The overall probability of selection of a household in the i^{th} selected EA of the h^{th} stratum is given by:

$$\begin{aligned} F_{hi} &= P_{1hi} * P_{2hi} \\ &= \frac{a_h b}{\sum M_{hi}} * \frac{M_{hi}^*}{M_{hi}^*} \end{aligned}$$

The weighting factor (or expansion factor), W_{hi} , for a household in the i^{th} selected EA in the h^{th} stratum is the reciprocal (inverse) of the overall probability of selecting that household

$$\begin{aligned} \text{That is, } W_{hi} &= \frac{1}{F_{hi}} \\ &= \frac{\sum M_{hi}}{a_h b} * \frac{M_{hi}^*}{M_{hi}^*} \end{aligned}$$

The number of households successfully interviewed in each EA would be used in the computation. The final weight for the sample households in the j^{th} segment within the i^{th} sample PSU in stratum h is given by:

$$W_{hi}^j = W_{hi} * \frac{b^j}{b^i},$$

Where:

b^j = The number of interviews plus the number of no interviews in the sample segment

b^i = Total number of interviewed sample households selected in the j -th sample segment within the i th sample PSU in stratum h .

2.27 Training and fieldwork

Personnel with a minimum qualification of Higher National Diploma were recruited and trained to undertake the fieldwork. These attended a 5-day training programme during which members of the technical committee took them through the various sections of the questionnaire including the concepts and definitions used. The training also involved assessment exercises, field practice, role plays and group discussions, interviews in the major local languages and the use of the GPS.

The fieldwork was over a 21 day period and took place from 18th April 2014 to 4th May 2014. Six teams were deployed to the field, each comprising of a supervisor, a number of interviewers and a driver. They covered all aspect of the questionnaires and took coordinates positions, using the GPS machine of households interviewed. Data editing and capture were done at the Ghana Statistical Service using Cspro 4 software.

Field monitoring exercises were undertaken by the Technical Committee and UNDP. The monitors observed interviews and checked completed questionnaires to ensure consistency of responses and to ensure data quality.