

ENERGY COMMISSION



ENERGY PROFILE OF DISTRICTS IN GHANA

DECEMBER 2019

PREFACE

In line with its mandate to secure a comprehensive database for national decision making, the Energy Commission has over the years provided energy statistical documents such as the *National Energy Statistics* which compiles statistics of the various forms of energy annually. This document comprises among other things, the overall national energy consumption of both primary and non-primary forms of energy including wood fuel, petroleum and electricity. The document has become a very important source of energy data for energy policymakers, researchers, students as well as organizations and institutions in the energy field.

It has become necessary to develop an energy database at the district level to provide relevant information for execution of Government programmes at district level such as the “One District One Factory” (1D1F) initiative. The Commission has therefore developed a comprehensive database on the energy profile of the various districts of the country which is the first of its kind in the country, providing information on energy resources and their utilisation at the district level.

This report is organised into five sections. The first section is the introductory portion of the report. The second section deals with renewable energy resources at the district level which are, hydro, solar, wind and biomass. Section 3 covers petroleum resources in the country and Section 4 covers projected residential energy demand at the district level in 2020. The document also provides Annexes of tables which present the number of LPG filling stations, electricity access and 2020 projected household energy demand in the various districts.

It is expected that this report will serve as a source of valuable information for all relevant agencies and institutions in the country including decision makers, policy makers, researchers and investors.

Oscar Amonoo-Neizer
Executive Secretary

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1. INTRODUCTION

The Energy Commission Act, (Act 541)1997, mandates the Commission to among other things, “secure a comprehensive database for national decision making on the extent of development and utilization of energy resources available in the nation”. In line with this, the Commission has over the years been compiling national energy data to assist researchers, policy and decision makers in taking informed decisions on matters relating to energy utilisation in the country.

The compilation of the existing energy data is however usually done at the national level therefore making the available energy resources and energy utilization at the district level unknown. This falls out of line with the manner in which national development projects are executed which is at the district and the local assembly levels. The Government of Ghana has initiated a number of flagship programmes such as the “One District, One Factory,” “One Village One Dam,” and “Planting for Food and Jobs” initiatives. These programmes seek to reinvigorate Ghana’s industrialization process and enhance the country’s socio-economic development efforts through the process of linking agriculture to industry. In the case of the “One District One Factory” initiative, otherwise known as District Enterprises initiative, the Government seeks to establish medium-to-large-scale factories or industrial enterprises that have the potential to fundamentally affect the economy of the districts as well as adding value to the country’s natural resource base.

A comprehensive database on Ghana’s energy profile at the district level, indicating the indigenous energy resources and energy utilisation in the various districts, is therefore essential for national development as this will assist in the development of the necessary policies and strategies for effective energy use in the country. The existence of such a database is expected to help in the development of the necessary strategies for the enhancement of the country’s energy security and the effective implementation of the District Enterprise agenda as well as other Government developmental initiatives. This report presents information on the indigenous energy resources of districts in Ghana, as well as the projected energy use in the various households at the district level in the year 2020. The energy resources covered in the report are small and medium hydro potentials, solar, and wind. The report also presents data on electricity access, charcoal production areas and LPG filling stations in the various districts in the country.

2. RENEWABLE ENERGY RESOURCES

Ghana has a variety of renewable energy resources which are solar, wind, hydro and bioenergy. Woodfuel, a form of biomass, is currently a major source of primary energy in the country. According to current estimates, it is the second largest source of primary energy, coming after petroleum. It constitutes about 38% of primary energy consumption with petroleum constituting about 48%¹. Almost all the remaining share is taken by hydro. By virtue of its geographical location, which is within the tropical zone, Ghana has abundant solar energy resource. Solar energy has been used for crop drying and other heating purposes over the years and is currently finding increasing use in electricity generation. Currently, the total installed capacity of solar photovoltaic system in the country is 67,218 kW². In addition to solar, wind and municipal waste are also gaining attention in electricity generation. The total installed capacity of wind and municipal waste electric power systems stand at 31 kW and 100 kW respectively². Ghana has a number of river bodies making it rich in hydro resources. Hydro power has been the main source of electricity until it was overtaken by thermal generation sources in 2016. Currently, 6017 GWh of electricity is generated from hydro, representing 37 % of electricity generation with almost all the remaining share taken by thermal sources. This section presents renewable energy resources such as solar, wind and hydro energy resources at the district level. Also presented is the main charcoal production areas in the various districts.

2.1 Solar Energy

Solar irradiation intensity is a measure of the amount of solar energy reaching a surface on the earth. Upon passing through the earth's atmosphere, part of solar radiation is absorbed by the atmosphere whereas the remaining portion is scattered or directly transmitted to the earth surface. The sum of the scattered, transmitted and reflected radiation is called Global Horizontal Irradiation (GHI) and it is the total solar radiation incident on a horizontal surface on earth. The transmitted radiation is referred to as direct normal irradiation (DNI) and it is the amount of radiation received by a surface perpendicular to the sun rays. The scattered radiation is called diffuse horizontal irradiation (DHI). The global horizontal irradiation intensity (GHI) based on a study conducted by

¹ Energy Commission, *National Energy Statistics 2009 to 2018*, p 1., 2019

² Energy Commission, *National Energy Statistics 2009 to 2018*, p 8., 2019

SOLARGIS³ is presented in Figure 1. The GHI intensity in Ghana ranges from 1592 kWh/ m² to 2082 kWh/ m² per annum (i.e. 4.36 to 5.7 kWh/m²/day). The highest irradiation level occurs in the northern portion of the country and generally decreases southwards. Areas with highest intensity are in the Upper West, Upper East and the North East Regions as well as parts of the Savanna and the Northern Regions. The intensity in this zone ranges from 2018 kWh/ m²/annum to 2082 kWh/ m²/annum (5.5 kWh/ m²/day to 5.7 kWh/ m²/day). Districts in these regions include Lawra, Jirapa, Nandom, Bolgatanga municipality, Kasena Nankana East and West and Bawku Municipality. The next highest zone covers the North East Region and the upper part of Savannah and Northern Regions with annual irradiance ranging from 1969 kWh/ m² to 2017 kWh/ m² (i.e., daily irradiation of 5.4 to 5.5 kWh/m²). Districts in these regions include Wa East and West, West Mamprusi and Chereponi. This is followed by areas covered by the mid parts of the Savannah and Northern regions with annual intensities in the range of 1920 to 1968 kWh/ m² (5.3 to 5.4 kWh/ m² daily). Some southern parts of Volta and Greater Accra regions also have such level of solar intensities. The districts in these regions include West Gonja, Tamale North Sub Metro, Yendi Municipality, Keta, and East and West Ada. Districts in the southern parts of, Savannah and Northern Regions as well as the northern part of the Bono East Region have intensities below those mentioned above, falling in the range of 1877 to 1919 kWh/ m²/annum (5.1 to 5.3 kWh/ m²).

Districts in the middle part of the country such as southern part of Bono East, northern parts of the Ashanti and Eastern Regions have intensities ranging from 1840 to 1876 kWh/ m² /annum (5.04 to 5.14 kWh/ m²). These intensities fall between the northern and the southern portions of the country. The southern part of the country has the lowest level of solar intensities with a broad range of 1592 to 1839 kWh/ m²/annum (4.36 to 5.04 kWh/m²). Regions in these areas include Ahafo, Western, Western North, Volta, Central and Greater Accra Regions. The southern portions of Oti, Ashanti, Eastern, and Bono Regions also fall in this solar intensity range. Some of the associated districts are Sefwi-Wiawso, Asutifi North and South, Tarkwa Nsuaam, Mfatsiman, Assin North, Ga East and West, Adansi North and South, Kwaebibirem Atiwa, Birim North and South, Akatsi North and South, Ketu North and South and Adaklu. The mean solar irradiation intensities of all districts in the country are presented in tables 1 to 5.

³ <https://solargis.com/maps-and-gis-data/download/ghana>, 2016

In addition to the global horizontal irradiation which gives the total solar radiation intensities, Figures 2 and 3 give the direct normal irradiation (DNI) and the horizontal diffuse irradiation. The direct normal irradiation intensities are high in the northern portion of the country, decreasing southwards. The reverse is the case of the diffused irradiation which is low in the northern part of the country and high in the southern portion of the country. This is due to the high cloud cover in the southern part of the country as compared to the north.

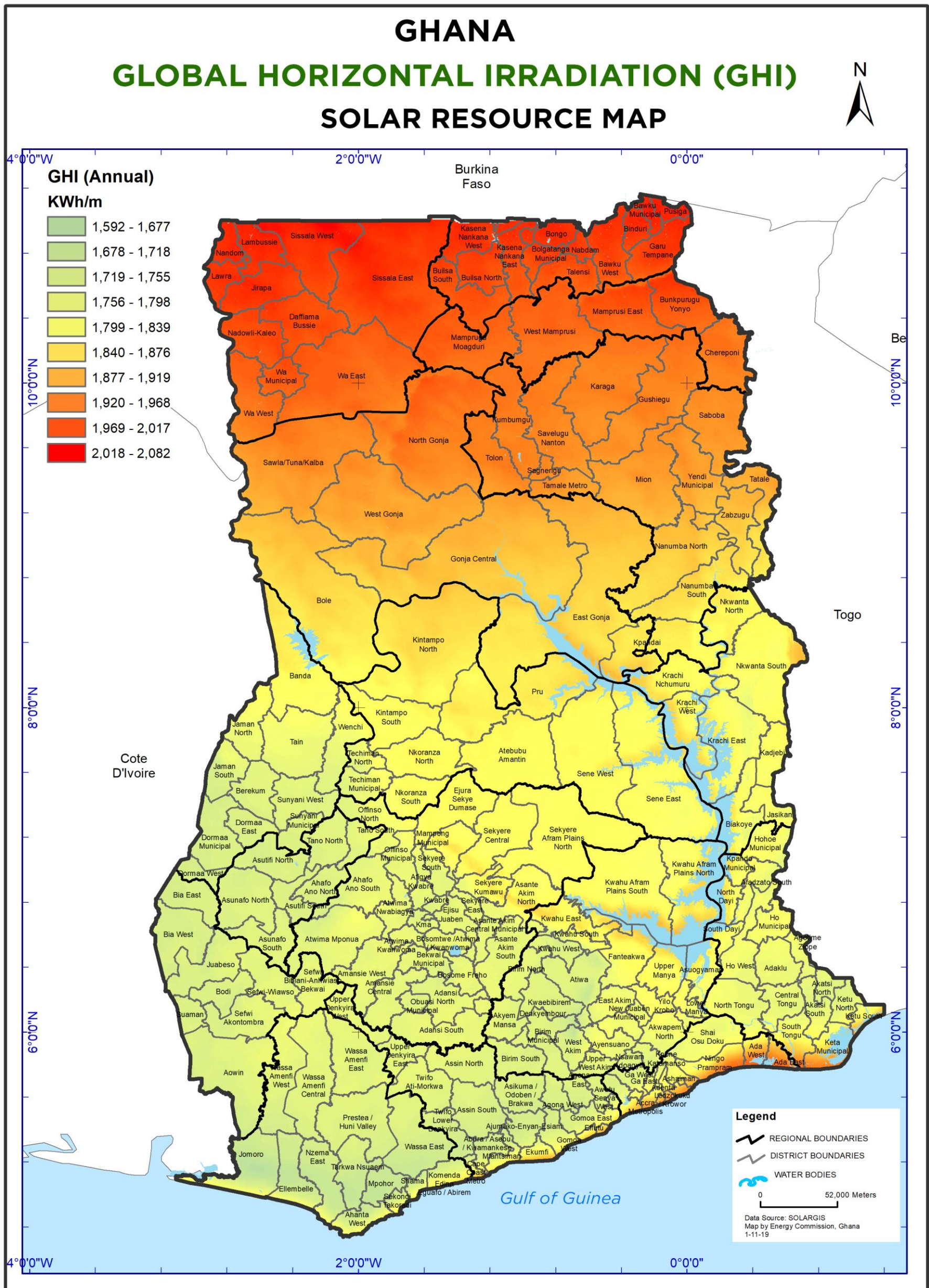


Fig. 1: Global Horizontal Solar Irradiation Map

Table 1: Annual Global Solar Irradiation Intensity of Districts in Ahafo, Ashanti, Bono and Bono East Regions

AHAFO REGION		ASHANTI REGION	
District	Solar Irradiation Intensity (kWh/m ²)	District	Solar Irradiation Intensity (kWh/m ²)
Asunafo North	1707.8	Adansi North	1732.3
Asunafo South	1720.1	Adansi South	1740.1
Asutifi North	1706	Afigya Kwabre	1746.5
Asutifi South	1710.8	Ahafo Ano North	1712.6
Tano North	1721.2	Ahafo Ano South	1736.3
Tano South	1740.1	Amansie Central	1730.9
		Amansie West	1740
BONO REGION		Asante Akim Central Municipal	1745.3
District	Solar Irradiation Intensity (kWh/m ²)	Asante Akim North	1820.5
Banda	1851.4	Asante Akim South	1744.9
Berekum	1725.4	Asokore Mampong Municipal	1717.5
Dormaa East	1710.5	Atwima Kwanwoma	1746.3
Dormaa Municipal	1698.8	Atwima Mponua	1735.5
Dormaa West	1692.2	Atwima Nwabiagya	1748.8
Jaman North	1783.3	Bekwai Municipal	1730.6
Jaman South	1723.1	Bosome Freho	1740.2
Sunyani Municipal	1719.6	Bosomtwe	1748.5
Sunyani West	1731.5	Ejisu Juaben	1743
Tain	1778.7	Ejura Sekye Dumase	1838.9
Wenchi	1781	Kma	1726
		Kwabre	1729.4
BONO EAST REGION		Mampong Municipal	1828.2
District	Solar Irradiation Intensity (kWh/m ²)	Obuasi Municipal	1718.8
Atebubu Amantin	1858.2	Offinso Municipal	1759.2
Kintampo North	1885.1	Offinso North	1766.1
Kintampo South	1841.7	Sekyere Afram Plains North	1841.8
Nkoranza North	1846.6	Sekyere Central	1837.1
Nkoranza South	1827.1	Sekyere East	1753.3
Pru	1875.8	Sekyere Kumawu	1825.7
Sene East	1851.3	Sekyere South	1802
Sene West	1858.7		
Techiman Municipal	1766.5		
Techiman North	1774.3		

Table 2: Annual Global Solar Irradiation Intensity of Districts in Central and Eastern Regions

CENTRAL REGION		EASTERN REGION	
District	Solar Irradiation Intensity (kWh/m ²)	District	Solar Irradiation Intensity (kWh/m ²)
Abura-Asebu- Kwamankese	1690.6	Akwapem North	1777.2
Agona East	1701.5	Akwapem South	1731.1
Agona West	1699.7	Akyem Mansa	1733.7
Ajumako-Enyan-Esiam	1681.8	Asuogyaman	1846.2
Asikuma -Odoben -Brakwa	1699	Atiwa	1710
Assin North	1727.9	Ayensuano	1762.9
Assin South	1696.6	Birim Municipal	1717.6
Awutu Senya East Municipal	1733.4	Birim North	1739
Awutu Senya West	1711.3	Birim South	1716
Cape Coast Metro	1758.8	Denkyembour	1708.5
Effutu	1830.4	East Akim	1764.7
Ekumfi	1811.2	Fanteakwa	1827.9
Gomoa East	1743.1	Kwaebibirem	1716.5
Gomoa West	1730.5	Kwahu Afram Plains North	1874
Komenda-Edina-Eguafo -Abirem	1744.9	Kwahu Afram Plains South	1851
Mfantsiman	1746.8	Kwahu East	1826.8
Twifo Ati-Morkwa	1726.7	Kwahu South	1838.6
Twifo Lower Denkyira	1678.9	Kwahu West	1721.2
Upper Denkyira East	1731.2	Lower Manya	1807.7
Upper Denkyira West	1736.6	New Juaben Municipal	1769
		Nsawam Adoagyiri	1729.7
		Suhum Municipal	1774.3
		Upper Manya	1846.2
		Upper West Akim	1735.7
		West Akim	1710.4
		Yilo Krobo	1804.7

Table 3: Annual Global Solar Irradiation Intensity of Districts in Greater Accra, Northern, North East and Oti Regions

GREATER ACCRA REGION		NORTHERN REGION	
District	Solar Irradiation Intensity (kWh/m ²)	District	Solar Irradiation Intensity (kWh/m ²)
Accra Metropolis	1864.6	Gushiegu	1972.9
Ada East	1931.3	Karaga	1979.5
Ada West	1899.5	Kpandai	1864.8
Adenta	1812.7	Kumbungu	1988.4
Ashaiman	1850.9	Mion	1938.4
Ga Central Municipal	1793.6	Nanumba North	1898.1
Ga East	1768.4	Nanumba South	1881.7
Ga South	1768.7	Saboba	1957.4
Ga West	1727.5	Sagnerigu	1969.9
Kpone Katamanso	1812.6	Savelugu Nanton	1978.2
La Dade Kotopon	1892.8	Tamale Metro	1952.6
La Nkwantanang Madina	1772.4	Tatale	1907.3
Ledzokuku / Krowor	1908.9	Tolon	1977.6
Ningo Prampram	1872.4	Yendi Municipal	1939.2
Shai Osu Doku	1775.3	Zabzugu	1904.2
Tema Metropolis	1901.5		
NORTH EAST REGION		OTI REGION	
District	Solar Irradiation Intensity (kWh/m ²)	District	Solar Irradiation Intensity (kWh/m ²)
Bunkpurugu Yonyo	2016.3	Biakoye	1831.2
Chereponi	1984.8	Jasikan	1795.6
Mamprugu Moagduri	2012.6	Kadjebi	1812.8
Mamprusi East	2012.2	Krachi East	1845.7
West Mamprusi	2006.1	Krachi Nchumuru	1866.5
		Krachi West	1875.9
		Nkwanta North	1860.9
		Nkwanta South	1825.8

Table 4: Annual Global Solar Irradiation Intensity of Districts in Savannah, Upper East, Upper West and Volta Region

SAVANNAH REGION		UPPER EAST REGION	
District	Solar Irradiation Intensity (kWh/m ²)	District	Solar Irradiation Intensity (kWh/m ²)
Bole	1891.4	Bawku Municipal	2060.6
East Gonja	1897.3	Bawku West	2039.4
Gonja Central	1918.1	Binduri	2052.2
North Gonja	1983.4	Bolgatanga Municipal	2041.9
Sawla/Tuna/Kalba	1959	Bongo	2057.8
West Gonja	1942.3	Builsa North	2041.2
		Builsa South	2030
VOLTA REGION		Garu Tempane	2039.6
District	Solar Irradiation Intensity (kWh/m ²)	Kasena Nankana East	2042.3
Adaklu	1778.7	Kasena Nankana West	2054.9
Afadzato South	1790.4	Nabdram	2045.4
Agotime Ziope	1778.2	Pusiga	2062.1
Akatsi North	1736.3	Talensi	2026.9
Akatsi South	1757.9	UPPER WEST REGION	
Central Tongu	1757.2	District	Solar Irradiation Intensity (kWh/m ²)
Ho Municipal	1802.6	Daffiama Bussie	2029.3
Ho West	1785.2	Jirapa	2048.6
Hohoe Municipal	1791.1	Lambussie Karni	2061.1
Keta Municipal	1880.1	Lawra	2051.5
Ketu North	1743.4	Nadowli-Kaleo	2027.2
Ketu South	1836.8	Nandom	2061.7
Kpando Municipal	1851.9	Sissala West	2055.8
North Dayi	1872	Sissala East	2043.4
North Tongu	1777.5	Wa East	2003.9
South Dayi	1847.1	Wa Municipal	2014
South Tongu	1828.8	Wa West	1992.7

Table 5: Annual Global Solar Irradiation Intensity of Districts in Western and Western North Regions

WESTERN REGION		WESTERN NORTH	
District	Solar Irradiation Intensity (kWh/m ²)	District	Solar Irradiation Intensity (kWh/m ²)
Ahanta West	1702.8	Aowin	1702.8
Ellembelle	1669.2	Bia East	1694.8
Jomoro	1668.8	Bia West	1692.1
Mpohor	1638.4	Bodi	1698.7
Nzema East	1663	Juabeso	1701.5
Prestea / Huni Valley	1706.7	Sefwi Bibiani-Anhwiaso Bekwai	1737.6
Sefwi Akontombra	1710.6	Suaman	1697.4
Sefwi-Wiawso	1727.6		
Sekondi Takoradi	1713.5		
Shama	1709.3		
Tarkwa Nsuaem	1662.8		
Wassa Amenfi Central	1721.7		
Wassa Amenfi East	1727.2		
Wassa Amenfi West	1717.4		
Wassa East	1682.6		

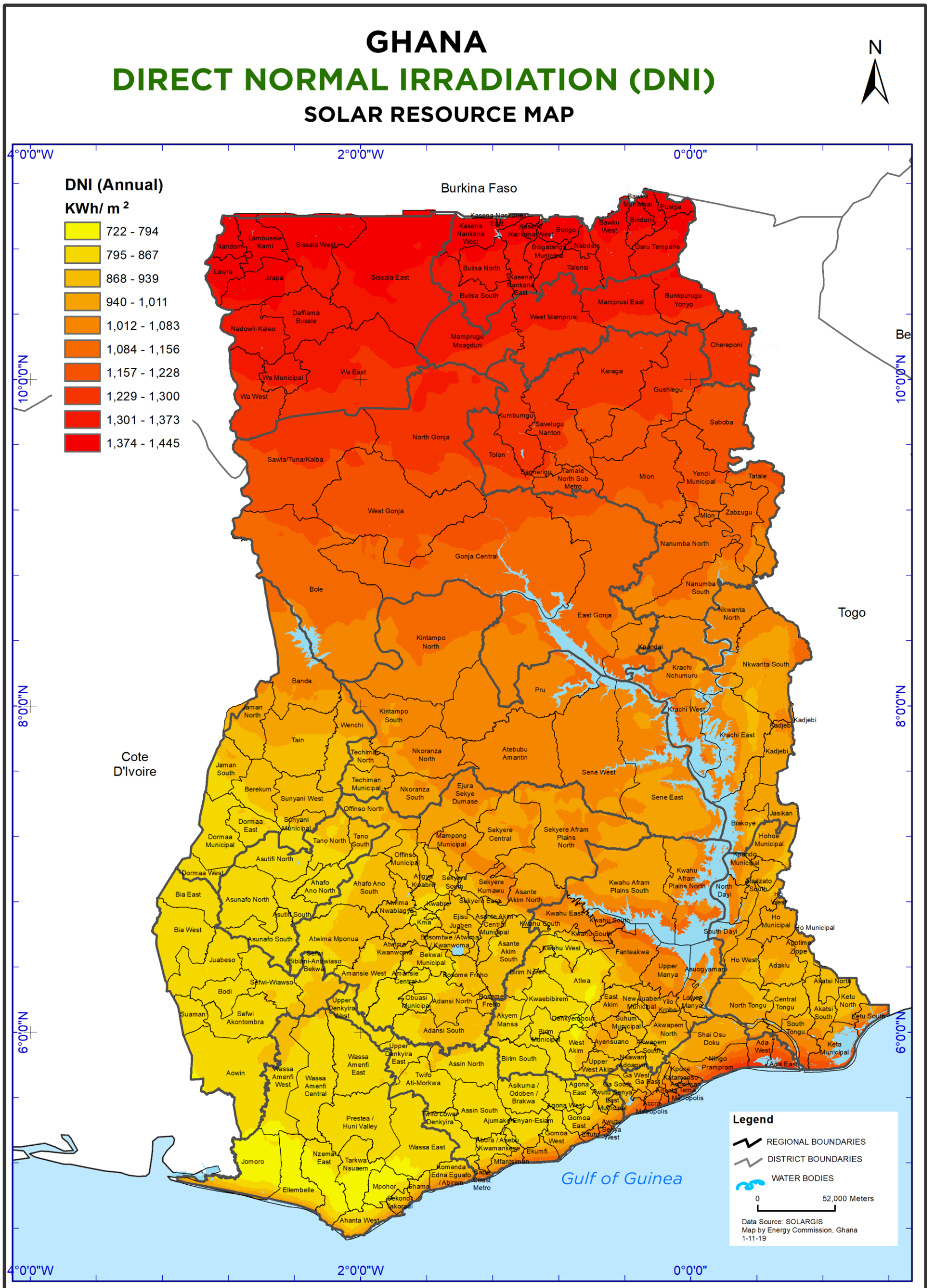


Fig. 2: Direct Normal Solar Irradiation Map

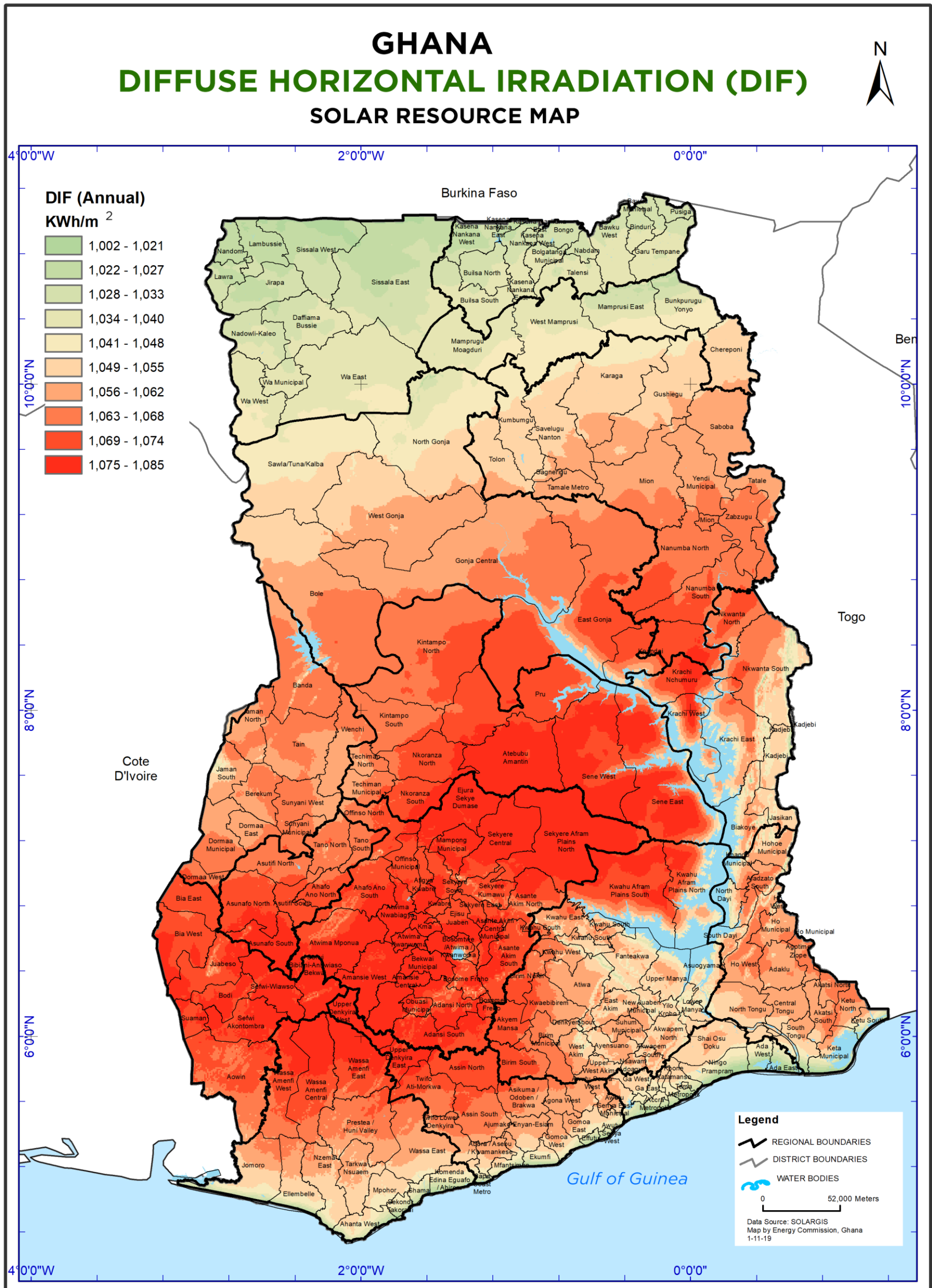


Fig. 3: Diffuse Horizontal Solar Irradiation Map

2.2 Wind Energy

Currently, the total installed capacity of wind electricity generation systems stands at about 31 kW. Most promising areas for deployment of wind power plants are along the mountains in the south-eastern part of the country and along the eastern coastal areas of the country (Figure 4). The average annual wind speed along these areas range from 4.0 m/s to 6.0 m/s at 50 m hub height. The wind regime in other parts of the country is generally low with wind speed in the range of 2-5 m/s. The minimum wind speed for most modern wind turbines is about 3 m/s⁴ meaning that most part of the country cannot be used for wind power generation. Districts with wind speeds above 5.3 m/s include Keta Municipality in the Volta Region; Ada East and West in the Greater Accra Region; Mampong Municipal and Ashanti Akim in the Ashanti Region and Kwahu East, Kwahu South, Upper Manya and Fantekwa in the Eastern Region.

⁴http://www.wind-power-program.com/turbine_characteristics.htm

GHANA

WIND SPEED (m/s) - 50 m

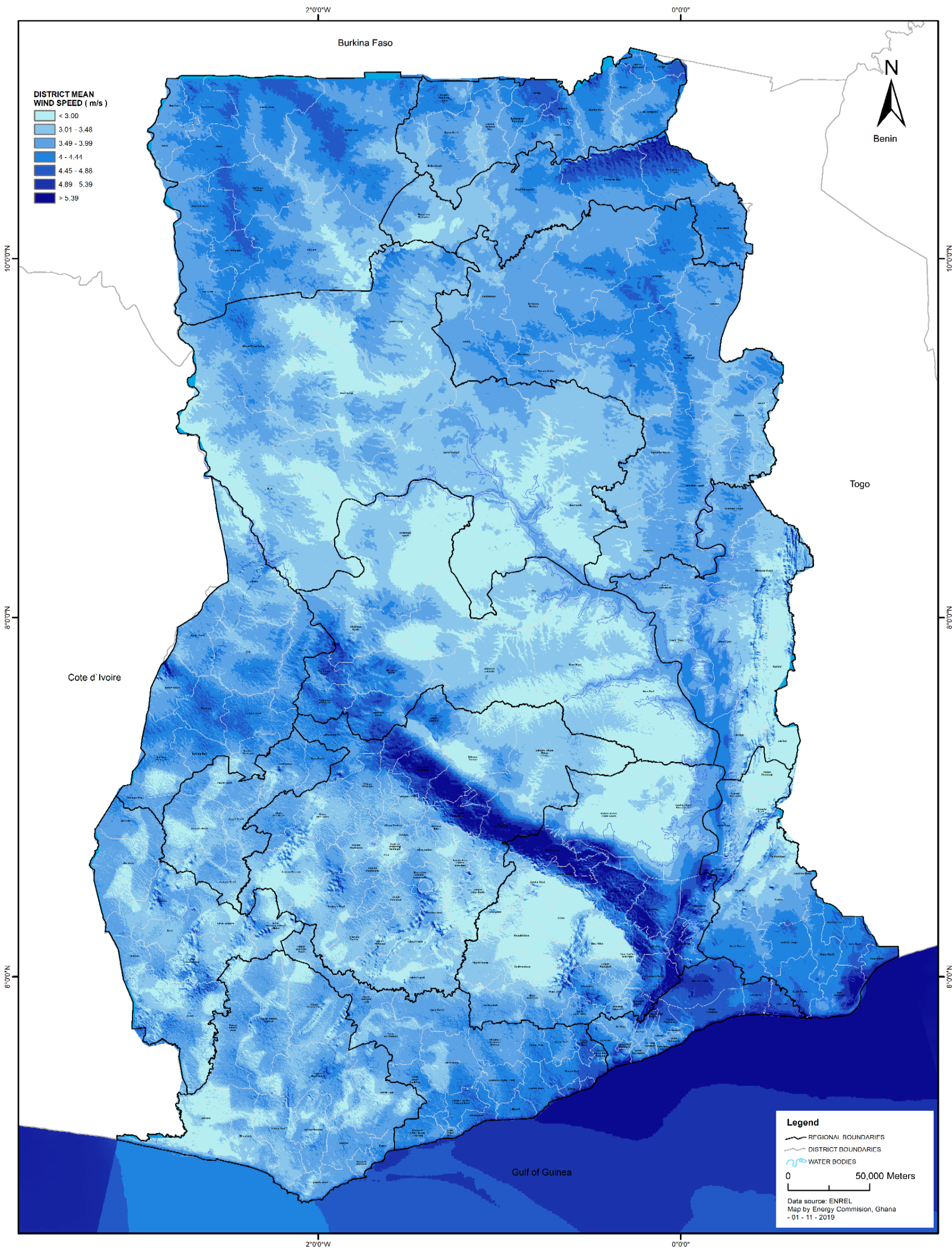


Fig. 4: Wind Resource Map

2.3 Hydro

Ghana is drained by a large number of streams and rivers some of which have potential for hydropower generation. Notable among them are the Volta, Tano and Oti. Apart from the Volta, none of the rivers have been utilised for power generation. Hydropower is one of the widely used primary energy sources in the country. Total installed capacity of hydropower in Ghana is 1584 MW⁵ and this constitutes about 32% of total installed electricity generation capacity of 4961.5 MW as of December 2018⁶. Almost all the remaining share is taken by thermal plants. The tapped hydro resources comprise, Akosombo in the Asuogyaman District with an installed capacity of 1020 MW, Kpong in the Lower Manya Krobo District with an installed capacity of 160 MW and Bui in the Banda District with an installed capacity of 404 MW.

The total hydro potential is estimated to be about 846 MW and is located at 32 sites in 30 districts (Figure 5). Each of the remaining hydro potential sites has capacity below 100 MW. Notable among the hydro resources are Lanka (95 MW), Juale (90 MW), Hemang (90 MW), Pwalugu (50 MW), Kulpawn (40 MW) and Daboya (40 MW) in Bole, Nkwanta North, Talensi, Shama, Savelugu Nanton and North Gonja Districts respectively. Others include Awisam (50) MW in the Akyem Mansa District, Tanoso (56 MW) in Wassa Amenfi District, Ntereso (64 MW) in Sawla-Tuna-Kalba District and Abatumesu (50 MW) in Twifo Lower Denkyira District. There are also small hydro potential sites with capacity in the kW zone located at in some districts. These include Tsatsadu (30 kW) in Afadzato South District, Sawnu (135 kW) in Asunafo South District and Dodi Papasa (770 kW) in the Nkwanta South District.

⁵ Energy Commission, *National Energy Statistics 2009 to 2018*, pp 7-8, 2019

⁶ Energy Commission, *2019 Energy Supply and Demand Outlook for Ghana*, page 1, 2019.

GHANA HYDRO POTENTIAL MAP SMALL AND MEDIUM POTENTIAL SITES

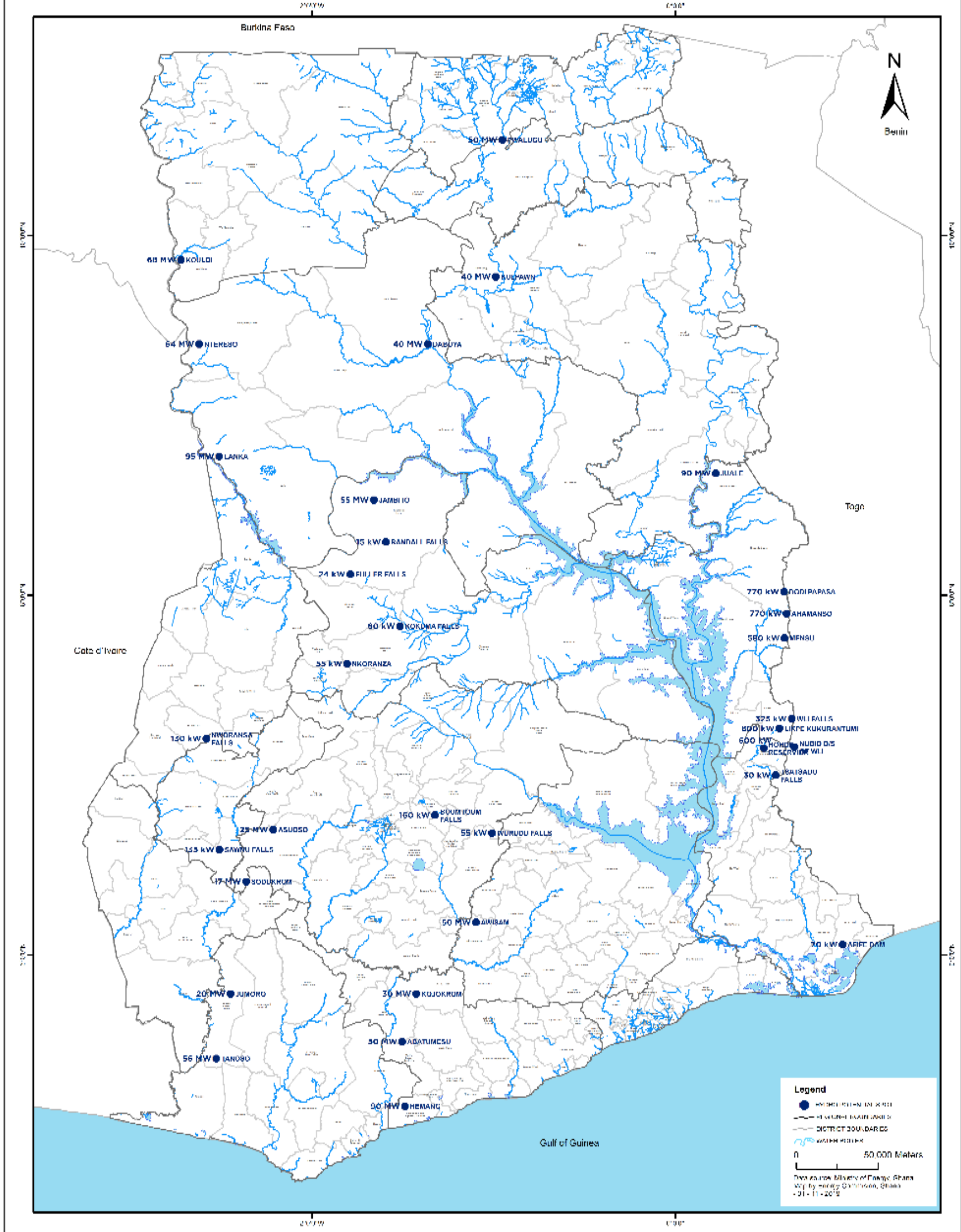


Fig. 5: Hydro Map

2.4 Bioenergy

Bioenergy refers to energy obtained from natural organism such as plants and animals. Ghana's total land area is estimated at 23.9 million hectares (ha) of which 65.7% lies within the savanna zone (SZ) in the north while the remaining 8.2 million ha are within the tropical high forest zone (HFZ) in the south. The savanna zone is characterized by an open canopy of trees and shrubs with a distinct ground layer of grasses. Bioenergy in Ghana include woodfuel and crop residue.

2.4.1 Woodfuel

Woodfuel, refers to woody biomass that can be used as fuel in its natural or raw state. In some cases, woodfuel is processed to other kinds of fuel such as charcoal, briquette, etc. If used in its raw form, it is referred to as firewood or fuel wood. Woodfuel in Ghana is obtained from forest and farmlands and the high dependency on woodfuel as primary energy source has contributed to the depletion of the forest. Currently, data on the amount of woodlot in the country that is available for use as woodfuel does not exist and therefore the necessary studies have to be conducted. The most important source of wood for charcoal production are forests in the transition zone of Ghana⁷. The main charcoal producing areas are shown in Figure 6. According to the figure, the main charcoal production hotspots in the country are Kintampo in the Kintampo North District, Bole in the Bole District and Atebubu in the Atebubu Amantin District.

⁷ Nutakor, E., Damnyag, L., Nunoo, I. and Obiri, D.B. 2016. *Ex-ante Assessment of Potential Impact of Wood Fuel Plantations on Environment and Livelihoods. ITTO Wood Fuel Project 2015/2016*, PowerPoint slide 4, 24 & 25

GHANA

CHARCOAL PRODUCTION HOTSPOTS

CHARCOAL RESOURCE MAP

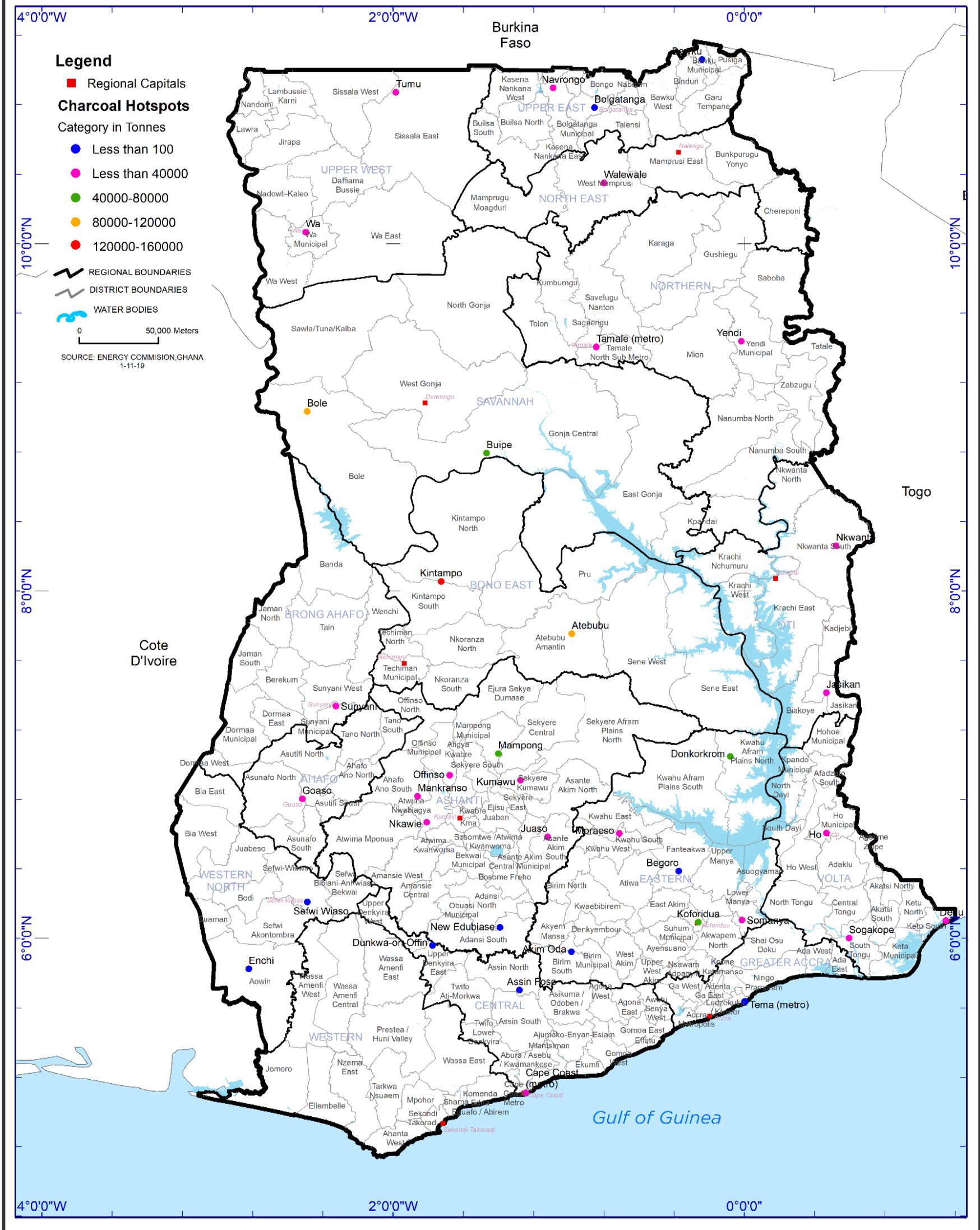


Fig. 6: Main Charcoal Production Areas

2.4.2 Crop Residue

There are many kinds of crop residues that can be used as fuel to complement or replace fuel-wood. Some of these residues are maize stalks and cobs, rice straw and husks, groundnut shells and haulms and cassava peels. The amount of residue generated during processing of food crops as well as the energy content can be estimated by using table 6⁸. The estimated amount of some crop residues and their energy contents for the various districts are presented in Tables 6 to 38. Since part of the crop residue is used as manure and animal feed, the amount available for energy usage is far lower than that stated. Data on the amount of crop residue that is used for non-energy purposes is not available and therefore the actual amount of crop residue available for energy purposes remains unknown. In addition, due to the scattered nature of farmlands in Ghana, the cost of transport involved in collecting such residues for energy utilisation is high.

Table 6: Amount of residues per unit mass of agriculture produce and their corresponding energy content

Type of Residue	Ratio of residues to crop volume (t/t)	Energy of residue (MJ/kg)
Maize (cobs & stalks)	1.5	17.65-18.77
Cassava	0.5	14.24
Yam straw	0.5	14.24
Cocoyam straw	0.5	14.24
Rice straw	1.5	16.28
Rice husk	0.25	16.14
Groundnut shells	0.3	10.00-17.00
Groundnut haulms	2	10.00-17.00
Oil Palm shells	0.45	10.00-17.00
Sorghum stalks	1	10.00-17.00
Millet straw	1.2	10.00-17.00

⁸ Renewable Energy and Energy Efficiency Partnership (REEEP), *Renewable Energy Policy Framework for Climate Mitigation in Ghana* p 15, 2010

a) Ahafo Region

Table 7: Quantity of Crop Residues Produced in the Districts in Ahafo Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Asunafo North	25,031.0	61,056.7	782.3	646.0	107.7	30,267.6
Asunafo South	18,176.4	195,203.0	325.1	616.1	102.7	34,135.7
Asutifi North	7,027.9	99,579.8	542.4	2,432.3	405.4	20,471.8
Asutifi South	7,266.2	77,077.6	586.5	2,268.0	378.0	13,046.4
Tano North	18,001.1	37,729.8	2,696.3	765.9	127.7	6,413.5
Tano South	18,621.9	134,227.8	13,397.9	1,459.7	243.3	6,275.9
TOTAL	94,124.5	604,874.5	18,330.5	8,187.9	1,364.7	110,610.9

Table 8: Energy Content of Crop Residues Produced in the Districts in Ahafo Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Asunafo North	455,815.0	869,446.6	11,139.2	10,516.5	1,737.7	431,010.5
Asunafo South	330,992.2	2,779,690.4	4,629.3	10,030.5	1,657.4	486,092.5
Asutifi North	127,977.1	1,418,015.6	7,723.8	39,597.0	6,542.8	291,518.8
Asutifi South	132,318.2	1,097,584.1	8,352.0	36,923.0	6,100.9	185,780.7
Tano North	327,799.7	537,272.4	38,395.6	12,468.9	2,060.3	91,327.7
Tano South	339,104.8	1,911,403.9	190,785.6	23,763.1	3,926.5	89,368.3
TOTAL	1,714,007.0	8,613,413.0	261,025.5	133,299.0	22,025.5	1,575,098.4

b) Ashanti Region

Table 9: Quantity of Crop Residues Produced in the Districts in Ashanti Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam Straw	Groundnut Shells	Groundnut Haulms
Adansi South (East)	9,805.8	79,569.1	6,043.8	11,799.0	1,966.5	8,006.7	0.0	0.0
Adansi North	11,063.3	79,526.3	4,771.2	2,279.1	379.9	3,096.0	0.0	0.0
Afigya Kwabre	10,695.0	46,740.8	7,626.5	1,190.0	198.3	8,070.0	15.8	105.0
Ahafo Ano North	29,766.0	72,965.5	4,848.8	3,520.9	586.8	19,164.3	0.0	0.0
Ahafo Ano South	26,395.8	133,360.2	3,528.9	7,145.1	1,190.9	31,796.4	0.0	0.0
Amansie Central	15,525.1	65,874.9	5,969.8	219.6	36.6	4,595.5	0.0	0.0
Amansie West	11,699.4	54,111.6	4,032.6	281.8	47.0	4,691.8	0.0	0.0
Asante Akim Central	9,960.1	24,254.5	1,644.0	1,010.9	168.5	4,307.4	0.0	0.0
Asante Akim North	38,338.9	58,326.6	6,916.6	3,357.9	559.7	4,325.3	0.0	0.0
Asante Akim South	15,472.1	83,927.6	1,738.1	2,261.0	376.8	22,948.7	0.0	0.0
Asokore Mampong	134.1	616.7	0.0	69.0	11.5	0.0	0.0	0.0
Atwima Kwanwoma	6,385.4	36,206.3	3,276.9	1,615.0	269.2	1,830.4	0.0	0.0
Atwima Mponua	13,666.3	60,238.3	4,592.0	5,795.0	965.8	18,300.2	0.0	0.0
Atwima Nwabiagya	20,920.5	79,820.5	10,337.7	4,092.8	682.1	12,953.2	8.4	56.0
Bekwai (Amansie East)	13,531.8	64,205.7	3,487.6	573.0	95.5	4,734.1	0.0	0.0
Bosome Freho	7,254.1	26,955.6	1,709.0	2,465.8	411.0	4,534.3	0.0	0.0
Bosumtwe	6,093.7	25,796.9	3,215.7	1,147.4	191.2	1,292.8	0.0	0.0
Ejura Sekyedumase	90,689.0	34,747.5	108,994.4	21,670.9	3,611.8	71.9	2,108.9	14,059.7
Ejisu Juaben	10,839.2	66,545.3	3,409.6	5,058.2	843.0	6,376.0	0.0	0.0
KMA ⁹	594.0	3,494.7	36.5	346.5	57.8	12.7	0.0	0.0
Kwabre East	2,796.5	48,319.0	1,484.8	648.8	108.1	6,212.2	0.0	0.0
Mampong (Sekyere West)	33,795.6	93,975.8	56,169.2	258.5	43.1	2,407.3	172.4	1,149.5
Obuasi (Adansi West)	2,806.4	4,293.1	3,365.5	324.1	54.0	1,079.9	0.0	0.0
Offinso	28,151.7	53,957.9	2,835.6	1,091.4	181.9	3,130.3	66.5	443.4
Offinso North	39,909.0	64,952.8	7,979.1	1,813.5	302.3	2,223.4	207.4	1,382.6
Sekyere Afram Plains	8,618.7	20,461.9	7,104.8	629.2	104.9	4,203.1	33.2	221.6
Sekyere Central	23,837.4	75,604.3	24,921.6	444.7	74.1	4,396.2	82.8	552.1

⁹ KMA means Kumasi Metropolitan Assembly

Sekyere East	20,863.4	81,143.7	21,407.4	821.0	136.8	1,837.8	31.1	207.4
Sekyere South	17,830.8	48,227.1	12,135.5	654.2	109.0	7,212.2	23.7	158.3
TOTAL	527,439.1	1,588,220.0	323,583.2	82,584.3	13,764.1	193,810.2	2,750.3	18,335.5

Table 10: Energy Content of Crop Residues Produced in the Districts in Ashanti Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam Straw	Groundnut Shells	Groundnut Haulms
Adansi South (East)	178,563.6	1,133,063.5	86,063.3	192,087.7	31,739.3	114,015.8	0.0	0.0
Adansi North	201,462.9	1,132,454.8	67,941.5	37,103.7	6,130.8	44,087.5	0.0	0.0
Afigya Kwabre	194,756.2	665,588.4	108,600.7	19,373.6	3,201.2	114,916.1	212.7	1,417.8
Ahafo Ano North	542,038.3	1,039,029.3	69,047.4	57,320.6	9,471.3	272,899.8	0.0	0.0
Ahafo Ano South	480,667.5	1,899,049.4	50,251.4	116,322.2	19,220.3	452,781.0	0.0	0.0
Amansie Central	282,711.9	938,058.8	85,009.8	3,575.1	590.7	65,439.7	0.0	0.0
Amansie West	213,046.1	770,548.8	57,424.1	4,588.0	758.1	66,811.7	0.0	0.0
Asante Akim Central	181,373.8	345,383.5	23,411.0	16,457.1	2,719.3	61,337.0	0.0	0.0
Asante Akim North	698,150.9	830,570.8	98,492.0	54,666.6	9,032.8	61,592.5	0.0	0.0
Asante Akim South	281,746.6	1,195,128.6	24,751.0	36,808.8	6,082.0	326,789.9	0.0	0.0
Asokore Mampong	2,442.8	8,781.9	0.0	1,123.8	185.7	0.0	0.0	0.0
Atwima Kwanwoma	116,277.5	515,577.3	46,663.4	26,291.8	4,344.3	26,064.5	0.0	0.0
Atwima Mponua	248,863.7	857,793.4	65,390.4	94,342.8	15,588.6	260,595.5	0.0	0.0
Atwima Nwabiagya	380,962.3	1,136,644.1	147,208.4	66,630.0	11,009.5	184,453.9	113.4	756.0
Bekwai (Amansie East)	246,414.6	914,289.0	49,663.0	9,328.4	1,541.4	67,413.0	0.0	0.0
Bosome Freho	132,097.5	383,847.3	24,335.8	40,143.5	6,633.1	64,569.0	0.0	0.0
Bosomtwe	110,965.8	367,347.9	45,791.4	18,679.8	3,086.5	18,408.8	0.0	0.0
Ejura Sekyedumase	1,651,445.8	494,803.8	1,552,080.1	352,801.6	58,294.6	1,024.1	28,470.8	189,805.4
Ejisu Juaben	197,381.5	947,605.4	48,552.7	82,348.1	13,606.7	90,794.3	0.0	0.0
KMA	10,816.7	49,764.1	519.8	5,641.0	932.1	180.4	0.0	0.0
Kwabre East	50,925.0	688,062.8	21,142.9	10,561.7	1,745.1	88,462.2	0.0	0.0

Mampong (Sekyere West)	615,418.1	1,338,215.8	799,849.7	4,208.1	695.3	34,279.4	2,327.7	15,518.3
Obuasi (Adansi West)	51,105.3	61,133.6	47,925.1	5,276.9	871.9	15,378.3	0.0	0.0
Offinso	512,641.9	768,360.7	40,378.8	17,768.2	2,935.9	44,575.5	897.9	5,985.7
Offinso North	726,742.9	924,927.9	113,622.8	29,523.8	4,878.3	31,661.7	2,799.7	18,664.9
Sekyere Afram Plains	156,946.0	291,377.7	101,172.6	10,242.7	1,692.4	59,851.8	448.7	2,991.1
Sekyere Central	434,079.1	1,076,605.2	354,884.2	7,239.6	1,196.2	62,601.4	1,117.9	7,452.8
Sekyere East	379,923.2	1,155,485.9	304,841.9	13,366.5	2,208.6	26,170.9	420.0	2,800.3
Sekyere South	324,698.9	686,753.5	172,809.3	10,651.0	1,759.9	102,702.2	320.5	2,136.4
TOTAL	9,604,666.4	22,616,253.3	4,607,824.4	1,344,472.9	222,151.8	2,759,857.8	37,129.3	247,528.7

c) Bono Region

Table 11: Quantity of Crop Residues Produced in the Districts in Bono Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Groundnut shells	Groundnut haulms	Sorghum stalks
Banda	3,415.5	50,747.8	56,911.4	6.1	1.0	0.0	71.6	477.6	457.5
Berekum Municipal	35,624.6	101,210.6	7,737.6	64.8	10.8	16,574.6	0.0	0.0	0.0
Dormaa East	28,589.6	84,567.1	2,799.9	0.0	0.0	4,943.2	0.0	0.0	0.0
Dormaa Municipal	32,520.6	48,150.1	1,847.9	997.5	166.3	5,564.1	0.0	0.0	0.0
Dormaa West	19,936.7	21,186.8	63.0	247.5	41.3	5,498.4	0.0	0.0	0.0
Jaman North	11,354.2	377,645.0	42,259.0	108.0	18.0	2,913.8	0.0	0.0	0.0
Jaman South	19,361.7	53,666.7	18,914.0	7.2	1.2	6,173.8	0.0	0.0	0.0
Sunyani Municipal	38,797.9	66,073.6	3,100.8	0.0	0.0	952.3	0.0	0.0	0.0
Sunyani West	55,529.3	62,124.0	2,550.6	0.0	0.0	3,263.3	0.0	0.0	0.0
Tain	8,076.5	85,893.9	51,432.2	5.1	0.9	253.5	184.1	1,227.6	175.8

Wenchi Municipal	38,754.5	119,331.9	78,480.8	132.6	22.1	175.5	141.8	945.0	105.4
TOTAL	291,961.0	1,070,597.4	266,097.2	1,568.8	261.5	46,312.3	397.5	2,650.2	738.7

Table 12: Energy Content of Crop Residues Produced in the Districts in Bono Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Groundnut shells	Groundnut haulms	Sorghum stalks
Banda	62,196.3	722,648.7	810,418.3	99.6	16.5	0.0	967.1	6,447.6	6,176.3
Berekum Municipal	648,724.2	1,441,238.2	110,183.0	1,054.9	174.3	236,022.0	0.0	0.0	0.0
Dormaa East	520,617.1	1,204,235.8	39,870.6	0.0	0.0	70,391.2	0.0	0.0	0.0
Dormaa Municipal	592,200.1	685,657.1	26,313.8	16,239.3	2,683.3	79,232.4	0.0	0.0	0.0
Dormaa West	363,046.9	301,700.4	897.1	4,029.3	665.8	78,297.2	0.0	0.0	0.0
Jaman North	206,759.8	5,377,664.8	601,767.4	1,758.2	290.5	41,492.5	0.0	0.0	0.0
Jaman South	352,576.0	764,213.9	269,335.9	117.2	19.4	87,914.2	0.0	0.0	0.0
Sunyani Municipal	706,508.8	940,887.4	44,155.4	0.0	0.0	13,560.0	0.0	0.0	0.0
Sunyani West	1,011,187.6	884,645.1	36,320.9	0.0	0.0	46,468.7	0.0	0.0	0.0
Tain	147,072.2	1,223,129.1	732,393.8	83.0	13.7	3,609.8	2,485.9	16,572.6	2,373.6
Wenchi Municipal	705,720.2	1,699,286.8	1,117,567.0	2,158.7	356.7	2,499.1	1,913.6	12,757.5	1,422.9
TOTAL	5,316,609.1	15,245,307.2	3,789,223.2	25,540.4	4,220.1	659,487.2	5,366.7	35,777.7	9,972.7

d) Bono East Region

Table 13: Quantity of Crop Residues Produced in the Districts in Bono East Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Groundnut shells	Groundnut haulms	Sorghum stalks
Atebubu - Amantin	9,443.8	201,292.0	131,339.5	1,716.8	286.1	0.0	137.6	917.4	51.8
Kintampo North	43,284.4	71,750.3	86,778.5	613.4	102.2	14.8	841.8	5,611.8	159.3
Kintampo South	34,458.6	63,396.5	112,237.5	0.0	0.0	32.0	921.0	6,140.0	0.0
Nkoranza North	62,284.9	67,453.1	93,462.6	100.8	16.8	241.1	456.3	3,042.0	93.2
Nkoranza South	52,872.8	61,820.1	79,784.6	180.0	30.0	724.5	412.2	2,748.2	39.6
Pru	7,289.9	116,157.9	127,581.5	3,568.5	594.8	0.0	788.0	5,253.6	66.0
Sene East	3,334.5	10,792.5	94,236.5	2,374.4	395.7	0.0	514.4	3,429.0	0.0
Sene West	5,756.6	4,204.2	112,749.5	8,083.6	1,347.3	0.0	492.1	3,280.5	111.6
Techiman Municipal	34,577.9	106,598.9	76,782.1	23.0	3.8	3,060.1	45.9	306.0	16.8
Techiman North	22,604.5	96,091.7	39,708.5	25.5	4.3	351.2	32.4	216.0	15.6
TOTAL	275,907.8	799,557.2	954,660.8	16,686.0	2,781.0	4,423.6	4,641.7	30,944.5	553.9

Table 14: Energy Content of Crop Residues Produced in the Districts in Bono East Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Groundnut shells	Groundnut haulms	Sorghum stalks
Atebubu - Amantin	171,972.0	2,866,398.1	1,870,274.5	27,948.7	4,618.1	0.0	1,857.7	12,384.9	699.3
Kintampo North	788,208.5	1,021,723.6	1,235,725.8	9,986.8	1,650.2	210.0	11,364.0	75,759.8	2,149.9
Kintampo South	627,491.1	902,766.7	1,598,262.0	0.0	0.0	455.7	12,433.5	82,890.0	0.0
Nkoranza North	1,134,207.6	960,531.9	1,330,907.4	1,641.0	271.2	3,433.0	6,160.1	41,067.0	1,258.5

Nkoranza South	962,812.8	880,318.2	1,136,132.4	2,930.4	484.2	10,316.9	5,565.1	37,100.7	534.6
Pru	132,748.2	1,654,088.5	1,816,760.6	58,095.2	9,599.3	0.0	10,638.5	70,923.6	891.0
Sene East	60,721.3	153,685.6	1,341,928.3	38,655.9	6,387.2	0.0	6,943.7	46,291.5	0.0
Sene West	104,828.4	59,867.8	1,605,553.2	131,600.6	21,744.8	0.0	6,643.0	44,286.5	1,506.6
Techiman Municipal	629,664.0	1,517,968.9	1,093,376.4	373.6	61.7	43,575.7	619.7	4,131.0	226.8
Techiman North	411,627.2	1,368,345.1	565,448.8	415.1	68.6	5,000.6	437.4	2,916.0	210.6
TOTAL	5,024,281.0	11,385,694.3	13,594,369.4	271,647.3	44,885.2	62,991.9	62,662.7	417,751.0	7,477.3

e) Central Region

Table 15: Quantity of Crop Residues Produced in the Districts in Central Region (Tonnes)

DISTRICT	Maize (Cobs & Stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam Straw
Abura-Asebu-Kwamankese	26,708.7	33,023.2	2,407.5	356.4	3,834.9	1,460.8
Agona East	11,316.1	45,263.8	1,091.8	82.5	887.7	155.1
Agona West	11,549.3	25,774.2	696.0	0.0	0.0	136.3
Ajumako-Enyan-Esiam	16,430.4	75,052.9	1,228.5	0.0	0.0	2,954.7
Asikuma-Odoben-Brakwa	19,850.2	45,683.2	91.5	160.8	1,730.2	114.8
Assin North	33,138.8	96,427.5	1,192.5	1,387.5	14,929.5	4,117.8
Assin South	18,716.0	81,689.8	232.4	1,176.0	12,653.8	1,667.3
Awutu-Senya	41,573.0	260,456.4	496.8	0.0	0.0	0.0
Cape Coast	7,059.2	70,537.5	0.0	0.0	0.0	0.0
Effutu (Winneba)	27,585.5	83,711.3	115.2	0.0	0.0	0.0
Gomoa East	11,294.3	46,189.2	145.6	1,296.0	13,945.0	0.0
Gomoa West	15,248.3	40,433.8	80.0	0.0	0.0	0.0
Komenda-Edina-Eguafo-Abirem	42,418.9	162,945.5	0.0	0.0	0.0	0.0
Mfantiman	21,204.8	91,249.6	0.0	0.0	0.0	0.0
Twifo-Herman/L. Denkyira	23,096.1	82,293.8	530.0	745.8	8,024.8	1,124.7

Upper Denkyira East	24,038.9	62,338.4	1,847.4	1,048.8	174.8	6,503.4
Upper Denkyira West	15,750.5	54,556.6	1,055.3	1,198.0	12,890.4	10,632.3
TOTAL	366,979.0	1,357,626.7	11,210.5	7,451.8	69,071.1	28,867.2

Table 16: Energy Content of Crop Residues Produced in the Districts in Central Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam Straw
Abura-Asebu-Kwamankese	486,365.4	470,250.4	34,282.8	5,802.2	61,894.7	20,801.8
Agona East	206,065.5	644,556.5	15,547.2	1,343.1	14,327.5	2,208.6
Agona West	210,311.8	367,024.6	9,911.0	0.0	0.0	1,940.9
Ajumako-Enyan-Esiam	299,197.6	1,068,752.6	17,493.8	0.0	0.0	42,074.9
Asikuma-Odoben-Brakwa	361,471.4	650,528.8	1,303.0	2,617.8	27,925.6	1,635.3
Assin North	603,456.6	1,373,127.6	16,981.2	22,588.5	240,962.1	58,636.8
Assin South	340,817.4	1,163,262.0	3,309.4	19,145.3	204,231.7	23,741.6
Awutu-Senya	757,043.4	3,708,899.1	7,074.4	0.0	0.0	0.0
Cape Coast	128,547.1	1,004,454.0	0.0	0.0	0.0	0.0
Effutu (Winneba)	502,331.0	1,192,048.2	1,639.7	0.0	0.0	0.0
Gomoa East	205,668.3	657,734.2	2,073.3	21,098.9	225,071.7	0.0
Gomoa West	277,670.6	575,776.6	1,138.5	0.0	0.0	0.0
Komenda-Edina-Eguafo-Abirem	772,447.4	2,320,343.2	0.0	0.0	0.0	0.0
Mfantseman	386,138.5	1,299,394.3	0.0	0.0	0.0	0.0
Twifo-Herman/L. Denkyira	420,579.4	1,171,863.0	7,547.2	12,141.6	129,520.4	16,015.7
Upper Denkyira East	437,748.0	887,698.1	26,306.8	17,074.5	2,821.3	92,608.2
Upper Denkyira West	286,817.3	776,886.0	15,026.8	19,503.3	208,050.6	151,404.0
TOTAL	6,682,676.7	19,332,599.2	159,635.1	121,315.2	1,114,805.6	411,067.8

f) Eastern Region

Table 17: Amount of Crop Residues Produced in the Districts in Eastern Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Groundnut shells	Groundnut haulms
Akuapim North	40,246.9	178,250.3	1,140.2	0.0	0.0	1,291.8	0.0	0.0
Akuapim South	8,878.5	35,740.8	639.2	0.0	0.0	256.1	0.0	0.0
Akyemansa	21,548.4	101,543.1	8,410.3	7,879.4	1,313.2	5,736.7	0.0	0.0
Asuogyaman	30,740.9	137,332.8	14,702.8	0.0	0.0	90.8	0.0	0.0
Atiwa	27,361.6	169,527.6	3,971.4	1,048.1	174.7	17,751.8	0.0	0.0
Ayensuano	20,183.6	98,308.3	1,115.4	0.0	0.0	1,257.8	0.0	0.0
Birim Central	38,128.6	105,923.4	4,657.5	13,361.3	2,226.9	11,297.5	0.0	0.0
Birim North	15,067.6	69,393.9	5,925.1	7,108.0	1,184.7	3,851.0	0.0	0.0
Birim South	27,124.8	77,014.6	3,138.0	9,700.9	1,616.8	8,274.0	0.0	0.0
Denkyembour	10,613.4	43,254.9	962.8	2,890.9	481.8	4,945.0	0.0	0.0
East Akim	23,463.4	105,641.3	3,955.8	150.5	25.1	9,748.1	0.0	0.0
Fanteakwa	55,205.7	255,593.2	20,570.9	156.5	26.1	34,519.3	120.1	800.4
Kwaebibirem	15,000.4	68,721.2	1,345.1	3,988.8	664.8	7,040.1	0.0	0.0
Kwahu Afram Plains North	50,755.1	140,856.6	140,356.4	195.7	32.6	42.4	1,521.1	10,140.5
Kwahu Afram Plains South	62,168.2	170,554.8	169,931.4	235.4	39.2	52.8	1,835.6	12,237.7
Kwahu East	12,395.3	56,697.3	5,432.5	0.0	0.0	1,828.8	301.2	2,007.9
Kwahu South	17,249.4	65,109.1	5,612.4	0.0	0.0	1,935.2	347.1	2,314.3
Kwahu West	16,408.2	125,619.8	10,871.0	508.6	84.8	4,143.4	0.0	0.0
Lower Manya Krobo	20,435.5	56,461.4	6,106.1	4,789.0	798.2	176.5	0.0	0.0
New Juaben	20,181.5	50,834.7	996.2	0.0	0.0	1,272.5	0.0	0.0
Nsawam Adoagyiri	16,796.4	68,828.5	1,240.3	0.0	0.0	499.8	0.0	0.0
Suhum Kraboa Coaltar	16,064.8	79,159.8	934.5	0.0	0.0	1,045.7	0.0	0.0
Upper Manya Krobo	30,638.4	91,649.6	9,175.8	6,436.5	1,072.8	274.5	0.0	0.0
UpperWest Akim	38,521.4	111,006.5	6,262.2	73.8	12.3	2,016.2	0.0	0.0
West Akim	46,888.4	133,780.3	7,416.8	71.8	12.0	2,489.0	0.0	0.0
Yilo Krobo	30,787.5	127,517.2	13,817.6	76.2	12.7	2,217.4	0.0	0.0
TOTAL	712,854.1	2,724,321.1	448,687.8	58,671.2	9,778.5	124,054.2	4,125.1	27,500.8

Table 18: Energy Content of Crop Residue Produced in the Districts in Eastern Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Groundnut shells	Groundnut haulms
Akuapim North	732,895.2	2,538,284.2	16,236.1	0.0	0.0	18,394.6	0.0	0.0
Akuapim South	161,677.9	508,948.7	9,102.8	0.0	0.0	3,647.5	0.0	0.0
Akyemansa	392,396.9	1,445,973.9	119,762.9	128,276.2	21,195.5	81,691.2	0.0	0.0
Asuogyaman	559,791.4	1,955,618.9	209,367.9	0.0	0.0	1,293.5	0.0	0.0
Atiwa	498,255.2	2,414,073.2	56,553.3	17,063.1	2,819.4	252,786.0	0.0	0.0
Ayensuano	367,544.2	1,399,910.7	15,883.1	0.0	0.0	17,911.7	0.0	0.0
Birim Central	694,321.0	1,508,349.2	66,323.4	217,521.4	35,941.8	160,876.1	0.0	0.0
Birim North	274,381.6	988,168.5	84,373.0	115,718.7	19,120.6	54,838.2	0.0	0.0
Birim South	493,942.7	1,096,688.6	44,685.0	157,930.4	26,095.4	117,822.2	0.0	0.0
Denkyembour	193,270.8	615,949.2	13,710.4	47,064.5	7,776.6	70,416.8	0.0	0.0
East Akim	427,268.4	1,504,332.7	56,330.1	2,449.3	404.7	138,812.6	0.0	0.0
Fanteakwa	1,005,295.2	3,639,647.9	292,929.4	2,547.2	420.9	491,555.1	1,620.8	10,805.4
Kwaebibirem	273,157.5	978,589.6	19,153.9	64,936.9	10,729.7	100,251.0	0.0	0.0
Kwahu Afram Plains North	924,250.2	2,005,798.2	1,998,675.6	3,185.9	526.4	603.2	20,534.4	136,896.3
Kwahu Afram Plains South	1,132,082.9	2,428,700.9	2,419,823.3	3,831.9	633.2	752.3	24,781.3	165,208.3
Kwahu East	225,719.3	807,369.7	77,358.8	0.0	0.0	26,041.9	4,066.0	27,106.8
Kwahu South	314,110.7	927,153.2	79,921.2	0.0	0.0	27,556.8	4,686.5	31,243.4
Kwahu West	298,792.8	1,788,825.2	154,803.4	8,280.6	1,368.2	59,001.4	0.0	0.0
Lower Manya Krobo	372,129.8	804,010.5	86,951.2	77,964.7	12,882.4	2,513.5	0.0	0.0
New Juaben	367,505.4	723,886.1	14,185.6	0.0	0.0	18,120.9	0.0	0.0
Nsawam Adoagyiri	305,863.3	980,117.3	17,662.0	0.0	0.0	7,117.0	0.0	0.0
Suhum Kraboa Coaltar	292,540.7	1,127,235.9	13,306.8	0.0	0.0	14,890.4	0.0	0.0
Upper Manya Krobo	557,925.6	1,305,090.0	130,662.8	104,786.5	17,314.2	3,909.3	0.0	0.0
Upper West Akim	701,475.3	1,580,732.8	89,174.2	1,201.0	198.4	28,711.1	0.0	0.0

West Akim	853,837.4	1,905,031.6	105,614.7	1,168.7	193.1	35,442.9	0.0	0.0
Yilo Krobo	560,641.0	1,815,845.1	196,762.9	1,240.2	204.9	31,575.4	0.0	0.0
TOTAL	12,981,072.3	38,794,332.0	6,389,313.8	955,167.1	157,825.5	1,766,532.5	55,689.0	371,260.3

g) Greater Accra Region

Table 19: Quantity of Crop Residues Produced in the Districts in Greater Accra Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Rice Straw	Rice Husk
Ada East	214.0	6,055.0	0.0	0.0
Ada West	470.3	1,027.1	0.0	0.0
Adentan	84.2	21.0	0.0	0.0
AMA ¹⁰	0.0	0.0	0.0	0.0
Ashaiman	376.3	0.0	262.5	43.8
Ga Central	3.3	6.0	0.0	0.0
Ga East	150.6	302.5	0.0	0.0
Ga South	4,170.8	16,157.3	0.0	0.0
Ga West	1,471.4	9,011.7	0.0	0.0
Korle Klottey	599.9	1,205.6	0.0	0.0
La Dade-Kotopon	0.0	0.0	0.0	0.0
La Nkwantanang-Madina	51.3	72.3	0.0	0.0
Ledzokuku	67.2	16.0	0.0	0.0
Ningo-Prampram	2,639.1	595.0	2,625.0	437.5
Shai-Osudoku	15,467.0	13,169.0	30,977.3	5,162.9
Tema	189.6	0.0	0.0	0.0
TOTAL	25,955.0	47,638.5	33,864.8	5,644.2

¹⁰ AMA means Accra Metropolitan Assembly

Table 20: Energy Content of Crop Residues Produced in the Districts in Greater Accra Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk
Ada East	3,897.3	86,223.2	0.0	0.0	0.0
Ada West	8,563.3	14,625.2	0.0	0.0	0.0
Adentan	1,534.0	299.0	0.0	0.0	0.0
AMA	0.0	0.0	0.0	0.0	0.0
Ashaiman	6,852.8	0.0	0.0	4,273.5	706.1
Ga Central	60.4	85.4	0.0	0.0	0.0
Ga East	2,742.4	4,307.2	0.0	0.0	0.0
Ga South	75,950.7	230,079.2	0.0	0.0	0.0
Ga West	26,794.0	128,326.6	0.0	0.0	0.0
Korle Klottey	10,924.6	17,167.0	0.0	0.0	0.0
La Dade-Kotopon	0.0	0.0	0.0	0.0	0.0
La Nkwantanang-Madina	934.2	1,028.8	0.0	0.0	0.0
Ledzokuku	1,223.7	227.8	0.0	0.0	0.0
Ningo-Prampram	48,058.0	8,472.8	0.0	42,735.0	7,061.3
Shai-Osudoku	281,653.2	187,526.6	0.0	504,310.1	83,328.9
Tema	3,452.1	0.0	0.0	0.0	0.0
TOTAL	472,640.7	678,368.8	0.0	551,318.6	91,096.3

h) North East Region

Table 21: Quantity of Crop Residues Produced in the Districts in North East Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Bunkpurugu/Yunyoo	3,960.0	2,582.1	3,114.8	792.0	132.0	860.1	5,733.8	3,949.2	5,590.3
Chereponi	7,500.0	2,126.6	6,075.0	4,330.2	721.7	456.0	3,040.0	2,037.0	2,400.0
East Mamprusi	6,438.0	3,325.0	4,329.6	9,791.2	1,631.9	1,705.3	11,368.8	4,501.5	12,112.8
Mamprugu Moagduri	13,833.8	3,008.3	800.0	4,572.0	762.0	3,919.2	26,128.0	1,843.0	2,040.0
West Mamprusi	19,183.6	3,800.0	17,500.0	18,496.5	3,082.8	3,740.2	24,934.8	9,645.1	7,910.7
TOTAL	50,915.4	14,842.0	31,819.4	37,981.9	6,330.3	10,680.8	71,205.3	21,975.7	30,053.9

Table 22: Energy Content of Crop Residues Produced in the Districts in North East Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Bunkpurugu/Yunyoo	72,111.6	36,768.8	44,355.2	12,893.8	2,130.5	11,610.9	77,405.8	53,313.8	75,469.5
Chereponi	136,575.0	30,283.1	86,508.0	70,496.6	11,648.4	6,156.0	41,040.0	27,499.3	32,400.0
East Mamprusi	117,236.0	47,348.0	61,653.5	159,401.6	26,338.5	23,021.8	153,478.8	60,770.3	163,522.8
Mamprugu Moagduri	251,912.6	42,837.5	11,392.0	74,432.2	12,298.7	52,909.2	352,728.0	24,880.3	27,540.0
West Mamprusi	349,333.4	54,112.0	249,200.0	301,123.0	49,755.6	50,492.9	336,619.2	130,208.7	106,794.9
TOTAL	927,168.5	211,349.5	453,108.7	618,347.1	102,171.6	144,190.8	961,271.8	296,672.2	405,727.2

i) Northern Region

Table 23: Quantity of Crop Residues Produced in the Districts in Northern Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Gushiegu	14,700.8	33,435.7	14,001.0	9,975.0	1,662.5	2,707.4	18,049.2	4,913.4	5,040.0
Karaga	16,481.9	5,145.0	9,900.0	9,165.6	1,527.6	1,658.3	11,055.0	4,260.0	3,993.8
Kpandai	3,240.0	59,619.0	157,500.0	3,217.5	536.3	1,170.0	7,800.0	6,765.0	138.0
Kumbungu	12,787.5	4,297.5	4,584.0	15,675.0	2,612.5	331.2	2,208.0	2,600.0	1,700.4
Mion	12,893.7	13,428.0	27,775.0	20,303.3	3,383.9	2,595.6	17,304.0	7,761.5	4,725.5
Nanumba North	14,978.3	77,871.5	136,000.0	3,753.8	625.6	2,378.8	15,858.4	7,449.1	3,662.1
Nanumba South	13,650.0	86,680.0	124,422.5	4,312.5	718.8	1,609.5	10,730.0	9,018.0	1,920.1
Saboba	4,991.8	2,882.6	38,010.0	2,633.4	438.9	1,654.9	11,032.3	6,480.0	5,086.2
Sagnerigu	11,857.5	875.0	1,515.0	4,700.6	783.4	214.8	1,432.1	840.0	104.2
Savelugu Nanton	22,737.9	7,925.7	40,600.0	24,575.7	4,096.0	5,100.0	34,000.0	2,940.0	1,716.0
Tamale Metro	18,604.7	4,710.0	30,300.0	20,387.1	3,397.9	98.5	656.6	3,220.0	1,250.2
Tatale Sanguli	9,486.0	28,600.0	84,000.0	8,646.3	1,441.1	1,907.4	12,716.0	6,400.0	6,971.8

Tolon	32,577.1	32,904.0	32,772.3	24,750.0	4,125.0	2,242.8	14,952.0	5,700.0	3,510.0
Yendi	18,829.4	31,596.8	56,000.0	16,902.5	2,817.1	4,174.5	27,830.0	5,878.3	8,112.5
Zabzugu	13,043.1	26,790.0	108,500.0	5,250.0	875.0	2,464.6	16,430.4	8,128.2	13,996.8
TOTAL	220,859.7	416,760.7	865,879.8	174,248.2	29,041.4	30,308.1	202,054.0	82,353.5	61,927.5

Table 24: Energy Content of Crop Residue in Produced in the Districts in Northern Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Gushiegu	267,702.3	476,124.4	199,374.2	162,393.0	26,832.8	36,549.6	243,664.2	66,330.3	68,040.0
Karaga	300,135.9	73,264.8	140,976.0	149,216.0	24,655.5	22,386.4	149,242.5	57,510.0	53,915.6
Kpandai	59,000.4	848,974.6	2,242,800.0	52,380.9	8,655.1	15,795.0	105,300.0	91,327.5	1,863.0
Kumbungu	232,860.4	61,196.4	65,276.2	255,189.0	42,165.8	4,471.2	29,808.0	35,100.0	22,955.7
Mion	234,794.3	191,213.9	395,516.0	330,536.9	54,615.7	35,040.6	233,604.0	104,780.7	63,794.6
Nanumba North	272,753.9	1,108,890.2	1,936,640.0	61,111.1	10,097.6	32,113.3	214,088.4	100,563.2	49,437.8
Nanumba South	248,566.5	1,234,323.2	1,771,776.4	70,207.5	11,600.6	21,728.3	144,855.0	121,743.0	25,921.2
Saboba	90,900.2	41,048.2	541,262.4	42,871.8	7,083.9	22,340.5	148,936.3	87,480.0	68,664.0
Sagnerigu	215,925.1	12,460.0	21,573.6	76,526.1	12,644.7	2,899.9	19,332.7	11,340.0	1,406.2
Savelugu/Nanton	414,056.3	112,862.5	578,144.0	400,092.1	66,108.6	68,850.0	459,000.0	39,690.0	23,166.0
Tamale Metro	338,791.6	67,070.4	431,472.0	331,902.0	54,841.3	1,329.7	8,864.6	43,470.0	16,877.5
Tatale Sanguli	172,740.1	407,264.0	1,196,160.0	140,762.3	23,258.6	25,749.9	171,666.0	86,400.0	94,118.8
Tolon	593,229.5	468,553.0	466,677.6	402,930.0	66,577.5	30,277.8	201,852.0	76,950.0	47,385.0
Yendi	342,883.4	449,937.7	797,440.0	275,172.9	45,467.8	56,355.8	375,705.0	79,357.0	109,519.1
Zabzugu	237,515.2	381,489.6	1,545,040.0	85,470.0	14,122.5	33,271.6	221,810.4	109,730.7	188,956.8
TOTAL	4,021,855.0	5,934,672.8	12,330,128.4	2,836,761.3	468,727.8	409,159.4	2,727,729.2	1,111,772.4	836,021.3

j) Oti Region

Table 25: Quantity of Crop Residues Produced in the Districts in Oti Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Sorghum stalks
Biakoye	10,166.5	75,850.7	11,054.4	27,512.6	4,585.4	6,359.0	0.0
Jasikan	9,589.3	87,747.0	6,406.9	41,248.1	6,874.7	4,733.8	0.0
Kadjebi	13,864.1	52,850.4	9,780.2	27,217.5	4,536.3	6,323.2	322.3
Krachi East	6,033.0	73,126.8	48,470.4	13,992.6	2,332.1	610.7	2,083.4
Krachi Nchumuru	4,882.7	48,562.7	44,740.3	10,963.6	1,827.3	363.4	1,864.7
Krachi West	6,580.3	98,000.5	43,292.5	16,783.0	2,797.2	394.2	3,456.0
Nkwanta North	13,257.3	18,248.6	19,809.9	23,089.4	3,848.2	1,994.9	669.0
Nkwanta South	11,669.4	20,590.7	47,657.4	19,268.5	3,211.4	2,406.0	899.3
TOTAL	76,042.5	474,977.3	231,211.9	180,075.3	30,012.6	23,185.2	9,294.6

Table 26: Energy Content of Crop Residue Produced in the Districts in Oti Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw	Sorghum stalks
Biakoye	185,132.3	1,080,113.4	157,414.7	447,905.8	74,009.0	90,551.8	0.0
Jasikan	174,620.7	1,249,517.3	91,234.3	671,519.0	110,957.4	67,409.4	0.0
Kadjebi	252,464.9	752,590.1	139,269.3	443,100.9	73,215.1	90,042.0	4,351.3
Krachi East	109,860.9	1,041,325.6	690,218.5	227,799.8	37,640.1	8,696.9	28,126.2
Krachi Nchumuru	88,913.6	691,532.3	637,102.2	178,486.8	29,492.0	5,174.4	25,172.8
Krachi West	119,826.8	1,395,527.5	616,484.5	273,227.1	45,146.2	5,613.4	46,656.0
Nkwanta North	241,416.0	259,859.4	282,093.0	375,895.6	62,110.5	28,407.6	9,031.2
Nkwanta South	212,499.0	293,211.4	678,641.4	313,690.5	51,832.2	34,262.0	12,139.9
TOTAL	1,384,734.2	6,763,677.0	3,292,457.8	2,931,625.4	484,402.5	330,157.5	125,477.4

k) Savannah Region

Table 27: Quantity of Crop Residues Produced in the Districts in Savannah Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Bole	11,970.0	22,500.0	41,600.0	1,979.7	330.0	750.6	5,004.0	3,969.0	882.0
Central Gonja	9,644.4	18,423.8	27,650.0	7,728.0	1,288.0	1,687.5	11,250.0	1,100.0	588.0
East Gonja	13,680.0	49,117.5	134,794.8	14,301.0	2,383.5	3,471.0	23,140.0	819.0	1,760.4
North Gonja	7,200.0	5,850.0	720.0	1,620.0	270.0	1,218.9	8,126.0	114.8	144.0
Sawla Tuna Kalba	17,437.5	7,832.0	7,800.0	3,762.0	627.0	1,806.0	12,040.2	9,100.0	7,686.1
West Gonja	20,625.0	152,250.0	57,000.0	3,696.0	616.0	2,447.3	16,315.4	4,130.0	2,100.0
TOTAL	80,556.9	255,973.3	269,564.8	33,086.7	5,514.5	11,381.3	75,875.7	19,232.8	13,160.5

Table 28: Energy Content of Crop Residue Produced in the Districts in Savannah Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Bole	217,973.7	320,400.0	592,384.0	32,229.0	5,325.3	10,133.1	67,554.0	53,581.5	11,907.0
Central Gonja	175,624.5	262,354.2	393,736.0	125,811.8	20,788.3	22,781.3	151,875.0	14,850.0	7,938.0
East Gonja	249,112.8	699,433.2	1,919,478.1	232,820.3	38,469.7	46,858.5	312,390.0	11,056.5	23,765.4
North Gonja	131,112.0	83,304.0	10,252.8	26,373.6	4,357.8	16,455.2	109,701.0	1,549.1	1,944.0
Sawla Tuna Kalba	317,536.9	111,527.7	111,072.0	61,245.4	10,119.8	24,381.5	162,543.0	122,850.0	103,761.9
West Gonja	375,581.3	2,168,040.0	811,680.0	60,170.9	9,942.2	33,038.8	220,258.3	55,755.0	28,350.0
TOTAL	1,466,941.2	3,645,059.1	3,838,602.9	538,651.0	89,003.1	153,648.2	1,024,321.3	259,642.1	177,666.3

1) Upper East Region

Table 29: Quantity of Crop Residues Produced in the Districts in Upper East Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Bawku Municipal	27,000.0	8,625.0	1,437.5	72.0	480.0	2,730.0	2,304.0
Bawku West	19,167.8	10,266.3	1,711.1	1,161.0	7,740.0	9,145.2	8,607.7
Binduri	25,920.0	4,950.0	825.0	120.0	800.0	715.0	216.0
Bolgatanga Municipal	11,835.0	13,032.9	2,172.2	1,331.9	8,879.4	4,755.6	5,423.0
Bongo	5,281.2	4,556.3	759.4	2,182.5	14,550.0	6,994.0	5,473.4
Builsa North	6,204.0	22,856.4	3,809.4	2,004.8	13,365.6	6,957.6	8,704.8
Builsa South	2,224.8	6,075.0	1,012.5	199.8	1,332.0	621.5	504.4
Garu Tempene	56,732.4	26,941.5	4,490.3	1,523.2	10,154.4	18,050.2	8,438.4
Kassena Nankana Municipal	6,914.3	29,520.0	4,920.0	1,764.0	11,760.0	4,160.0	1,728.0
Kassena Nankana West	8,789.4	9,082.8	1,513.8	954.0	6,360.0	5,040.0	1,404.0
Nabdam	5,670.0	4,055.4	675.9	467.6	3,117.4	5,647.2	2,642.8
Pusiga	7,071.0	5,295.0	882.5	304.2	2,028.0	3,043.3	2,358.7
Talensi	15,702.0	11,126.3	1,854.4	1,244.5	8,296.8	7,581.0	5,359.7
TOTAL	198,511.8	156,382.8	26,063.8	13,329.5	88,863.6	75,440.6	53,164.9

Table 30: Energy Content of Crop Residue Produced in the Districts in Upper East Region (GJ)

DISTRICT	Maize (cobs & stalks)	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Bawku Municipal	491,670.0	140,415.0	23,201.3	972.0	6,480.0	36,855.0	31,104.0
Bawku West	349,044.7	167,135.4	27,616.3	15,673.5	104,490.0	123,460.2	116,204.2
Binduri	472,003.2	80,586.0	13,315.5	1,620.0	10,800.0	9,652.5	2,916.0
Bolgatanga Municipal	215,515.4	212,175.6	35,058.5	17,980.8	119,871.9	64,200.6	73,211.0
Bongo	96,170.7	74,175.8	12,256.3	29,463.8	196,425.0	94,419.0	73,891.4

Builsa North	112,974.8	372,102.2	61,483.7	27,065.3	180,435.6	93,927.6	117,514.8
Builsa South	40,513.6	98,901.0	16,341.8	2,697.3	17,982.0	8,390.3	6,808.9
Garu Tempane	1,033,097.0	438,607.6	72,472.6	20,562.7	137,084.4	243,677.7	113,918.4
Kassena Nankana Municipal	125,908.5	480,585.6	79,408.8	23,814.0	158,760.0	56,160.0	23,328.0
Kassena Nankana West	160,055.0	147,868.0	24,432.7	12,879.0	85,860.0	68,040.0	18,954.0
Nabdram	103,250.7	66,021.9	10,909.0	6,312.7	42,084.9	76,237.2	35,677.3
Pusiga	128,762.9	86,202.6	14,243.6	4,106.7	27,378.0	41,084.6	31,842.7
Talensi	285,933.4	181,135.4	29,929.6	16,801.0	112,006.8	102,343.5	72,355.7
TOTAL	3,614,899.9	2,545,912.0	420,669.7	179,948.8	1,199,658.6	1,018,448.1	717,726.4

m) Upper West Region

Table 31: Quantity of Crop Residues Produced in the Districts in Upper West Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Dafiama-Bussie-Issa	20,793.0	35,464.0	937.2	156.2	1,827.2	12,181.0	8,008.0	3,832.9
Jirapa	13,503.0	8,520.3	2,551.5	425.3	11,419.9	76,132.8	10,416.8	5,136.6
Lambussie-Karni	5,082.8	3,185.3	2,016.0	336.0	5,453.8	36,358.4	5,512.5	4,379.8
Lawra	6,672.0	4,915.5	630.0	105.0	2,610.9	17,406.0	18,502.5	4,304.2
Nadowli	20,830.5	38,532.0	554.4	92.4	2,671.5	17,810.0	12,818.0	8,189.3
Nandom	3,519.8	6,137.5	365.0	60.8	2,529.0	16,860.0	21,474.0	6,513.1
Sissala East	56,759.6	29,769.2	1,143.0	190.5	5,403.8	36,025.6	1,520.0	4,117.7
Sissala West	47,641.2	24,865.5	1,914.0	319.0	7,011.9	46,746.0	11,431.2	7,114.8
Wa East	32,947.2	71,830.3	3,398.3	566.4	8,916.4	59,442.8	4,508.9	4,341.1
Wa Municipal	26,576.6	86,568.8	3,075.0	512.5	11,721.8	78,145.6	7,154.4	7,318.1
Wa West	21,078.8	57,687.5	5,630.4	938.4	19,129.0	127,526.4	5,300.0	4,322.9
TOTAL	255,404.4	367,475.7	22,214.7	3,702.5	78,695.2	524,634.6	106,646.3	59,570.4

Table 32: Energy Content of Crop Residue Produced in the Districts in Upper West Region (GJ)

DISTRICT	Maize (cobs & stalks)	Yam Straw	Rice Straw	Rice Husk	Groundnut shells	Groundnut haulms	Sorghum stalks	Millet straw
Dafiama-Bussie-Issa	378,640.5	505,007.4	15,257.6	2,521.1	24,666.5	164,443.5	108,108.0	51,744.4
Jirapa	245,889.6	121,328.4	41,538.4	6,863.5	154,168.9	1,027,792.8	140,626.8	69,344.1
Lambussie-Karni	92,556.9	45,358.7	32,820.5	5,423.0	73,625.8	490,838.4	74,418.8	59,126.8
Lawra	121,497.1	69,996.3	10,256.4	1,694.7	35,247.2	234,981.0	249,783.8	58,106.2
Nadowli	379,323.4	548,695.7	9,025.6	1,491.3	36,065.3	240,435.0	173,043.0	110,555.3
Nandom	64,094.6	87,398.0	5,941.9	981.8	34,141.5	227,610.0	289,899.0	87,927.1
Sissala East	1,033,593.0	423,913.4	18,608.0	3,074.7	72,951.8	486,345.6	20,520.0	55,588.7
Sissala West	867,546.3	354,084.7	31,159.9	5,148.7	94,660.7	631,071.0	154,321.2	96,049.8
Wa East	599,968.5	1,022,863.0	55,323.5	9,141.3	120,371.8	802,478.3	60,870.2	58,605.1
Wa Municipal	483,960.6	1,232,739.0	50,061.0	8,271.8	158,244.8	1,054,965.6	96,584.4	98,794.1
Wa West	383,844.0	821,470.0	91,662.9	15,145.8	258,241.0	1,721,606.4	71,550.0	58,358.9
TOTAL	4,650,914.5	5,232,854.6	361,655.7	59,757.7	1,062,385.3	7,082,567.6	1,439,725.2	804,200.5

n) Volta Region

Table 33: Quantity of Crop Residues Produced in the Districts in Volta Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Adaklu	6,489.5	12,958.8	4,079.0	7,324.7	1,220.8	228.8
Afadzato South	14,706.4	44,230.7	9,613.0	15,612.9	2,602.2	444.9
Agortime- Ziope	7,897.5	14,514.6	1,624.7	5,107.4	851.2	126.0
Akatsi North	5,525.3	18,073.0	0.0	10,760.8	1,793.5	0.0
Akatsi South	4,663.9	15,190.2	0.0	7,708.3	1,284.7	0.0
Central Tongu	6,596.6	17,074.8	0.0	1,717.5	286.3	0.0
Ho Municipal	6,263.7	41,344.0	36,489.2	9,384.5	1,564.1	1,207.4
Ho West	6,618.0	33,108.8	9,494.4	7,342.0	1,223.7	554.1
Hohoe Municipal	21,554.1	69,941.9	2,812.1	62,902.9	10,483.8	4,688.8

Keta Municipal	2,600.6	12,746.4	0.0	1,674.7	279.1	0.0
Ketu North	10,041.1	85,160.4	0.0	71,973.9	11,995.7	0.0
Ketu South	3,576.3	23,164.8	0.0	3,975.8	662.6	0.0
Kpando Municipal	6,814.7	21,253.9	10,481.3	10,848.6	1,808.1	370.7
North Dayi	7,097.8	15,148.4	5,576.0	4,011.1	668.5	388.1
North Tongu	4,086.7	22,890.0	0.0	19,410.0	3,235.0	0.0
South Dayi	8,508.6	19,859.6	4,714.7	5,976.2	996.0	636.8
South Tongu	4,022.4	18,656.4	0.0	24,034.1	4,005.7	0.0
TOTAL	127,063.1	485,316.7	84,884.4	269,765.3	44,960.9	8,645.6

Table 34: Energy Content of Crop Residue Produced in the Districts in Volta Region

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Adaklu	118,172.9	184,533.7	58,085.5	119,246.0	19,703.4	3,257.6
Afadzato South	267,802.8	629,844.5	136,889.0	254,177.5	41,998.6	6,334.8
Agortime- Ziope	143,813.5	206,687.9	23,135.7	83,147.7	13,738.8	1,794.2
Akatsi North	100,616.2	257,359.5	0.0	175,185.7	28,946.5	0.0
Akatsi South	84,928.6	216,308.5	0.0	125,491.2	20,735.3	0.0
Central Tongu	120,124.5	243,145.2	0.0	27,960.9	4,620.1	0.0
Ho Municipal	114,062.5	588,738.5	519,605.5	152,780.3	25,244.4	17,194.0
Ho West	120,513.5	471,469.5	135,200.3	119,527.1	19,749.9	7,890.7
Hohoe Municipal	392,500.2	995,972.3	40,044.2	1,024,059.5	169,208.9	66,768.4
Keta Municipal	47,357.7	181,508.7	0.0	27,264.7	4,505.0	0.0
Ketu North	182,849.1	1,212,683.7	0.0	1,171,735.1	193,609.8	0.0
Ketu South	65,125.0	329,866.0	0.0	64,725.2	10,694.8	0.0
Kpando Municipal	124,094.8	302,655.2	149,253.0	176,615.2	29,182.7	5,279.1
North Dayi	129,250.2	215,713.8	79,402.2	65,301.5	10,790.0	5,526.3
North Tongu	74,419.2	325,953.6	0.0	315,994.8	52,212.9	0.0
South Dayi	154,941.6	282,801.6	67,137.8	97,292.2	16,075.9	9,068.6
South Tongu	73,247.4	265,667.3	0.0	391,274.3	64,651.6	0.0
TOTAL	2,313,819.5	6,910,908.9	1,208,753.2	4,391,779.0	725,668.6	123,113.7

o) Western Region

Table 35: Amount of Crop Residues Produced in the Districts in Western Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Amenfi East	9,905.0	30,580.5	2,039.6	3,213.7	535.6	5,412.6
Ahanta West	2,568.8	26,515.7	76.4	9.0	1.5	651.0
Akontombra	8,635.1	24,429.6	3,882.8	3,356.7	559.5	34,850.5
Amenfi Central	5,185.4	15,222.4	408.7	3,974.4	662.4	2,135.0
Amenfi West	10,965.3	22,946.2	2,512.5	4,137.1	689.5	3,860.5
Jomoro	1,673.7	33,975.8	65.6	2,536.3	422.7	345.8
Mporhor	3,969.9	23,441.0	234.0	167.0	27.8	2,785.3
Nzema East	3,383.8	34,918.1	102.6	841.5	140.3	1,190.3
Prestea Huni-Valley	2,970.2	17,249.6	415.1	3,183.3	530.6	3,159.0
Sefwi-Wiawso	12,459.5	41,680.4	6,664.0	8,251.9	1,375.3	20,999.2
Sekondi-Takoradi	1,403.4	10,148.5	86.4	78.3	13.0	70.0
Shama	848.5	11,398.0	94.5	383.9	64.0	90.0
Tarkwa Nsuaem	2,816.0	23,940.4	647.9	3,118.5	519.8	1,932.0
Wassa East	4,635.2	41,527.2	550.0	318.5	53.1	4,873.2
TOTAL	71,419.8	357,973.3	17,780.2	33,570.0	5,595.0	82,354.2

Table 36: Energy Content of Crop Residue Produced in the Districts in Western Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Amenfi East	180,369.1	435,466.3	29,044.4	52,318.6	8,644.8	77,075.1
Ahanta West	46,776.9	377,583.2	1,088.1	146.2	24.2	9,270.2
Akontombra	157,245.4	347,877.5	55,291.1	54,647.1	9,029.5	496,271.1
Amenfi Central	94,426.3	216,767.6	5,819.9	64,703.2	10,691.1	30,402.4
Amenfi West	199,678.7	326,753.9	35,778.0	67,351.3	11,128.7	54,973.5
Jomoro	30,478.1	483,814.7	934.5	41,291.3	6,822.7	4,924.2
Mporhor	72,291.9	333,799.1	3,332.2	2,719.2	449.3	39,662.0

Nzema East	61,619.4	497,234.0	1,461.0	13,699.6	2,263.6	16,949.2
Prest-Huni-Valley	54,088.0	245,634.7	5,911.4	51,824.1	8,563.1	44,984.2
Sefwi-Wiawso	226,886.9	593,529.3	94,895.4	134,340.5	22,197.5	299,027.9
Sekondi-Takoradi	25,556.2	144,514.5	1,230.3	1,274.0	210.5	996.8
Shama	15,450.7	162,307.5	1,345.7	6,250.1	1,032.7	1,281.6
Tarkwa Nsuaem	51,279.5	340,910.7	9,226.1	50,769.2	8,388.8	27,511.7
Wassa East	84,407.5	591,347.0	7,832.0	5,185.6	856.8	69,394.2
TOTAL	1,300,554.6	5,097,540.0	253,190.1	546,520.0	90,303.3	1,172,724.1

p) Western North Region

Table 37: Quantity of Crop Residues Produced in the Districts in Western North Region (Tonnes)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Aowin	20,583.8	54,285.0	2,700.0	5,285.2	880.9	15,290.3
Bia East	7,878.5	8,781.3	4,448.5	2,958.0	493.0	8,884.2
Bia West	12,791.6	16,851.6	5,393.5	6,646.8	1,107.8	8,443.5
Bibiani-Anhwiaso-Bekwai	10,807.9	51,293.3	11,018.0	4,746.7	791.1	30,253.1
Bodi	10,769.8	14,547.5	5,029.2	9,517.8	1,586.3	11,245.5
Ellembele	1,356.8	20,080.0	80.0	2,002.6	333.8	425.6
Juabeso	14,589.3	34,159.3	7,517.3	5,462.1	910.4	21,057.6
Suaman	4,804.8	24,304.2	1,731.9	1,142.5	190.4	12,606.1
TOTAL	83,582.5	224,302.2	37,918.4	37,761.7	6,293.7	108,205.9

Table 38: Energy Content of Crop Residue Produced in the Districts in Western North Region (GJ)

DISTRICT	Maize (cobs & stalks)	Cassava	Yam Straw	Rice Straw	Rice Husk	Cocoyam straw
Aowin	374,831.7	773,018.0	38,448.0	86,042.3	14,217.1	217,733.5
Bia East	143,466.9	125,045.0	63,346.4	48,156.2	7,957.0	126,511.0
Bia West	232,935.8	239,966.8	76,803.4	108,209.4	17,879.8	120,235.4
Bibiani-Anhwiaso-Bekwai	196,812.2	730,415.9	156,896.7	77,275.5	12,768.5	430,803.4
Bodi	196,117.3	207,156.4	71,615.8	154,949.8	25,602.9	160,135.9
Ellembele	24,706.4	285,938.5	1,139.2	32,601.7	5,386.9	6,060.5
Juabeso	265,670.6	486,427.7	107,046.2	88,923.0	14,693.1	299,860.2
Suaman	87,495.4	346,091.6	24,662.3	18,599.3	3,073.2	179,510.2
TOTAL	1,522,036.3	3,194,059.9	539,958.0	614,757.2	101,578.5	1,540,850.1

3. PETROLEUM RESOURCES

Ghana's proven oil and gas resources are currently located offshore in the Tano Cape Three Points sedimentary basin. The land bordering this basin comprises the Nzema East, Ahanta West and Sekondi-Tokoradi Districts. The total proven oil reserves is currently estimated to be 1019 million barrels (mmbbls). Some of the oil fields, have associated natural gas deposits. In addition to this, non-associated natural gas deposits have been discovered. The total discovered oil and gas reserves if untapped are estimated to be 1400 million barrels (mmbbls) and 2095 billion cubic feet (Bcf) respectively. The production of oil and gas has caused the reserves to be reduced to 1019 mmbbls and 1936 (Bcf) respectively as at November 2019.

4. PROJECTED RESIDENTIAL ENERGY DEMAND FOR 2020

This section presents the projected residential demand for the various energy commodities at the district level for the year 2020. The energy commodities presented are, firewood, charcoal, electricity, kerosene, and liquefied petroleum gas (LPG). It provides the total demand for the various energy products by households at the district level for the year 2020. The projections for the energy commodities at the district level were based on the Ghana Statistical Service's projected population in 2020 and historical data on the energy consumption patterns of the various communities in the districts provided by the 2000 and 2010 census reports. Since there is a distinction between the energy consumption patterns of urban and rural dwellers, the projected number of urban and rural households in 2020 in the various districts was first determined using the 2000 and 2010 census reports and this was multiplied by the projected quantity of energy commodities consumed per a household in the rural and urban areas to determine their respective residential energy consumption. The quantity of energy commodities used by the urban and rural dwellers per household was based on a survey conducted in 2010 by Energy Commission on energy usage of the various sectors of the economy including that of the residential areas.

4.1 Firewood Demand

The projected residential firewood demand for the various districts can be found in Figure. 7. The district with the highest demand would be the Amansie West in the Ashanti region with a projected demand of 77.5 kt of firewood. This would be followed by Atwima Mponua, Ahafo Ano South, Adansi South and Asante Akim South, all from Ashanti region with expected demand of 71.5 kt, 71 kt, 64.5 kt and 63 kt of firewood respectively. The district that would account for the lowest demand is projected to be Daffiame Bussie in the Upper West region with a firewood demand of 0.3 kt. The Ashanti Region is estimated to be the region with the highest average demand of 32.8 kt for firewood as presented in Table 39, which presents the regional average demand and share of the various regions in descending order of magnitude. Ashanti region would also have the highest share of about 18% of all firewood that would be consumed in the various districts of the country.

Table 39: Average firewood demand and share of the various regions

Region	Average District Demand (kt)	Regional share of total demand (%)
Ahafo	24.7	2.7
Ashanti	32.8	18.1
Bono	19.9	4.0
Bono East	26.6	4.9
Central	26.8	9.8
Eastern	27.2	12.9
Greater Accra	8.3	2.4
North East	29.5	2.7
Northern	26.9	7.5
Oti	29.1	4.3
Savannah	26.1	2.9
Upper East	25.4	6.0
Upper West	25.0	5.0
Volta	29.1	9.1
Western	21.2	5.8
Western North	15.1	1.9

GHANA 2020 ENERGY DEMAND PROJECTION TOTAL RESIDENTIAL FIREWOOD DEMAND

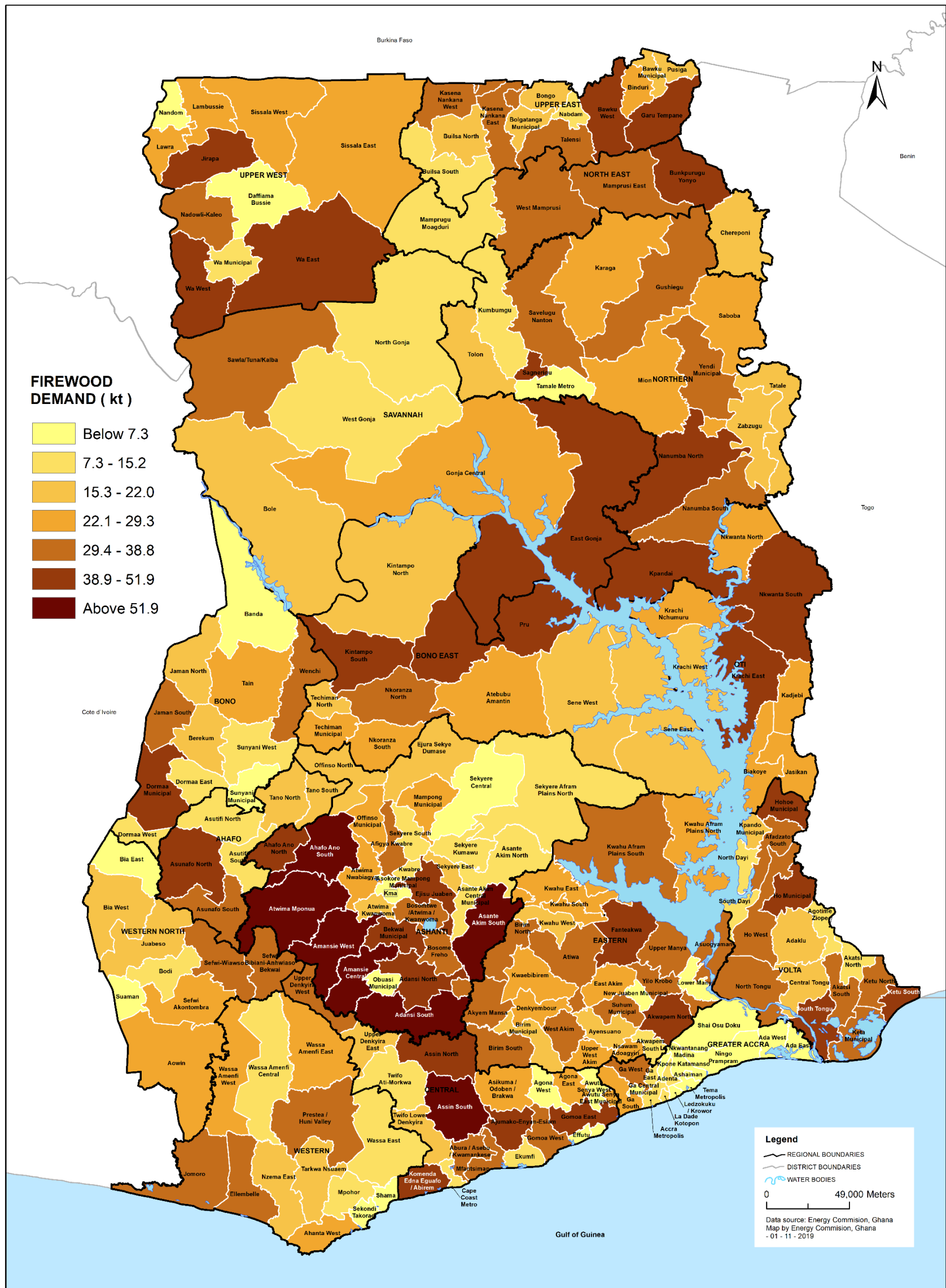


Fig. 7: Residential Firewood Demand

4.2 Charcoal Demand

The projected residential charcoal demand for the various districts are presented in Figure. 8. The district that would have the highest demand for charcoal is projected to be the Kumasi Metropolitan Assembly (KMA) in the Ashanti Region with an estimated charcoal demand of 143.4 kt. This would be followed by Accra Metropolitan Assembly (AMA) (Greater Accra Region) with a projected charcoal demand of 106.2 kt. The following districts; Sekondi Takoradi Metropolis (Western Region), Ga South Municipal (Greater Accra Region) and Asokore Mampong Municipal (Ashanti Region) would be the third highest consuming districts with their respective charcoal demands being, 47.1 kt, 24.4 kt and 19.2 kt .The district projected to have the least demand is Wa East (Upper West Region) with an estimated projected demand of 0.07 kt. Table 40 depicts the regional average demand and share in the overall charcoal demand in descending order of magnitude. Greater Accra Region would have the highest average demand of 15 kt and Ashanti region having the highest share of 25.7%.

Table 40: Average charcoal demand and share of the various regions

Region	Average Demand per District (kt)	Regional share of total demand (%)
Ahafo	2.8	1.7
Ashanti	8.5	25.7
Bono	3.4	3.8
Bono East	3.1	3.2
Central	4.0	8.0
Eastern	3.8	10.0
Greater Accra	15.0	24.2
North East	1.5	0.7
Northern	2.1	3.1
Oti	2.0	1.6
Savannah	1.1	0.7
Upper East	2.7	3.5
Upper West	0.9	1.0
Volta	2.8	4.9
Western	4.6	7.0
Western North	1.2	0.9

GHANA 2020 ENERGY DEMAND PROJECTION TOTAL RESIDENTIAL CHARCOAL DEMAND

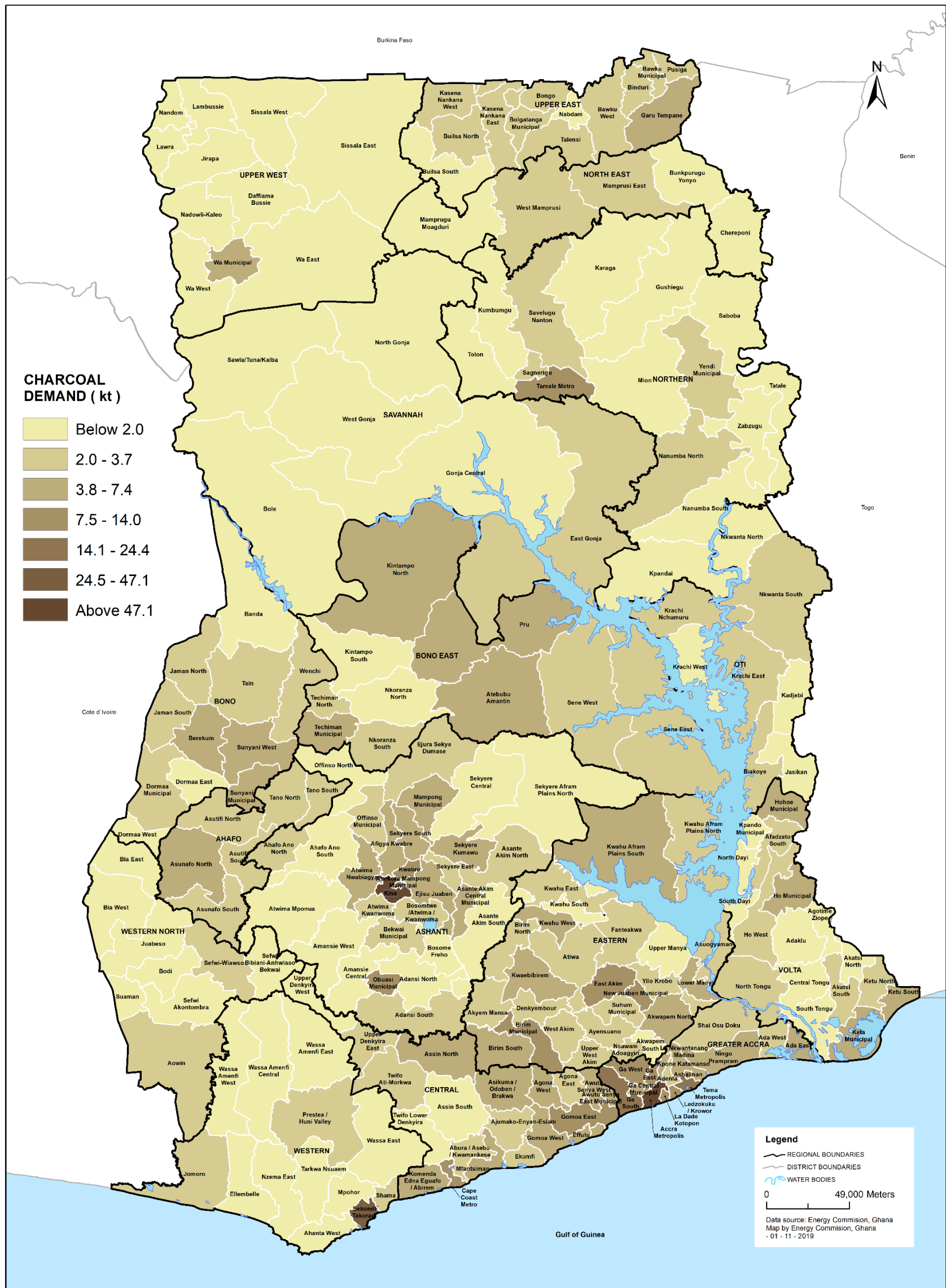


Fig. 8: Residential Charcoal Demand

4.3 Kerosene Demand

The projected residential kerosene demand for the various districts are presented in Figure. 9. In 2020, the district with the highest demand would be Atwima Wabiagya in the Ashanti region with a demand of 0.087 kt. This would be followed by Afigya Kwabre, Ejisu Juaben Municipal, Asante Akyim South and Atwima Kwanwoma all in the Ashanti region with their demands being 0.081 kt, 0.065 kt, 0.0633 kt and 0.0630 kt respectively. The district that is expected to have the lowest demand of kerosene is Wa East (Upper West Region) with a demand of 0.07 kt. Table 41 presents the average demand of the various regions and their share in the overall kerosene demand. The Ashanti Region has the highest average demand and share of 0.033 kt and 34.5 % respectively

Table 41: Average kerosene demand and share of the various regions

Region	Average Demand per District (kt)	Regional share of total demand (%)
Ahafo	0.006	1.2
Ashanti	0.033	34.5
Bono	0.005	1.8
Bono East	0.006	2.2
Central	0.006	4.4
Eastern	0.006	5.8
Greater Accra	0.003	1.5
North East	0.007	1.2
Northern	0.006	3.3
Oti	0.019	5.4
Savannah	0.006	1.3
Upper East	0.016	7.2
Upper West	0.008	2.9
Volta	0.026	15.5
Western	0.018	9.3
Western North	0.01	2.5

GHANA 2020 ENERGY DEMAND PROJECTION TOTAL RESIDENTIAL KEROSENE DEMAND

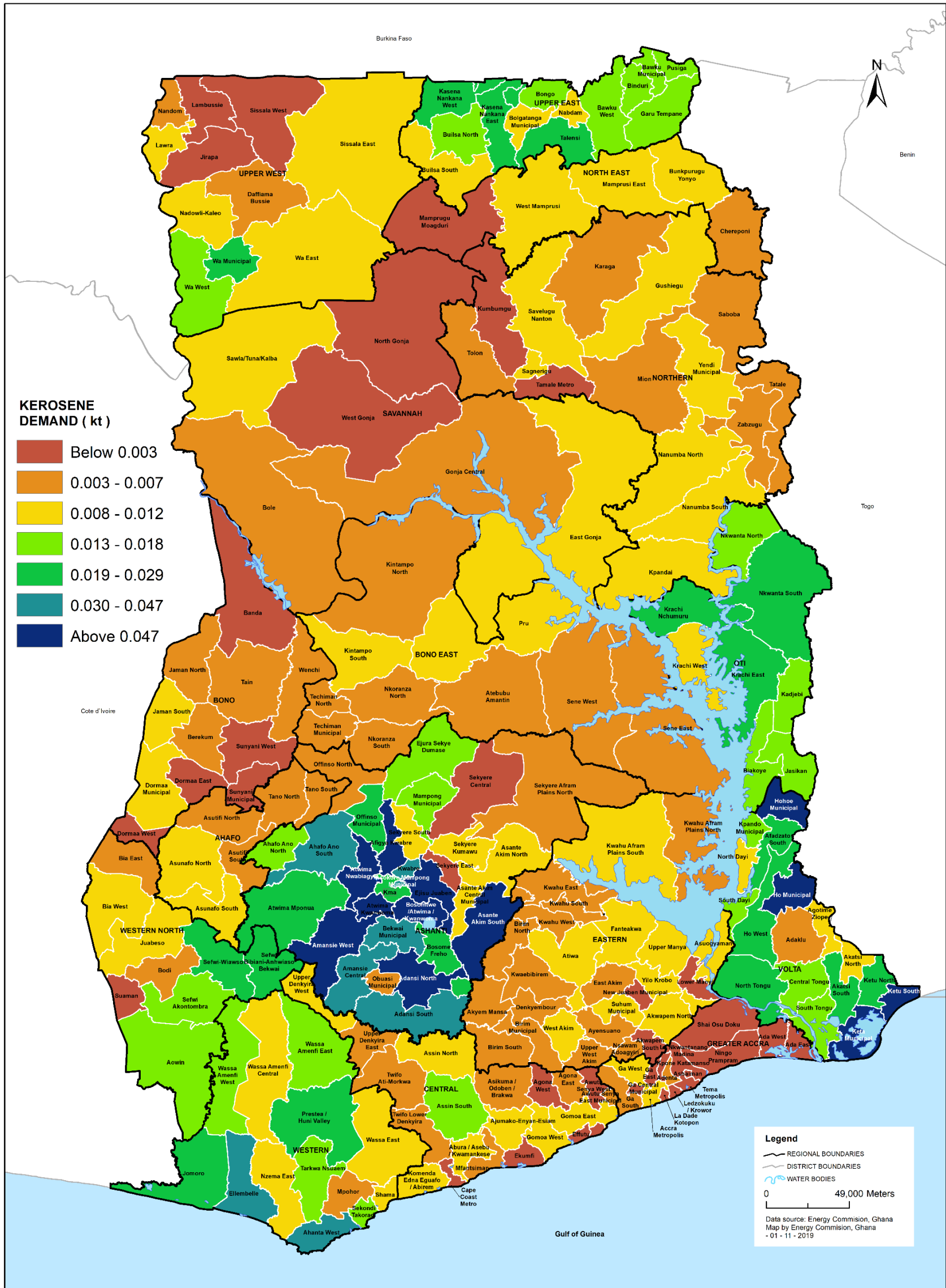


Fig. 9: Residential Kerosene Demand

4.4 LPG Demand

The projected residential LPG demand for the various districts are presented in Figure. 10. The district with the expected highest demand is AMA (Accra Metropolitan Assembly) with a projected LPG demand of 30.2 kt. This would be followed by KMA (Kumasi Metropolis) with a projected LPG demand of 19.7 kt. The following districts; Secondi Takoradi Metropolis, Ga South Municipality and Tema Metropolis are projected to have the demand of 7.6 kt, 6.9 kt and 5.1 kt respectively. The district with least projected demand is Wa East (Upper West Region) with a demand of 0.02 kt. Table 42 presents average regional demand and shares in LPG demand. Greater Accra Region would have the highest average regional demand with 15 kt of LPG demand. This region also expected to have the highest share of 32.9 %.

Table 42: Average LPG demand and share of the various regions

Region	Average Demand per District (kt)	Regional share of total demand (%)
Ahafo	0.72	2.1
Ashanti	1.01	14.6
Bono	0.92	4.8
Bono East	0.82	4.0
Central	1.05	10.2
Eastern	1.0	12.6
Greater Accra	4.25	32.8
North East	0.34	0.9
Northern	0.51	3.7
Oti	0.48	1.9
Savannah	0.25	0.6
Upper East	0.09	0.6
Upper West	0.04	0.2
Volta	0.73	6.0
Western	0.63	4.5
Western North	0.14	0.5

GHANA 2020 ENERGY DEMAND PROJECTION TOTAL RESIDENTIAL LPG DEMAND

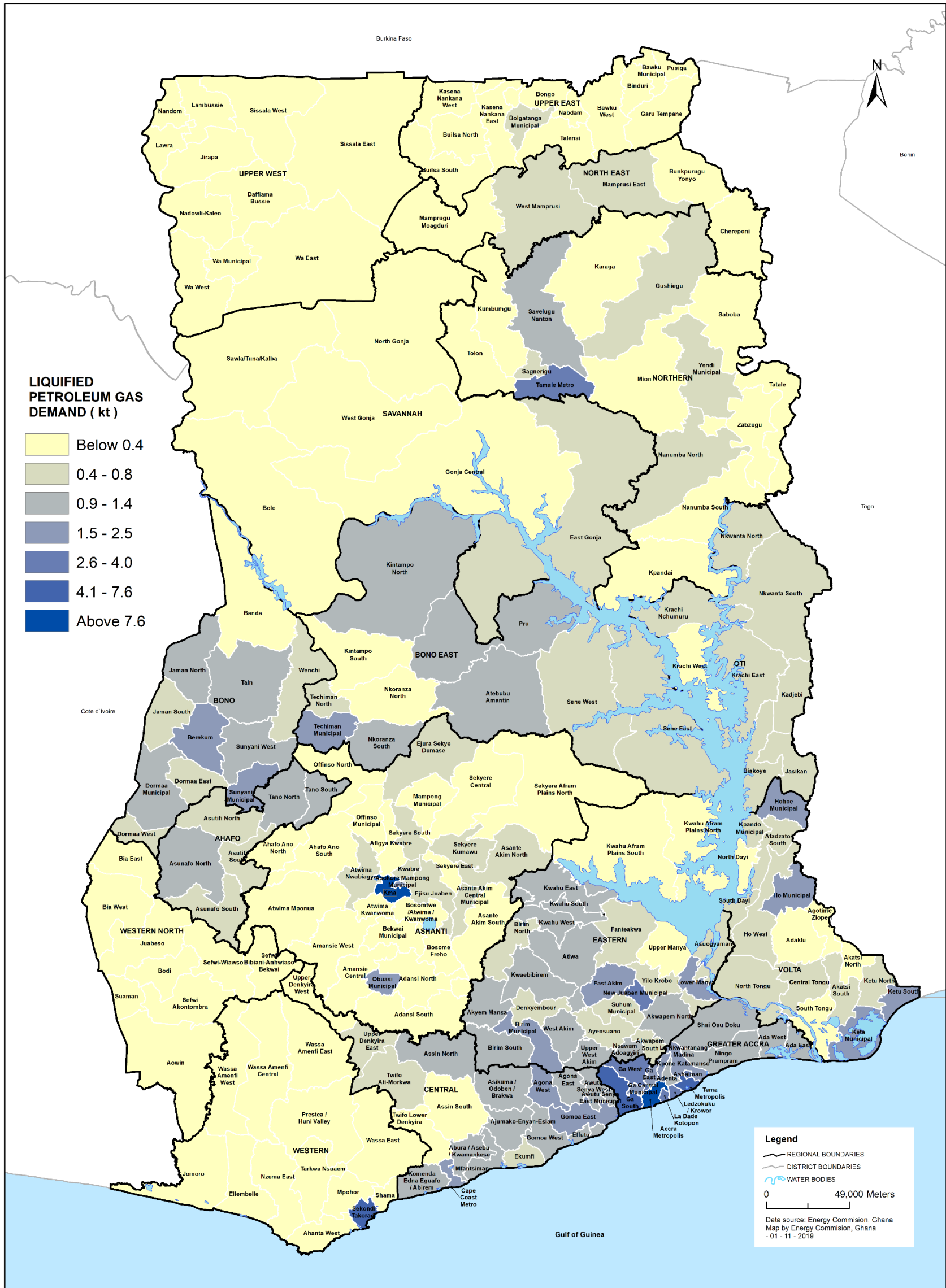


Fig. 10: Residential LPG Demand

4.5 Electricity Demand

The projected residential electricity demand for the various districts are presented in Figure. 11. The district with the highest demand is expected to be Kumasi Metropolitan Assembly (KMA) with a demand of 836.5 GWh. This would be followed by Accra Metropolitan Assembly (AMA) with 644.5 GWh, Sekondi Takoradi Metropolis, Asokore Mampong Municipality and Ga South Municipality with electricity demands of 661.9 GWh, 196.1 GWh and 150.9 GWh respectively. The district with the lowest electricity demand is expected to be Offinso North (Ashanti Region) with a total electricity demand of 4.8 GWh. Table 43 presents average demand of the various regions and their share in overall electricity demand. Greater Accra Region would have the highest average demand with 92.1 GWh followed by Ashanti and Western Regions with average demands of 66.2 GWh and 64.9 GWh respectively. The Ashanti region would have the highest share of electricity demand with 35.5 %.

Table 43: Average electricity demand and share of the various regions

Region	Average Demand per District (GWh)	Regional share of total demand (%)
Ahafo	19.6	1.6
Ashanti	66.2	26.1
Bono	23.1	3.3
Bono East	22.1	2.8
Central	27.2	7.2
Eastern	26.2	9.0
Greater Accra	92.1	19.4
North East	12.4	0.8
Northern	15.7	3.1
Oti	15.4	1.6
Savannah	9.9	0.8
Upper East	13.8	2.4
Upper West	17.7	2.6
Volta	20.6	4.6
Western	64.6	12.8
Western North	20.5	1.9

GHANA 2020 ENERGY DEMAND PROJECTION TOTAL RESIDENTIAL ELECTRICITY DEMAND

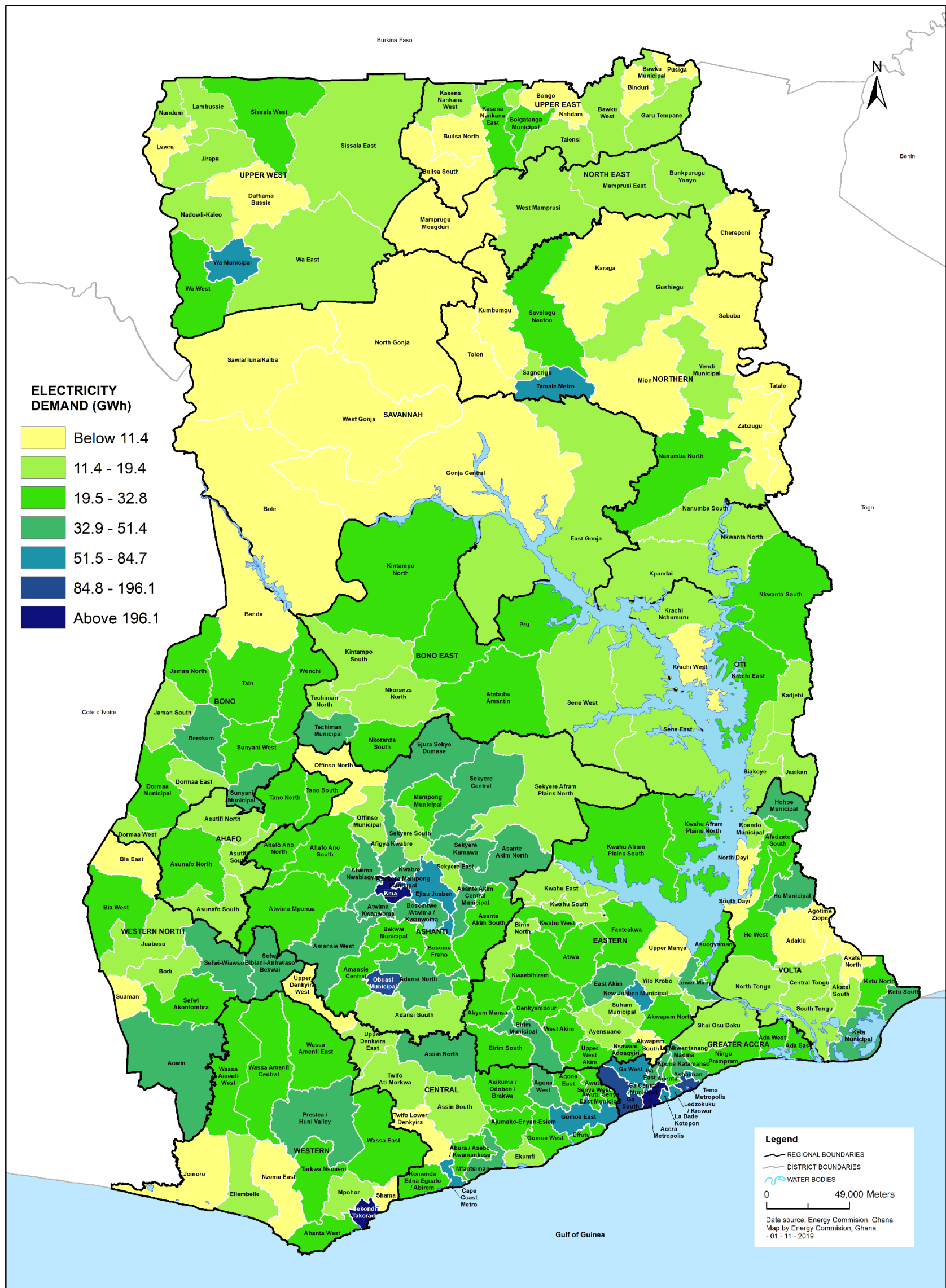


Fig. 11: Residential Charcoal Demand

ANNEX 1

2020 PROJECTED RESIDENTIAL LPG DEMAND AND NUMBER OF LPG OUTLETS

1. AHAFO REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Asunafo North	1.02	23.80	3
Asunafo South	0.54	12.68	1
Asutifi North	0.50	11.74	4
Asutifi South	0.50	11.74	1
Tano North	0.86	19.92	8
Tano South	0.86	20.13	1
TOTAL	4.30	100	18

2. ASHANTI REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Adansi North	0.11	0.35	3
Adansi South	0.09	0.29	0
Afigya Kwabre	0.29	0.96	6
Ahafo Ano North	0.13	0.43	2
Ahafo Ano South	0.05	0.18	1
Amansie Central	0.05	0.16	0
Amansie West	0.05	0.15	2
Asante Akim Central Municipal	0.54	1.77	0

Asante Akim North	0.42	1.38	3
Asante Akim South	0.13	0.41	1
Asokore Mampong Municipal	2.29	7.54	1
Atwima Kwanwoma	0.23	0.77	3
Atwima Mponua	0.05	0.17	1
Atwima Nwabiagya	0.58	1.92	8
Bekwai Municipal	0.21	0.68	6
Bosome Freho	0.03	0.09	0
Bosomtwe	0.32	1.05	4
Ejisu Juaben	0.47	1.53	6
Ejura Sekye Dumase	0.42	1.37	2
KMA	19.70	64.99	25
Kwabre	0.52	1.71	0
Mampong Municipal	0.20	0.67	5
Obuasi Municipal	1.64	5.40	6
Offinso Municipal	0.09	0.31	1
Offinso North	0.05	0.15	2
Sekyere Afram Plains North	0.10	0.34	0
Sekyere Central	0.54	1.77	0
Sekyere East	0.20	0.65	2
Sekyere Kumawu	0.50	1.65	0
Sekyere South	0.35	1.15	0
TOTAL	30.32	100	90

3. BONO REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Banda	0.20	1.96	0
Berekum	1.77	17.52	5
Dormaa East	0.48	4.78	1
Dormaa Municipal	0.84	8.32	3
Dormaa West	0.46	4.56	0
Jaman North	0.92	9.13	0
Jaman South	0.56	5.52	3
Sunyani Municipal	2.10	20.83	11
Sunyani West	1.26	12.47	7
Tain	0.79	7.81	0
Wenchi	0.72	7.09	3
TOTAL	10.10	100	33

4. BONO EAST REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Atebubu Amantin	1.06	12.91	2
Kintampo North	1.13	13.84	1
Kintampo South	0.19	2.38	1
Nkoranza North	0.29	3.54	0
Nkoranza South	0.93	11.32	5
Pru	1.03	12.63	1
Sene East	0.57	6.98	0
Sene West	0.55	6.71	0
Techiman Municipal	1.86	22.72	11
Techiman North	0.57	6.98	0
TOTAL	8.17	100	21

5. CENTRAL REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Abura / Asebu / Kwamankese	0.78	3.73	1
Agona East	0.80	3.81	5
Agona West	1.83	8.70	6
Ajumako-Enyan-Esiam	0.89	4.23	1
Asikuma / Odoben / Brakwa	1.15	5.48	1
Assin North	1.25	5.96	3
Assin South	0.08	0.40	1
Awutu Senya East Municipal	1.09	5.16	2
Awutu Senya West	1.32	6.28	0
Cape Coast Metro	2.48	11.78	7
Effutu	1.18	5.59	2
Ekumfi	0.52	2.46	0
Gomoa East	2.30	10.95	11
Gomoa West	1.23	5.85	2
Komenda Edina Eguafo / Abirem	1.03	4.91	0
Mfantsiman	1.42	6.77	5
Twifo Ati-Morkwa	0.62	2.95	0
Twifo Lower Denkyira	0.31	1.48	3
Upper Denkyira East	0.69	3.29	1
Upper Denkyira West	0.05	0.23	2
TOTAL	21.04	100	53

6. EASTERN REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Akwapem North	1.05	4.01	4
Akwapem South	0.4	1.52	5
Akyem Mansa	0.84	3.21	0
Asuogyaman	0.65	2.49	2
Atiwa	0.83	3.18	2
Ayensuano	0.73	2.79	0
Birim Municipal	2.11	8.07	0
Birim North	0.49	1.86	1
Birim South	1.23	4.72	2
Denkyembour	0.75	2.89	1
East Akim	2.17	8.32	4
Fanteakwa	0.68	2.60	1
Kwaebibirem	1.21	1.13	5
Kwahu Afram Plains North	0.29	1.24	0
Kwahu Afram Plains South	0.32	4.18	0
Kwahu East	1.09	4.32	0
Kwahu South	1.13	4.97	1
Kwahu West	1.3	1.13	3
Lower Manya	1.59	6.09	4
New Juaben Municipal	3.28	12.58	13
Nsawam Adoagyiri	0.83	3.18	3
Suhum Municipal	0.54	2.07	5
Upper Manya	0.23	0.89	1
Upper West Akim	0.83	3.18	0
West Akim	0.92	3.54	3
Yilo Krobo	0.61	2.33	3
TOTAL	26.10	100	63

7. GREATER ACCRA REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Accra Metropolis	30.17	44.33	25
Ada East	1.16	1.70	0
Ada West	0.96	1.41	0
Adenta	0.90	1.32	18
Ashaiman	3.33	4.89	10
Ga Central Municipal	1.90	2.79	7
Ga East	2.34	3.43	20
Ga South	6.89	10.12	15
Ga West	2.80	4.11	22
Kpone Katamanso	1.78	2.61	9
La Dade Kotopon	2.98	4.38	0
La Nkwantanang Madina	1.82	2.67	3
Ledzokuku / Krowor	3.97	5.83	1
Ningo Prampram	1.15	1.69	7
Shai Osu Doku	0.84	1.23	3
Tema Metropolis	5.09	7.47	27
TOTAL	68.08	100	167

8. NORTH EAST REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Bunkpurugu Yonyo	0.28	16.77	0
Chereponi	0.13	7.90	0
Mamprugu Moagduri	0.16	9.23	0
Mamprusi East	0.61	36.26	0
West Mamprusi	0.50	29.85	1
TOTAL	1.69	100	1

9. NORTHERN REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Gushiegu	0.42	5.42	0
Karaga	0.24	3.15	0
Kpandai	0.19	2.52	0
Kumbungu	0.13	1.70	0
Mion	0.27	3.50	0
Nanumba North	0.62	8.08	0
Nanumba South	0.27	3.51	0
Saboba	0.11	1.48	0
Sagnerigu	0.48	6.19	5
Savelugu Nanton	0.86	11.18	0
Tamale North Sub Metro	2.87	37.19	9
Tatale	0.2	2.55	0
Tolon	0.24	3.08	0
Yendi Municipal	0.55	7.13	2
Zabzugu	0.26	3.32	0
TOTAL	7.71	100	16

10. OTI REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Biakoye	0.50	12.97	0
Jasikan	0.37	9.72	1
Kadjebi	0.36	9.34	0
Krachi East	0.74	19.16	1
Krachi Nchumuru	0.54	14.15	0
Krachi West	0.23	5.90	0
Nkwanta North	0.41	10.58	0

Nkwanta South	0.70	18.17	3
TOTAL	3.85	100	5

11. SAVANNAH REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Bole	0.21	13.94	1
East Gonja	0.41	27.70	1
Gonja Central	0.27	18.51	0
North Gonja	0.15	9.95	0
Sawla/Tuna/Kalba	0.23	15.46	0
West Gonja	0.21	14.45	1
TOTAL	1.48	100	3

12. UPPER EAST REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Bawku Municipal	0.05	4.28	1
Bawku West	0.03	2.63	1
Binduri	0.04	3.35	2
Bolgatanga Municipal	0.58	49.07	6
Bongo	0.03	2.59	0
Builsa North	0.04	3.06	0
Builsa South	0.02	1.99	0
Garu Tempene	0.01	1.04	0
Kasena Nankana East	0.24	20.12	3
Kasena Nankana West	0.03	2.50	0
Nabdam	0.02	1.82	0

Pusiga	0.04	3.12	0
Talensi	0.05	4.43	0
TOTAL	1.18	100	13

13. UPPER WEST REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Daffiama Bussie	0.01	3.09	0
Jirapa	0.03	5.67	1
Lambussie Karni	0.01	3.00	1
Lawra	0.01	3.17	0
Nadowli-Kaleo	0.01	1.15	0
Nandom	0.02	4.34	1
Sissala West	0.00	0.57	0
Sissala East	0.02	4.12	2
Wa East	0.00	0.45	0
Wa Municipal	0.33	73.44	7
Wa West	0.00	1.01	0
TOTAL	0.45	100	12

14. VOLTA REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Adaklu	0.10	0.82	0
Afadzato South	0.72	5.84	2
Agotime Ziope	0.22	1.76	1
Akatsi North	0.26	2.08	0
Akatsi South	0.55	4.43	2

Central Tongu	0.45	3.64	1
Ho Municipal	1.73	14.05	11
Ho West	0.72	5.84	1
Hohoe Municipal	1.49	12.10	5
Keta Municipal	1.72	13.94	7
Ketu North	0.76	6.19	5
Ketu South	1.64	13.33	11
Kpando Municipal	0.40	3.25	6
North Dayi	0.29	2.33	0
North Tongu	0.59	4.77	2
South Dayi	0.40	3.25	1
South Tongu	0.29	2.37	3
TOTAL	12.33	100	58

15. WESTERN REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Ahanta West	0.09	0.93	5
Ellembelle	0.06	0.59	1
Jomoro	0.17	1.84	5
Mpohor	0.10	1.06	0
Nzema East	0.03	0.34	3
Prestea / Huni Valley	0.33	3.49	6
Sefwi Akontombra	0.05	0.54	1
Sefwi-Wiawso	0.28	2.97	5
Sekondi Takoradi	7.55	79.60	16
Shama	0.12	1.29	3
Tarkwa Nsuaem	0.16	1.64	8
Wassa Amenfi Central	0.16	1.71	0
Wassa Amenfi East	0.04	0.46	1
Wassa Amenfi West	0.15	1.54	1

Wassa East	0.19	2	0
TOTAL	9.49	100	55

16. WESTERN NORTH REGION

District	LPG		Number of LPG Outlets
	Quantity (kt)	Regional Share (%)	
Aowin	0.28	28.89	0
Bia East	0.07	6.93	0
Bia West	0.20	20.80	1
Bodi	0.12	12.71	0
Juabeso	0.04	4.58	1
Sefwi Bibiani-Anhwiaso Bekwai	0.20	20.90	7
Suaman	0.05	5.20	0
TOTAL	0.97	100	9

ANNEX 2

2020 PROJECTED RESIDENTIAL ELECTRICITY DEMAND AND ELECTRICITY ACCESS RATE

1. AHAFO REGION

DISTRICT	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Asunafo North	29.05	24.65	83.7
Asunafo South	18.50	15.70	67.3
Asutifi North	13.44	11.40	53.4
Asutifi South	13.43	11.40	86.6
Tano North	21.80	18.50	77.7
Tano South	21.65	18.37	89.2
TOTAL	117.88	100	

2. ASHANTI REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Adansi North	35.17	1.77	92.3
Adansi South	14.10	0.71	63.6
Afigya Kwabre	37.69	1.90	80.8
Ahafo Ano North	30.11	1.52	79.3
Ahafo Ano South	27.06	1.36	69.6
Amansie Central	21.30	1.07	65.4
Amansie West	44.09	2.22	88.2
Asante Akim Central Municipal	45.96	2.31	96.9
Asante Akim North	37.94	1.91	83.0

Asante Akim South	25.80	1.30	88.6
Asokore Mampong Municipal	196.10	9.87	100.0
Atwima Kwanwoma	41.08	2.07	98.9
Atwima Mponua	24.45	1.23	64.4
Atwima Nwabiagya	46.89	2.36	93.9
Bekwai Municipal	30.82	1.55	96.0
Bosome Freho	20.93	1.05	78.0
Bosomtwe	36.90	1.86	98.5
Ejisu Juaben	60.55	3.05	99.5
Ejura Sekye Dumase	39.65	2.00	91.3
KMA	836.48	42.11	100.0
Kwabre	41.33	2.08	100.0
Mampong Municipal	19.96	1.00	95.4
Obuasi Municipal	120.41	6.06	99.7
Offinso Municipal	17.20	0.87	93.5
Offinso North	4.75	0.24	76.4
Sekyere Afram Plains North	12.58	0.63	12.4
Sekyere Central	45.96	2.31	90.7
Sekyere East	16.54	0.83	95.9
Sekyere Kumawu	42.90	2.16	99.4
Sekyere South	11.89	0.60	97.6
TOTAL	1986.59	100	

3. BONO REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Banda	5.26	2.07	90.6
Berekum	41.02	16.15	99.4
Dormaa East	12.85	5.06	90.7

Dormaa Municipal	25.02	9.85	86.5
Dormaa West	12.27	4.83	73.8
Jaman North	23.06	9.08	94.7
Jaman South	18.45	7.27	81.9
Sunyani Municipal	45.41	17.88	93.2
Sunyani West	28.48	11.22	89.3
Tain	21.50	8.47	87.6
Wenchi	20.63	8.12	87.8
TOTAL	253.96	100	

4. BONO EAST REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Atebubu Amantin	27.58	12.45	75.4
Kintampo North	27.51	12.42	81.3
Kintampo South	11.65	5.26	69.4
Nkoranza North	11.61	5.24	90.1
Nkoranza South	24.10	10.88	79.0
Pru	29.71	13.41	56.6
Sene East	15.19	6.86	21.2
Sene West	14.60	6.59	66.1
Techiman Municipal	44.35	20.02	90.2
Techiman North	15.19	6.86	89.3
TOTAL	221.50	100	

5. CENTRAL REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Abura / Asebu / Kwamankese	23.06	4.24	97.9
Agona East	21.17	3.90	76.5
Agona West	39.94	7.35	94.6
Ajumako-Enyan-Esiam	26.75	4.92	92.4
Asikuma / Odoben / Brakwa	29.31	5.39	83.9
Assin North	35.86	6.60	73.6
Assin South	11.99	2.21	84.2
Awutu Senya East Municipal	27.83	5.12	93.2
Awutu Senya West	29.17	5.37	76.1
Cape Coast Metro	54.07	9.95	99.7
Effutu	24.86	4.58	99.1
Ekumfi	13.26	2.44	98.9
Gomoa East	56.77	10.45	88.5
Gomoa West	32.78	6.03	96.0
Komenda Edina Eguafo / Abirem	29.58	5.44	98.3
Mfantsiman	35.59	6.55	99.2
Twifo Ati-Morkwa	15.90	2.93	52.6
Twifo Lower Denkyira	10.48	1.93	76.0
Upper Denkyira East	18.14	3.34	79.1
Upper Denkyira West	6.89	1.27	94.1
TOTAL	543.41	100	

6. EASTERN REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Akwapem North	30.71	4.51	75.8
Akwapem South	10.04	1.47	81.9
Akyem Mansa	23.29	3.42	90.4
Asuogyaman	20.40	3.00	92.9
Atiwa	24.56	3.61	83.5
Ayensuano	19.36	2.84	59.3
Birim Municipal	47.83	7.02	84.7
Birim North	15.89	2.33	86.0
Birim South	31.58	4.64	82.5
Denkyembour	20.03	2.94	91.9
East Akim	51.35	7.54	96.3
Fanteakwa	21.96	3.23	68.6
Kwaebibirem	30.64	4.50	91.7
Kwahu Afram Plains North	26.04	3.82	58.8
Kwahu Afram Plains South	29.38	4.31	83.3
Kwahu East	16.83	2.47	84.2
Kwahu South	13.84	2.03	83.3
Kwahu West	26.37	3.87	89.4
Lower Manya	33.98	4.99	84.5
New Juaben Municipal	69.44	10.20	92.6
Nsawam Adoagyiri	22.04	3.24	86.6
Suhum Municipal	17.87	2.62	76.1
Upper Manya	11.17	1.64	29.1
Upper West Akim	22.04	3.24	75.9
West Akim	25.74	3.78	84.6
Yilo Krobo	18.61	2.73	55.0
TOTAL	681.01	100	

7. GREATER ACCRA REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Accra Metropolis	644.46	43.74	100
Ada East	25.23	1.71	81.3
Ada West	20.87	1.42	81.3
Adenta	21.87	1.48	100.0
Ashaiman	71.15	4.83	100.0
Ga Central Municipal	41.39	2.81	100.0
Ga East	51.40	3.49	98.2
Ga South	150.88	10.24	90.6
Ga West	66.24	4.50	74.9
Kpone Katamanso	38.74	2.63	100.0
La Dade Kotopon	64.94	4.41	100.0
La Nkwantanang Madina	39.56	2.69	96.3
Ledzokuku / Krowor	84.72	5.75	100.0
Ningo Prampram	25.07	1.70	96.3
Shai Osu Doku	18.24	1.24	84.0
Tema Metropolis	108.68	7.38	100.0
TOTAL	1473.44	100	

8. NORTH EAST REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Bunkpurugu Yonyo	13.94	22.41	33.0
Chereponi	6.35	10.21	29.4
Mamprugu Moagduri	5.66	9.10	45.3
Mamprusi East	18.94	30.46	57.8
West Mamprusi	17.30	27.81	57.9
TOTAL	62.19	100	

9. NORTHERN REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Gushiegu	15.21	6.44	45.3
Karaga	9.79	4.15	65.3
Kpandai	11.60	4.92	53.1
Kumbungu	4.77	2.02	59.6
Mion	9.83	4.17	46.9
Nanumba North	20.69	8.77	61.2
Nanumba South	11.59	4.91	72.6
Saboba	7.04	2.98	39.5
Sagnerigu	17.37	7.36	98.4
Savelugu Nanton	24.13	10.22	83.4
Tamale North Sub Metro	61.36	26.00	92.9
Tatale	7.15	3.03	31.2
Tolon	8.64	3.66	62.7
Yendi Municipal	17.80	7.54	72.5
Zabzugu	9.01	3.82	39.1
TOTAL	236	100	

10. OTI REGION

DISTRICT	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Biakoye	14.66	11.88	89.3
Jasikan	12.06	9.77	85.8
Kadjebi	11.84	9.59	72.6
Krachi East	23.74	19.23	45.5
Krachi Nchumuru	16.04	12.99	62.1
Krachi West	8.68	7.03	68.0
Nkwanta North	13.03	10.55	73.4

Nkwanta South	23.38	18.94	50.4
TOTAL	123.42	100	

11. SAVANNAH REGION

DISTRICT	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Bole	8.06	13.55	73.6
East Gonja	17.06	28.69	47.4
Gonja Central	11.05	18.59	48.2
North Gonja	5.36	9.02	37.5
Sawla/Tuna/Kalba	11.35	19.08	31.9
West Gonja	6.58	11.07	69.3
TOTAL	59.46	100	

12. UPPER EAST REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Bawku Municipal	12.46	6.92	83.5
Bawku West	15.62	8.67	44.2
Binduri	10.08	5.60	36.7
Bolgatanga Municipal	26.17	14.54	77.2
Bongo	8.52	4.73	64.9
Builsa North	9.23	5.13	45.8
Builsa South	5.98	3.32	37.2
Garu Tempene	16.94	9.41	47.1
Kasena Nankana East	28.90	16.05	65.2
Kasena Nankana West	17.95	9.97	65.5
Nabdam	5.47	3.04	73.3

Pusiga	9.40	5.22	46.6
Talensi	13.33	7.40	60.6
TOTAL	180.02	100	

13. UPPER WEST REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Daffiama Bussie	8.74	4.48	90.5
Jirapa	16.56	8.49	78.9
Lambussie Karni	12.72	6.52	80.1
Lawra	9.35	4.79	74.2
Nadowli-Kaleo	15.64	8.02	59.5
Nandom	12.27	6.29	53.5
Sissala West	12.50	6.41	96.8
Sissala East	20.96	10.75	91.1
Wa East	12.26	6.29	61.2
Wa Municipal	53.40	27.38	96.7
Wa West	20.62	10.57	48.9
TOTAL	195.02	100	

14. VOLTA REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Adaklu	5.39	1.54	68.8
Afadzato South	21.23	6.05	90.7
Agotime Ziope	6.37	1.82	74.7
Akatsi North	7.55	2.15	85.6
Akatsi South	18.55	5.29	80.0
Central Tongu	13.21	3.76	78.3
Ho Municipal	45.58	12.99	97.8

Ho West	21.22	6.05	90.4
Hohoe Municipal	40.75	11.61	97.5
Keta Municipal	42.19	12.02	96.0
Ketu North	22.34	6.37	89.5
Ketu South	42.40	12.08	77.3
Kpando Municipal	11.79	3.36	95.9
North Dayi	8.69	2.48	96.2
North Tongu	18.52	5.28	75.4
South Dayi	11.13	3.17	94.2
South Tongu	13.97	3.98	91.0
TOTAL	350.88	100	

15. WESTERN REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Ahanta West	20.75	2.14	91.5
Ellembelle	18.44	1.90	91.6
Jomoro	11.03	1.14	98.1
Mpohor	12.97	1.34	82.9
Nzema East	6.84	0.71	79.1
Prestea / Huni Valley	47.13	4.87	87.4
Sefwi Akontombra	21.45	2.21	60.2
Sefwi-Wiawso	41.26	4.26	91.6
Sekondi Takoradi	661.90	68.32	99.4
Shama	8.29	0.86	98.1
Tarkwa Nsuaem	25.90	2.67	94.2
Wassa Amenfi Central	20.89	2.16	85.8
Wassa Amenfi East	21.23	2.19	71.6
Wassa Amenfi West	26.22	2.71	88.4

Wassa East	24.50	2.53	66.6
TOTAL	968.82	100	

16. WESTERN NORTH REGION

District	Electricity		Electricity Access Rate (%)
	Quantity (GWh)	Regional Share (%)	
Aowin	36.02	25.09	65.1
Bia East	8.65	6.02	48.0
Bia West	25.94	18.06	59.0
Bodi	15.85	11.04	59.5
Juabeso	15.51	10.80	65.6
Sefwi Bibiani-Anhwiaso Bekwai	35.15	24.48	96.2
Suaman	6.48	4.52	66.2
TOTAL	143.59	100	

ANNEX 3

2020 PROJECTED RESIDENTIAL DEMAND FOR CHARCOAL, FIREWOOD AND KEROSENE

1. AHAFO REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Asunafo North	4.00	24.14	40.83	27.60	0.010	27.50
Asunafo South	2.30	13.88	38.73	26.18	0.009	25.84
Asutifi North	1.92	11.60	15.11	10.21	0.004	10.25
Asutifi South	1.92	11.60	15.11	10.21	0.004	10.25
Tano North	3.21	19.35	20.04	13.55	0.005	13.71
Tano South	3.22	19.43	18.13	12.26	0.004	12.45
TOTAL	16.58	100	147.94	100	0.03	100

2. ASHANTI REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Adansi North	1.73	0.68	50.37	5.15	0.055	5.69
Adansi South	2.00	0.78	64.90	6.64	0.040	4.14
Afigya Kwabre	5.17	2.03	30.46	3.12	0.081	8.34
Ahafo Ano North	1.91	0.75	49.94	5.11	0.016	1.64
Ahafo Ano South	0.85	0.33	70.99	7.26	0.045	4.71
Amansie Central	0.65	0.25	59.99	6.14	0.037	3.81
Amansie West	1.16	0.45	77.46	7.92	0.054	5.63
Asante Akim Central Municipal	4.49	1.76	12.16	1.24	0.010	1.05
Asante Akim North	3.54	1.39	13.05	1.33	0.011	1.11
Asante Akim South	1.66	0.65	62.98	6.44	0.063	6.56

Asokore Mampong Municipal	19.16	7.52	51.89	5.31	0.043	4.48
Atwima Kwanwoma	2.79	1.09	22.03	2.25	0.063	6.52
Atwima Mponua	1.08	0.42	71.50	7.31	0.022	2.28
Atwima Nwabiagya	6.69	2.62	24.21	2.48	0.087	8.98
Bekwai Municipal	2.05	0.81	47.86	4.90	0.035	3.63
Bosome Freho	0.32	0.13	37.92	3.88	0.026	2.66
Bosomtwe	3.61	1.42	31.24	3.20	0.059	6.06
Ejisu Juaben	4.37	1.72	45.38	4.64	0.066	6.84
Ejura Sekye Dumase	3.55	1.39	16.37	1.67	0.013	1.37
Kma	143.40	56.25	1.16	0.12	0.027	2.78
Kwabre	8.26	3.24	7.63	0.78	0.035	3.67
Mampong Municipal	4.25	1.67	22.50	2.30	0.017	1.74
Obuasi Municipal	13.18	5.17	0.98	0.10	0.004	0.38
Offinso Municipal	2.10	0.82	24.16	2.47	0.020	2.03
Offinso North	1.18	0.46	18.38	1.88	0.006	0.57
Sekyere Afram Plains North	0.91	0.36	9.01	0.92	0.007	0.74
Sekyere Central	4.49	1.76	12.16	1.24	0.010	1.05
Sekyere East	2.73	1.07	15.92	1.63	0	0.05
Sekyere Kumawu	4.19	1.64	11.35	1.16	0.009	0.98
Sekyere South	3.46	1.36	13.63	1.39	0.005	0.51
TOTAL	254.94	100	977.59	100	0.97	100

3. BONO REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Banda	0.75	2.00	5.91	2.70	0.001	2.67
Berekum	6.41	17.01	18.78	8.59	0.005	8.93
Dormaa East	1.84	4.89	14.45	6.61	0.003	6.54
Dormaa Municipal	3.35	8.90	39.98	18.28	0.009	17.89
Dormaa West	1.76	4.66	13.79	6.31	0.003	6.24

Jaman North	3.43	9.11	19.24	8.79	0.005	8.81
Jaman South	2.33	6.18	36.93	16.88	0.009	16.44
Sunyani Municipal	7.43	19.72	3.49	1.60	0.001	2.35
Sunyani West	4.52	12.00	9.40	4.30	0.002	4.62
Tain	3.03	8.06	26.47	12.10	0.006	11.94
Wenchi	2.82	7.48	30.27	13.84	0.007	13.58
TOTAL	37.67	100	218.73	100	0.052	100

4. BONO EAST REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Atebubu Amantin	4.00	12.73	28.66	10.77	0.007	10.83
Kintampo North	4.17	13.28	19.21	7.22	0.005	7.39
Kintampo South	1.11	3.52	42.07	15.81	0.010	15.46
Nkoranza North	1.32	4.21	30.59	11.50	0.007	11.29
Nkoranza South	3.50	11.14	24.68	9.28	0.006	9.33
Pru	4.06	12.94	43.30	16.28	0.010	16.18
Sene East	2.18	6.93	17.08	6.42	0.004	6.43
Sene West	2.09	6.66	16.42	6.17	0.004	6.19
Techiman Municipal	6.80	21.65	26.95	10.13	0.007	10.46
Techiman North	2.18	6.93	17.08	6.42	0.004	6.43
TOTAL	31.39	100	266.05	100	0.062	100

5. CENTRAL REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Abura / Asebu / Kwamankese	3.11	3.93	35.67	6.65	0.008	6.55
Agona East	3.05	3.84	23.11	4.31	0.005	4.29
Agona West	6.49	8.18	5.41	1.01	0.002	1.27

Ajumako-Enyan-Esiam	3.56	4.49	43.84	8.17	0.010	8.04
Asikuma / Odoben / Brakwa	4.32	5.45	26.69	4.98	0.006	4.99
Assin North	4.92	6.20	51.42	9.59	0.012	9.47
Assin South	0.87	1.10	57.17	10.66	0.013	10.32
Awutu Senya East Municipal	4.08	5.15	26.37	4.92	0.006	4.92
Awutu Senya West	4.70	5.93	5.78	1.08	0.002	1.25
Cape Coast Metro	8.78	11.07	7.21	1.34	0.002	1.69
Effutu	4.14	5.22	0.41	0.08	0	0.26
Ekumfi	1.94	2.45	12.56	2.34	0.003	2.35
Gomoa East	8.53	10.75	43.25	8.06	0.010	8.16
Gomoa West	4.69	5.92	36.86	6.87	0.009	6.84
Komenda Edina Eguafo / Abirem	4.06	5.11	42.55	7.93	0.010	7.83
Mfantseman	5.30	6.68	29.51	5.50	0.007	5.55
Twifo Ati-Morkwa	2.33	2.94	15.07	2.81	0.004	2.81
Twifo Lower Denkyira	1.31	1.65	21.51	4.01	0.005	3.93
Upper Denkyira East	2.62	3.31	19.07	3.56	0.005	3.55
Upper Denkyira West	0.50	0.63	32.84	6.12	0.008	5.93
TOTAL	79.31	100	536.30	100	0.127	100

6. EASTERN REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Akwapem North	4.15	4.20	47.25	6.69	0.011	6.60
Akwapem South	1.48	1.50	8.89	1.26	0.002	1.27
Akyem Mansa	3.25	3.29	30.49	4.32	0.007	4.28
Asuogyaman	2.65	2.69	36.75	5.20	0.009	5.12
Atiwa	3.30	3.34	38.69	5.48	0.009	5.40
Ayensuano	2.78	2.81	21.49	3.04	0.005	3.03
Birim Municipal	7.57	7.66	16.69	2.36	0.004	2.54

Birim North	2.02	2.04	31.20	4.42	0.007	4.34
Birim South	4.63	4.69	30.03	4.25	0.007	4.27
Denkyembour	2.87	2.91	22.23	3.15	0.005	3.14
East Akim	7.92	8.01	28.76	4.07	0.007	4.20
Fanteakwa	2.81	2.84	42.13	5.96	0.010	5.86
Kwaebibirem	4.52	4.57	27.69	3.92	0.007	3.94
Kwahu Afram Plains North	3.74	3.78	28.91	4.09	0.007	4.08
Kwahu Afram Plains South	4.22	4.27	32.61	4.62	0.008	4.60
Kwahu East	2.25	2.28	26.98	3.82	0.006	3.77
Kwahu South	1.76	1.78	26.91	3.81	0.006	3.74
Kwahu West	3.93	3.98	21.62	3.06	0.005	3.09
Lower Manya	5.59	5.66	0.76	0.11	0	0.30
New Juaben Municipal	11.55	11.69	1.15	0.16	0.001	0.55
Nsawam Adoagyiri	3.16	3.20	24.46	3.46	0.006	3.45
Suhum Municipal	2.26	2.28	35.67	5.05	0.008	4.96
Upper Manya	1.17	1.18	34.89	4.94	0.008	4.81
Upper West Akim	3.16	3.20	24.46	3.46	0.006	3.45
West Akim	3.59	3.63	33.93	4.80	0.008	4.76
Yilo Krobo	2.45	2.48	31.89	4.51	0.007	4.44
TOTAL	98.79	100	706.54	100	0.167	100

7. GREATER ACCRA REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Accra Metropolis	106.16	44.12	10.55	7.92	0.008	19.21
Ada East	4.10	1.71	3.10	2.33	0.001	2.13
Ada West	3.39	1.41	2.57	1.93	0.001	1.77
Adenta	3.31	1.38	15.17	11.39	0.004	8.27
Ashaiman	11.72	4.87	1.16	0.87	0.001	2.12

Ga Central Municipal	6.73	2.80	5.09	3.82	0.002	3.50
Ga East	8.31	3.45	9.03	6.78	0.003	5.74
Ga South	24.45	10.16	23.29	17.48	0.007	15.20
Ga West	10.21	4.24	37.15	27.88	0.009	20.51
Kpone Katamanso	6.30	2.62	4.77	3.58	0.001	3.28
La Dade Kotopon	10.56	4.39	7.99	6.00	0.002	5.50
La Nkwantanang Madina	6.43	2.67	4.87	3.65	0.001	3.35
Ledzokuku / Krowor	13.96	5.80	1.39	1.04	0.001	2.52
Ningo Prampram	4.08	1.69	3.08	2.31	0.001	2.12
Shai Osu Doku	2.97	1.23	2.24	1.68	0.001	1.54
Tema Metropolis	17.90	7.44	1.78	1.34	0.001	3.24
TOTAL	240.59	100	133.23	100	0.044	100

8. NORTH EAST REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Bunkpurugu Yonyo	1.44	19.43	44.42	30.11	0.010	29.98
Chereponi	0.67	8.99	19.74	13.38	0.005	13.32
Mamprugu Moagduri	0.68	9.17	13.19	8.94	0.003	8.94
Mamprusi East	2.48	33.52	33.26	22.54	0.008	22.68
West Mamprusi	2.14	28.89	36.93	25.03	0.009	25.08
TOTAL	7.40	100	147.54	100	0.034	100

9. NORTHERN REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Gushiegu	1.82	5.86	35.42	8.78	0.008	8.73
Karaga	1.11	3.58	25.93	6.43	0.006	6.37
Kpandai	1.10	3.54	41.92	10.39	0.010	10.26

Kumbungu	0.57	1.84	11.10	2.75	0.003	2.74
Mion	1.18	3.79	22.90	5.68	0.005	5.64
Nanumba North	2.61	8.37	41.69	10.33	0.010	10.30
Nanumba South	1.28	4.11	32.69	8.10	0.008	8.03
Saboba	0.66	2.12	25.90	6.42	0.006	6.34
Sagnerigu	2.08	6.69	40.47	10.03	0.009	9.97
Savelugu Nanton	3.35	10.77	32.48	8.05	0.008	8.10
Tamale North Sub Metro	10.09	32.42	1.86	0.46	0.001	1.07
Tatale	0.86	2.75	16.66	4.13	0.004	4.10
Tolon	1.04	3.33	20.13	4.99	0.005	4.96
Yendi Municipal	2.27	7.30	34.26	8.49	0.008	8.47
Zabzugu	1.10	3.53	19.97	4.95	0.005	4.92
TOTAL	31.12	100	403.38	100	0.094	100

10. OTI REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Biakoye	1.98	12.50	22.61	9.72	0.018	12.00
Jasikan	1.54	9.74	22.98	9.88	0.015	9.77
Kadjebi	1.50	9.45	23.47	10.09	0.015	9.57
Krachi East	3.04	19.19	45.06	19.38	0.030	19.22
Krachi Nchumuru	2.16	13.64	24.89	10.71	0.020	13.12
Krachi West	1.01	6.40	21.54	9.26	0.011	6.91
Nkwanta North	1.68	10.57	24.40	10.49	0.016	10.56
Nkwanta South	2.93	18.51	47.58	20.46	0.029	18.86
TOTAL	15.86	100	232.53	100	0.154	100

11. SAVANNAH REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Bole	0.93	13.75	20.55	13.12	0.005	13.12
East Gonja	1.91	28.19	46.71	29.80	0.011	29.79
Gonja Central	1.26	18.55	29.27	18.68	0.007	18.68
North Gonja	0.64	9.49	12.49	7.97	0.003	7.99
Sawla/Tuna/Kalba	1.17	17.24	36.33	23.18	0.008	23.12
West Gonja	0.87	12.78	11.36	7.25	0.003	7.31
TOTAL	6.77	100	156.72	100	0.036	100

12. UPPER EAST REGION

DISTRICT	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Bawku Municipal	2.73	7.80	17.22	5.22	0.016	7.75
Bawku West	2.63	7.52	40.37	12.23	0.013	6.30
Binduri	2.58	7.36	22.33	6.77	0.017	8.31
Bolgatanga Municipal	3.08	8.79	19.96	6.05	0.010	4.84
Bongo	2.00	5.72	20.58	6.24	0.014	6.64
Builsa North	2.36	6.74	20.44	6.19	0.016	7.61
Builsa South	1.53	4.37	13.25	4.02	0.010	4.93
Garu Tempene	4.25	12.14	49.13	14.89	0.016	7.85
Kasena Nankana East	3.61	10.32	33.76	10.23	0.025	12.41
Kasena Nankana West	3.03	8.65	30.46	9.23	0.021	10.10
Nabdam	1.40	3.99	12.11	3.67	0.009	4.51
Pusiga	2.40	6.86	20.82	6.31	0.016	7.75
Talensi	3.41	9.73	29.52	8.95	0.022	10.99
TOTAL	35.03	100	329.95	100	0.204	100

13. UPPER WEST REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Daffiama Bussie	0.32	3.29	0.30	0.11	0.005	5.81
Jirapa	0.80	8.17	42.60	15.46	0	0.47
Lambussie Karni	0.57	5.84	24.25	8.80	0	0.04
Lawra	0.66	6.79	25.91	9.41	0.008	9.35
Nadowli-Kaleo	0.22	2.26	30.86	11.20	0.010	11.80
Nandom	0.45	4.62	0.43	0.15	0.007	8.16
Sissala West	0.10	1.07	25.85	9.38	0	0.00
Sissala East	0.82	8.41	26.50	9.62	0.008	9.14
Wa East	0.07	0.68	40.62	14.75	0.011	13.81
Wa Municipal	5.64	57.65	14.16	5.14	0.021	25.87
Wa West	0.12	1.21	43.96	15.96	0.013	15.55
TOTAL	9.78	100	275.45	100	0.083	100

14. VOLTA REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Adaklu	0.54	1.11	18.14	3.67	0.006	1.45
Afadzato South	2.86	5.93	32.95	6.66	0.027	6.02
Agotime Ziope	0.86	1.78	9.90	2.00	0.008	1.81
Akatsi North	1.02	2.11	11.72	2.37	0.010	2.14
Akatsi South	2.31	4.78	38.76	7.83	0.023	5.18
Central Tongu	1.78	3.69	20.50	4.14	0.017	3.75
Ho Municipal	6.58	13.62	48.60	9.82	0.058	13.12
Ho West	2.86	5.93	32.95	6.66	0.027	6.02
Hohoe Municipal	5.75	11.90	50.29	10.16	0.052	11.67
Keta Municipal	6.35	13.16	31.36	6.34	0.054	12.26

Ketu North	3.02	6.26	34.09	6.89	0.028	6.34
Ketu South	6.19	12.82	41.43	8.37	0.054	12.24
Kpando Municipal	1.59	3.29	18.31	3.70	0.015	3.35
North Dayi	1.15	2.39	14.49	2.93	0.011	2.46
North Tongu	2.40	4.98	33.56	6.78	0.023	5.22
South Dayi	1.56	3.22	14.49	2.93	0.014	3.18
South Tongu	1.46	3.03	43.43	8.77	0.017	3.79
TOTAL	48.30	100	494.95	100	0.444	100

15. WESTERN REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Ahanta West	1.62	2.33	27.04	8.49	0.033	12.58
Ellembelle	0.85	1.22	30.15	9.47	0.047	17.77
Jomoro	1.99	2.86	37.68	11.84	0.021	8.02
Mpohor	0.88	1.26	8.01	2.52	0.005	2.03
Nzema East	1.08	1.56	17.61	5.53	0.009	3.43
Prestea / Huni Valley	2.93	4.22	33.21	10.43	0.022	8.36
Sefwi Akontombra	0.59	0.85	26.83	8.43	0.018	6.61
Sefwi-Wiawso	2.51	3.61	29.97	9.42	0.020	7.53
Sekondi Takoradi	47.11	67.79	1.47	0.46	0.016	5.94
Shama	3.56	5.12	6.56	2.06	0.008	2.84
Tarkwa Nsuaem	1.42	2.04	21.31	6.69	0.014	5.32
Wassa Amenfi Central	1.42	2.04	12.90	4.05	0.009	3.27
Wassa Amenfi East	0.53	0.76	27.46	8.63	0.018	6.76
Wassa Amenfi West	1.35	1.94	22.95	7.21	0.015	5.72
Wassa East	1.66	2.39	15.13	4.75	0.010	3.83
TOTAL	69.50	100	318.26	100	0.265	100

16. WESTERN NORTH REGION

District	Charcoal		Firewood		Kerosene	
	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)	Quantity(kt)	Regional Share (%)
Aowin	2.44	28.29	22.24	20.98	0.015	21.17
Bia East	0.59	6.79	5.34	5.04	0.004	5.08
Bia West	1.76	20.36	16.01	15.10	0.011	15.24
Bodi	1.07	12.44	9.79	9.23	0.007	9.31
Juabeso	0.48	5.56	18.59	17.53	0.012	17.22
Sefwi Bibiani-Anhwiaso Bekwai	1.85	21.46	30.05	28.34	0.020	28.17
Suaman	0.44	5.09	4.00	3.78	0.003	3.81
TOTAL	8.63	100	106.02	100	0.070	100