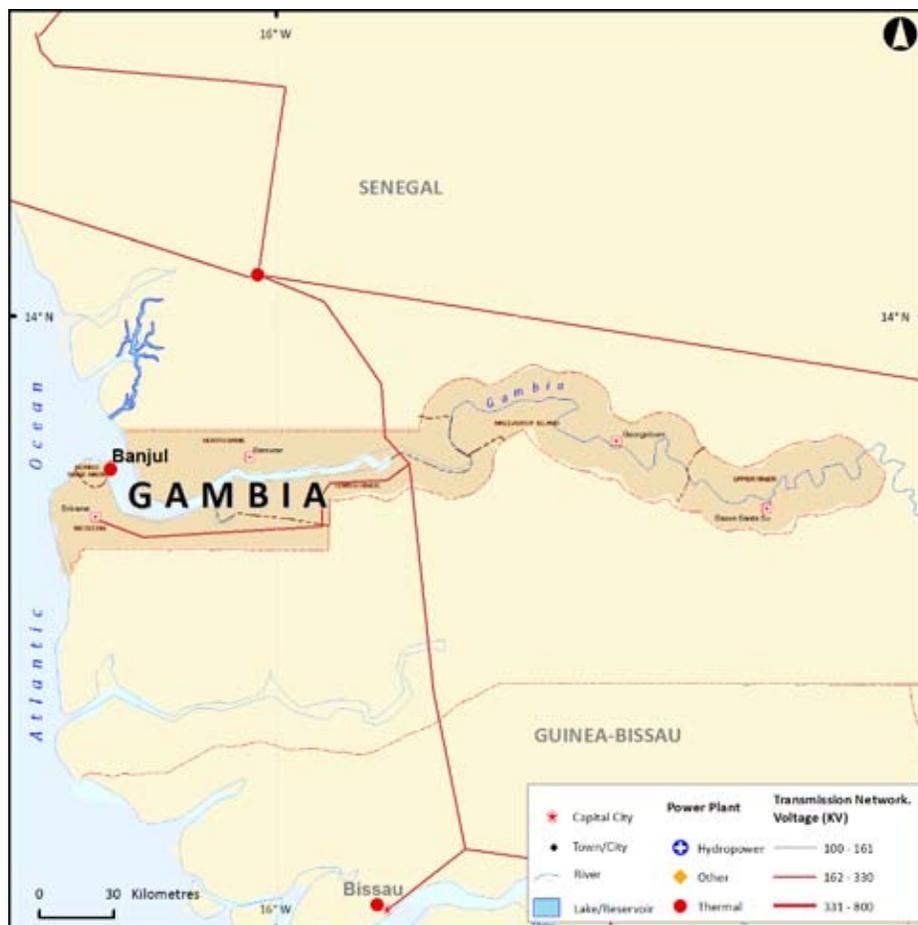




Figure 1: Energy profile of Gambia



## Energy Consumption and Production

In 2013, Gambia's population was 1.86 million (Table 1). Total production of electricity in 2015 was 28 ktoe with 96.4 per cent produced from fossil fuels (Table 2). In 2015, final consumption of electricity was 21 ktoe (AFREC, 2015). Key consumption and production statistics are shown in Figures 2 and 3.

Table 1: Gambia's key indicators

Key indicators	Amount
Population (million)	1.86
GDP (billion 2005 USD)	58.7
CO <sub>2</sub> emission (Mt of CO <sub>2</sub> )	0.42

Source: (World Bank, 2015)

## Energy Resources

### Biomass

Electricity supply is erratic and so households rely on biomass for over 90 per cent of their energy needs (REEEP, 2012). Alternative fuels are gaining in popularity. Energy crops include the Jatropha plant which is being used as a source of biofuels and Miscanthus (Elephant grass). Waste to energy ventures are also being promoted such as the use of groundnut shell briquettes and a waste to energy plant developed as a Public Private Partnerships (PPP) between National Water Electricity Company and Naanovo Energy Gambia Ltd (REEEP, 2012). Fuel efficient cookstoves that use less woodfuel and lower emissions are also being promoted.

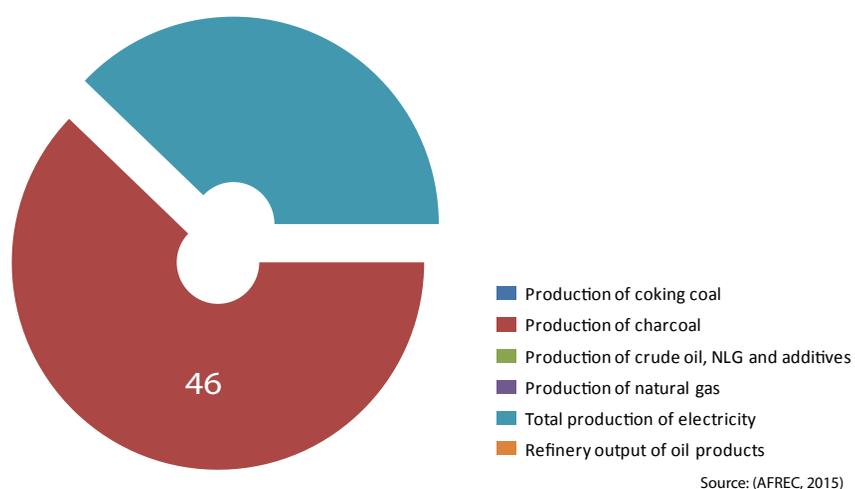
### Hydropower

Gambia has no hydroelectricity generating potential. However, is working with Guinea, Guinea-Bissau and Senegal, through their regional institution the Gambia River Basin Development Organisation (OMVG) to improve energy supply and security in the member states. Joint current projects include the Kaleta project (240 MW) on the Konkoure River in Guinea and Sambangalou project (128 MW) in Senegal (REEEP, 2012). Three smaller ones totalling 195 MW on Rivers Gambia, Corubal and Tomine are in the prefeasibility stage.

### Oil and natural gas

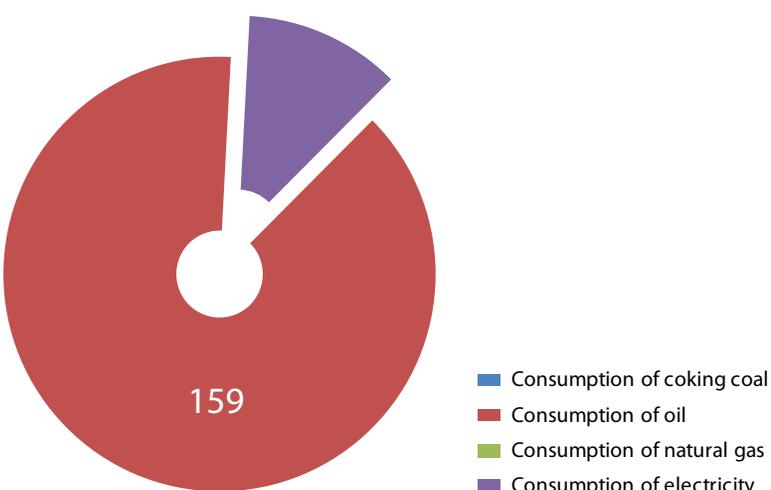
Although offshore exploration activities are ongoing, Gambia does not have any known oil deposits. As such it relies on imports to meet its petroleum needs. Net imports of oil have been increasing from 92 ktoe in 2000 to 177 ktoe in 2015 (AFREC, 2015). About 15 per cent of electricity was produced from fossil fuels in 2015 (AFREC 2015)

Figure 2: Total energy production, (ktoe)



Source: (AFREC, 2015)

Figure 3: Total energy consumption, (ktoe)



Source: (AFREC, 2015)

**Table 2: Total energy statistics (ktoe)**

Category	2000	2005	2010	2015 P
Production of coking coal	-	-	-	-
Production of charcoal	0	0	0	46
Production of crude oil, NLG and additives	-	-	-	-
Production of natural gas	-	-	-	-
Production of electricity from biofuels and waste	0	0	0	0
Production of electricity from fossil fuels	10	16	17	27
Production of nuclear electricity	-	-	-	-
Production of hydro electricity	-	-	-	-
Production of geothermal electricity	-	-	-	-
Production of electricity from solar, wind, Etc.	0	0	0	1
Total production of electricity	10	16	18	28
Refinery output of oil products	-	-	-	-
Final Consumption of coking coal	-	-	-	-
Final consumption of oil	90	104	170	159
Final consumption of natural gas	-	-	-	-
Final consumption of electricity	9	15	20	21
Consumption of oil in industry	0	0	0	0
Consumption of natural gas in industry	-	-	-	-
Consumption of electricity in industry	9	15	20	20
Consumption of coking coal in industry	-	-	-	-
Consumption of oil in transport	0	0	0	0
Consumption of electricity in transport	-	-	-	-
Net imports of coking coal	-	-	-	-
Net imports of crude oil, NGL, Etc.	-	-	-	-
Net imports of oil product	92	106	172	177
Net imports of natural gas	-	-	-	-
Net imports of electricity	-	-	-	-

- : Data not applicable

0 : Data not available

(P): Projected

(AFREC, 2015)

### Peat

The country has 100 km<sup>2</sup> of peatlands (WEC, 2013).

### Wind

The country's coastal areas offer the most realistic options for wind energy; one analysis indicates wind speeds of 5.5 m/s at a height of 50 m on the coast and 3m/s inland (Ceesay, 2012). Wind energy is currently used for water pumping. In 2009, a 150 kVA wind project was being implemented by an Independent Power Producer (IPP) in Batakunku Village, in Kombo South district. It provides electricity for the community and the excess is channeled to the transmission network. GAMWIND another IPP, is operating a 900 kW wind park that is also tied to the grid (REEEP, 2012).

### Geothermal

Gambia does not as yet have any known potential sources of geothermal energy. Geological surveys though have found heat reserves in the deeper rock layers which may point to some potential.

### Solar

Gambia receives 2,500 sunshine hours per annum which translates to a solar irradiance of over 4.5 kW/m<sup>2</sup>/day (REEEP, 2012). Solar energy is already being harvested and used for the traditional applications of lighting, refrigeration, heating and pumping of water and electricity for communication equipment, among others. A number of these installations were financed by the Regional Solar Programme of the Permanent Interstates Committee for Drought Control in the Sahel (CILSS) (REEEP, 2012). There has not been much investment in solar power generation since then (World Bank, 2013).

Paul Seligman / Flickr.com / CC BY-NC-ND 2.0



Cooking over a wood burning fire, Gambia

## Tracking progress towards sustainable energy for all (SE4All)

The Gambia has overall low electrification rates: in rural areas, 25.7 per cent of the population has access to electricity and in urban areas the proportion is 41 per cent (Table 3). The national electrification rate is 34.5 per cent (World Bank, 2016). In 2012, only 2 per cent of rural areas had access to modern fuels and 5.02 per cent has such access in urban areas. Banjul, the capital, has the highest electrification rate while the least electrified are the North Bank and Central River areas (REEEP, 2012). There have been initiatives to improve the extent of electrification, but progress is slow. A 6.2 MW capacity project started in 2000 had only achieved 2.2 MW of capacity by 2009 (REEEP, 2012).

The energy intensity (the ratio of the quantity of energy consumption per unit of economic output) was 5.5 per US dollar (2005 dollars at PPP) in 2012. The compound annual growth rate (CAGR) between 2010 and 2012 was -1.27 (World Bank, 2015).

The share of renewable energy in the total final energy consumption (TFEC) was 49.7 per cent in 2012. Traditional solid biofuels form the biggest share of renewable sources at 49.7 per cent of TFEC in 2012 (World Bank, 2015).

**Table 3: Gambia's progress towards achieving SDG7 – Ensure access to affordable, reliable, sustainable and modern energy for all**

Target	Indicators	Year					
		1990	2000	2010	2012	2000-2010	2011-2015
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.1 Per cent of population with access to electricity	18	34	31	34.5		
	7.1.2 Per cent of population with primary reliance on non-solid fuels	2	4	5	5.02		
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Renewable energy share in the total final energy consumption	58.9	50.3	41.0	49.7		
7.3 By 2030, Double the rate of improvement of energy efficiency	7.3.1 GDP per unit of energy use (constant 2011 PPP \$ per kg of oil equivalent)	22.5		17.57 (2007)			
	Level of primary energy intensity(MJ/\$2005 PPP)	5.8		5.7	5.5	5.7	5.53

Sources: (World Bank, 2015); (World Bank, 2016)

**Figure 4: SDG indicators**

Percentage of population with access to electricity	Access to non-solid fuel (% of population)	GDP per unit of energy use (PPP \$ per kg of oil equivalent) 2013	Renewable energy consumption (% of total final energy consumption), 2006-2011, 2012
34.5%	5.02%	<b>16.55</b>	48.83%
			

**Table 4: Gambia's key aspects/key mitigation measures to meet its energy Intended Nationally Determined Contributions (INDCs)**

INDC
*Reduce transmission losses by refurbishing and upgrading the national grid (from 33Kv to 132Kv) to reduce losses. Reduction GgCO <sub>2</sub> e in 2025 = 98.7
* Install solar PV, wind power and hydroelectric power plants. Reduction GgCO <sub>2</sub> e in 2025 =78.5
*Substitute incandescent light bulbs and raise awareness in the residential sector. Reduction GgCO <sub>2</sub> e in 2025 = 42.9
*Install solar water heating facilities on public buildings and support them for hotels and the residential sector. Reduction GgCO <sub>2</sub> e in 2025 = 19.3
*Promote energy saving appliances and additional hydroelectric, solar PV and wind power capacities. GgCO <sub>2</sub> e in 2025 = 121.7
* Reduce firewood and charcoal consumption and the overuse of forest resources. GgCO <sub>2</sub> e in 2025 = 287.6
* Reduce fuel consumption through efficiency standards. GgCO <sub>2</sub> e in 2025 = 114.0
*Remove methane emissions from landfills. GgCO <sub>2</sub> e in 2025 = 237.0
*Reduce methane emissions from anaerobic decomposing of organic matter by composting and reducing waste generation by recycling. GgCO <sub>2</sub> e in 2025 = 2.7

Source: (ROC, 2015)

**Table 5: Gambia's institutional and legal framework**

Basic Elements	Response
Presence of an Enabling Institutional Framework for sustainable energy development and services (Max 5 institutions) most critical ones	<ul style="list-style-type: none"> <li>• Department of State for Petroleum, Energy and Mineral Resources (DoSPEMR)</li> <li>• National Water and Electricity Company (NAWEC)</li> <li>• Ministry of Petroleum &amp; Mineral Resources •</li> </ul>
Presence of a Functional Energy Regulator	Public Utilities Regulatory Authority (PURA)
Ownership of sectoral resources and markets (Electricity/ power market; liquid fuels and gas market)	
Level of participation in regional energy infrastructure (Power Pools) and institutional arrangements	• West African Power Pool (WAPP)
Environment for Private Sector Participation	
Whether the Power Utility(ies) is/are vertically integrated or there is unbundling (list the Companies)	
Where oil and gas production exists, whether upstream services and operations are privatized or state-owned, or a mixture (extent) e.g., licensed private exploration and development companies)	<ul style="list-style-type: none"> <li>• Department of State for Finance and Economic Affairs plays a major role in the downstream sector</li> <li>• Gambia National Petroleum Company</li> <li>• Ministry of Petroleum &amp; Mineral Resources</li> <li>• Private companies involved in downstream sector: Galp Energia Gambia Ltd, Total Ltd, Elton Oil Ltd and Castle Oil Ltd</li> </ul>
Extent to which Downstream services and operations are privatized or state-owned, or a mixture (extent)	
Presence of Functional (Feed in Tariffs) FIT systems	
Presence Functional IPPs and their contribution	IPPs include: <ul style="list-style-type: none"> <li>• Global Electric Company with a power plant in Brikama Kabafita, with a total installed capacity of 25MW</li> <li>• GAMWIND operating the first large scale (900kW) grid-tied wind park.</li> </ul>
Legal, Policy and Strategy Frameworks	
Current enabling policies (including: RE; EE; private sector participation; & PPPs facilitation) (list 5 max) most critical ones	<ul style="list-style-type: none"> <li>• National Energy Policy and Action Plan 2014-2018</li> <li>• National Energy Efficiency Action Plan 2015-2020/2030</li> <li>• National Investment Program on Access to Energy in The Gambia (2013-2020)</li> <li>• National Energy Policy 2005</li> <li>• Vision 2020</li> <li>• Poverty Reduction Strategy Paper (PRSP).</li> </ul>
Current enabling laws/pieces of legislation (including: RE; EE; private sector participation; & PPPs facilitation) – including electricity/grid codes & oil codes (5 max or yes/ no) most critical ones	<ul style="list-style-type: none"> <li>• Petroleum Act (2004)</li> <li>• Renewable Energy Act (2013)</li> <li>• Electricity Act</li> </ul>

This table was compiled with material from (REEEP, 2012) and (ROG, 2013)

## Intended Nationally Determined Contributions (INDC) within the framework of the Paris climate Agreement

Although data for 2010 indicates that Gambia represents less than 0.01 per cent of global emissions, the government is still keen to do its part in reducing global climate change. The energy-related Intended Nationally Determined Contributions (INDC) are given in Table 4.

## Institutional and Legal Framework

The Department of State for Petroleum, Energy and Mineral Resources (DoSPEMR) is in charge of the energy sector (Table 5). The energy regulator is the Public Utilities Regulatory Authority (PURA). The National Water and Electricity Company (NAWEC) is the sole generator, transmitter and distributor of electric energy. On a regional level, the country is a member of the West African Power Pool (WAPP). The legal framework is provided by the Electricity Act. The main sector policy is the National Energy Policy 2005.