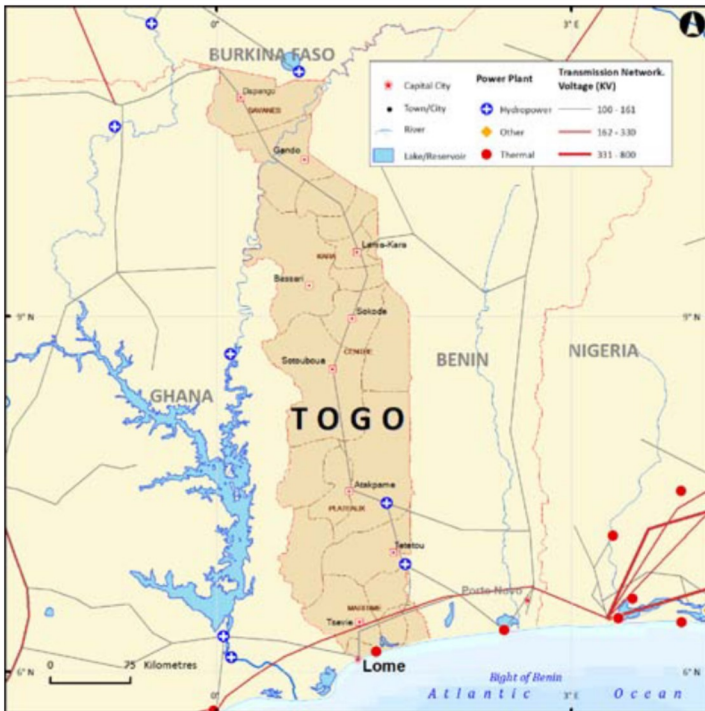




Figure 1: Energy profile of Togo



Energy Consumption and Production

In 2013, Togo had a population of 6.82 million (Table 1). Total electricity production in 2015 was 52 ktoe, with 71.1 per cent from fossil fuels and 23 per cent from hydro sources. Final consumption of electricity was 52 ktoe in 2015 as shown in Table 2 (AFREC, 2015). Figures 2 and 3 show the main energy statistics.

Table 1: Togo's key indicators

Key indicators	Amount
Population (million)	6.82
GDP (billion 2005 USD)	2.89
CO ₂ emission (Mt of CO ₂)	1.67

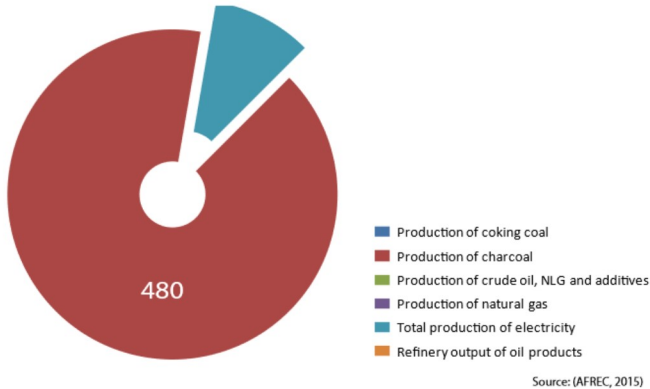
Source: (World Bank, 2015)

Energy Resources

Biomass

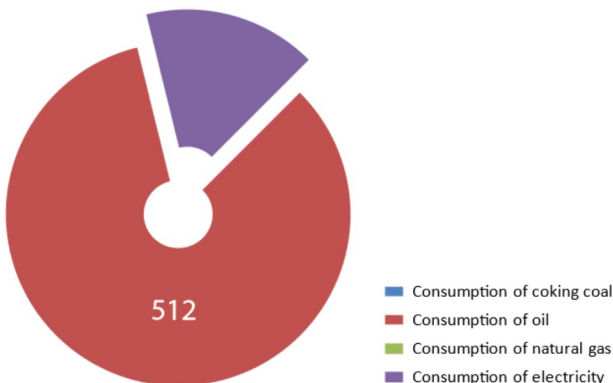
Traditional biomass is an important energy source in Togo with the biomass potential estimated at 2,600 ktoe (REEEP, 2012). Charcoal production has been increasing over the years from 330 ktoe in 2000 to 480 ktoe in 2015 (AFREC, 2015). There is some biogas used but more investment is needed to expand its usage.

Figure 2: Total energy production, (ktoe)



Source: (AFREC, 2015)

Figure 3: Total energy consumption, (ktoe)



Source: (AFREC, 2015)



Nangbeto Hydroelectric Power Plant Togo

jbdodane/Flickr.com/CC BY-NC 2.0

Table 2: Total energy statistics (ktoe)

Category	2000	2005	2010	2015 P
Production of coking coal	-	-	-	-
Production of charcoal	330	374	416	480
Production of crude oil, NLG and additives	-	-	-	-
Production of natural gas	-	-	-	-
Production of electricity from biofuels and waste	0	0	0	1
Production of electricity from fossil fuels	6	10	3	37
Production of nuclear electricity	-	-	-	-
Production of hydro electricity	9	6	8	12
Production of geothermal electricity	-	-	-	-
Production of electricity from solar, wind, Etc.	0	0	0	2
Total production of electricity	15	16	11	52
Refinery output of oil products	-	-	-	-
Final Consumption of coking coal	0	0	0	0
Final consumption of oil	288	342	641	512
Final consumption of natural gas	-	-	-	-
Final consumption of electricity	40	52	58	100
Consumption of oil in industry	86	30	77	49
Consumption of natural gas in industry	-	-	-	-
Consumption of electricity in industry	11	16	18	19
Consumption of coking coal in industry	0	0	0	0
Consumption of oil in transport	152	222	508	411
Consumption of electricity in transport	-	-	-	-
Net imports of coking coal	60	0	0	0
Net imports of crude oil, NGL, Etc.	-	-	-	-
Net imports of oil product	325	349	715	564
Net imports of natural gas	-	-	-	-
Net imports of electricity	32	44	61	57

- : Data not applicable

0 : Data not available

(P): Projected

(AFREC, 2015)

Hydropower

Togo had 66 MW of hydro-electric capacity installed in 2011 (WEC, 2013). Despite this and the potential for mini- and micro-hydroplants, on River Mono (eastern Togo) and River Oti (a transboundary river), the sector is undeveloped. The combined production capacity on these two rivers is about 224 MW (REEEP, 2012). Just 23 per cent of Togo's electricity comes from hydro-electricity (AFREC, 2015).

Oil and natural gas

Togo has no hydrocarbon deposits and all petroleum products are imported. In 2015, this amounted to 564 ktoe of oil products (AFREC, 2015).

Peat

There is about 10 km² of peatland (WEC, 2013).

Wind

There is much potential to exploit wind energy in Togo as the wind speeds recorded are fairly good. For instance, some of the coastal areas have recorded mean wind speeds between 5 m/s and as high as 6 m/s (REEEP, 2012) (MEF, 2014). The government has initiated a project to build a wind farm on 4,000 ha in a swamp near River Zio. Environmental issues regarding energy developments in wetlands will have be seriously considered. The farm will connect to the grid and provide between 5-7 per cent of the country's electricity on completion. A similar farm was developed in Cape Verde — the Cabeolica wind project in Cape Verde.

Geothermal

There has been no in-depth study to investigate potential in this sector (REEEP, 2012).

Solar

Togo still has a nascent solar industry despite the potential for solar energy. To date, solar has been used for off-grid services in rural areas such as water heating, telecommunications, school systems and other small-scale applications. The solar radiation is about 4.5 kWh/m²/day (REEEP, 2012).

Tracking progress towards sustainable energy for all (SE4All)

The national electrification rate is very low at 31.5 per cent, with 8.9 per cent electrification in rural areas and 67.6 per cent in urban areas (World Bank, 2016). Access to modern fuels is equally low. Electricity demand is growing at an annual rate of 8 per cent and will double over the next 10 years (Table 3). An additional 200 MW is needed to meet this demand (MEF, 2014). In 2012, only 4.75 per cent of the Togolese were using non-solid fuels; 2 per cent of these are in rural areas and 9 per cent in urban areas (World Bank, 2016); (World Bank, 2015).

Togo is among the countries with one of the highest energy intensities. The energy intensity (the ratio of the quantity of energy consumption per unit of economic output) of the Togolese economy was 15.0 MJ per US dollar (2005 dollars at PPP) in 2012, down slightly from 16.6 MJ per US dollar in 2010. The compound annual growth rate (CAGR) between 2010 and 2012 was -5.00 (World Bank, 2015).

The share of renewable energy in the total final energy consumption (TFEC) in 2012 was 72.7 per cent. Traditional solid biofuels form the biggest share of renewable sources at 60.3 per cent of TFEC in 2012, while modern solid biofuels contributed 3.9 per cent and hydro 3.4 per cent. Renewable sources contributed a 84.7 per cent share of electricity generation in 2012 (World Bank, 2015).

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

Although Togo is a negligible emitter of greenhouse gases, it is subject to the impacts of global climate change. To that end, Togo

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

Target	Indicators	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	10	17	28	31		
	7.1.2 Per cent of population with primary reliance on non-solid fuels	2	2	4	4.75		
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	78.7	77.1	76.1	72.7		
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)			2.9	3.0 (2011)		
	Level of primary energy intensity (MJ/\$2005 PPP)	10.3		16.6	15.0		

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
31.5%	4.75%	2.96	72.71%
			

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

INDC
*Produce and popularize energy-efficient stoves using wood, charcoal and gas among all of the country's social strata (a process that will need to begin with subsidies or appropriate tax benefits)
*Promote renewable energies (thermal, solar photovoltaic, micro-hydraulic, wind, etc.) by facilitating access to those technologies and training the populations on how to use and manage them
*Develop renewable energies (target of 4 per cent of the energy mix): promotion of bio-fuels and reclamation of degraded land; training and seeking out technical and financial partners for the production of new and renewable energies; tax remission on imports of solar and other renewable energies' equipment
*Implement a sustainable management of traditional energy sources (firewood and charcoal)
*Implement electricity-saving strategies
*Develop mini hybrid networks for rural electrification
*Promote low-carbon transport modes
*Promote new, clean technologies in the building sector

Source: (MEM, 2015)

Table 5: Togo'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"> • Ministry of Mines and Energy • Proposal to establish a Rural Electrification Agency
Presence of a Functional Energy Regulator	Regulatory Authority for Electricity Sector (ARSE)
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)	Electricity Energy Company of Togo (CEET) is in charge of transmission and distribution of electricity Communaute Electrique du Benin (CEB), develops generation and transmission infrastructure for Benin and Togo
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)	
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	Contour Global
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"> • Energy Policy and Strategy 2012 • Togo development strategy SCAPE 2013-2017 on renewable energy
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"> • Agreement on the International Code of Benin-Togo Electricity 2003; • Law No. 2000-012 of 2000 on the electricity sector; • Decree No. 2000-089/PR of 2000 establishing the modalities for conducting activities regulated by law No. 2000-012; • Decree No. 2000-090/PR of 8 November 2000 on the organization and functioning of the Regulatory Authority for Electricity Sector.

This table was compiled with material from (REEEP, 2012) and (MEF, 2014)

has fulfilled its international commitments and published its Intended Nationally Determined Contributions (INDC). These are in line with its national development policy. The energy related INDCs are listed in Table 4.

Institutional and Legal Framework

The Ministry of Mines and Energy is in charge of the energy sector (Table 5). The Regulatory Authority for Electricity Sector (ARSE) is involved in project evaluation and selection, ensures compliance with electrical safety and technical standards and arbitrates disputes. The Benin Electricity Community (CEB), a binational entity, is in charge of importation and transportation for both Benin and Togo; it also concludes energy

or electricity transit agreements and develops master plans for the generation and transmission of electricity. The Electricity Energy Company of Togo (CEET), a state owned company, is in charge of electricity transmission and distribution. At the regional level, Togo is a member of West African Power Pool.

The legal framework is provided by the Agreement on the International Code of Benin-Togo Electricity of 2003 and Law No. 2000-012 of 2000 on the electricity sector. Togo's Energy Policy and Strategy 2012 emphasizes a diversification of the energy mix with a focus on rural electrification; it also encourages the participation of the private sector and improvements in energy data and energy efficiency.