“202411681J001 Energy Policy “

The Federal Democratic Republic of Ethiopia

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General Information

Ethiopia is a large(1.14 Milli Sq. Km),diverse, and historically significant nation in the Horn of Africa. Africa's second most populous country (126 Million)with a rich cultural heritage, an agricultural economy, and a federal government structure. facing significant challenges like poverty and recent conflicts, holds a key geopolitical position and is undertaking massive development projects.

Nominal GDP: ~$205 - $215 Billion USD (IMF WEO, April 2024 projection).

GDP Growth Rate: Projected around **6.2%** (IMF WEO, April 2024).

- Number of HHs: around 22 Million

GDP per Capita : ~$1,650 - $1,750 USD

- Uses its own calendar (roughly 7 years behind Gregorian) and 12-hour clock system (dawn/dusk as reference). Rich traditions of Orthodox Christianity and Islam. Birthplace of coffee.

Institutional Framework
Ministry of Water and Energy (MoWE)

Mission: Equitable, sustainable resource management.

Structure:

3 State Ministers (Water, Sanitation, Energy).

3 Lead Executive Offices:

- Rural Energy Technology
- Energy Resource Study
- Electrification & Energy Information.

Affiliated Institutions:

- Ethiopian Electric Power (Generation/Transmission).
- Ethiopian Electric Utility (Distribution).
- Ethiopian Energy Authority (Regulation).

INSTITUTIONS INVOLVED IN THE ENERGY SECTOR DEVELOPMENT

- responsible to initiate policy, strategy and legislation with respect to water and energy development,
- prepare detail programs compatible with national development plan and implement them upon approval

- responsible to initiate policy and legislations pertaining to the development of minerals, geothermal, petroleum and natural gas development,
- prepare detail program compatible with national development plan and implement them upon approval

- responsible for power generation, transmission and bulk sale

- responsible for distribution and sales of electric power

- mandated to set regulatory frameworks and provide regulatory oversights on energy flows

- acts as a transaction liaison to those projects ought to be developed under public private partnership (PPP) modality

Organizational Structure

1. Ministry of Water & Energy (Minster)

- **Basin Development V/Minister**
- **Water supply & Sanitation V/Minister**
- Energy Resource V/Minister
  - EEP
  - EEU
  - Rural Energy T/D and Transition LEO
    - Desks
  - Energy Resource Study LEO
    - Desks
  - Electrification and Energy Data LEO
    - Desks

2. Regional energy Bureaus

- Zonal energy office
  - District energy office

3. Petroleum & Energy Authority

- Ministry of Trade & Regional Integration

Energy Resources Summary

- Hydropower potential 45,000 MW
- Geothermal potential ~ 10,000 MW
- Solar energy potential 5.5 kWh /sq. m/day – annual average daily irradiation
- Average wind speed > 7 meter/second at 50 m above ground level – 1,350 GW
- Wood – 1,120 million tones (annually exploitable)
- Agro-waste – 15 to 20 million tones (annually exploitable)
- Natural gas - 4 TCF (113 billion m^3)
- Coal > 300 million tones.
- Oil shale – 253 million tones

Primary Energy Supply(ktoe) by source(Production,imports & exports)

Energy Source	Share (Recent Years)	Production	Imports	Exports
Total Primary Energy Supply (TPES)	**100%**	**~45,000 - 50,000**	**~2,500 - 4,000**	**~100 - 500**
Biomass (Traditional)	**~85-90%**	**~38,000 - 45,000**	**Negligible**	**Negligible**
Oil Products	**~8-12%**	**~0**	**~2,000 - 3,500**	**Negligible**
Hydropower	**~2-5%**	**~700 - 2,000**	**0**	**~100 - 500**

Ethiopia's energy demand and supply (2013-2024)

Total Primary Energy Supply (TPES):

Biomass Dominance: ~85% (mainly fuelwood, charcoal, agricultural residues).

Modern Energy: ~15% (hydropower, oil, wind, solar).

Electricity Growth: Installed capacity tripled from **2,300 MW (2013)** to **~5,300 MW (2023)**, primarily from hydropower.

Electricity Generation Mix (2023):

Hydropower: **~90%** (major plants: Gilgel Gibe III, Tekeze).

Wind: **~8%** (Ashegoda, Adama farms).

Solar/Geothermal: **<2%** (recent expansions).

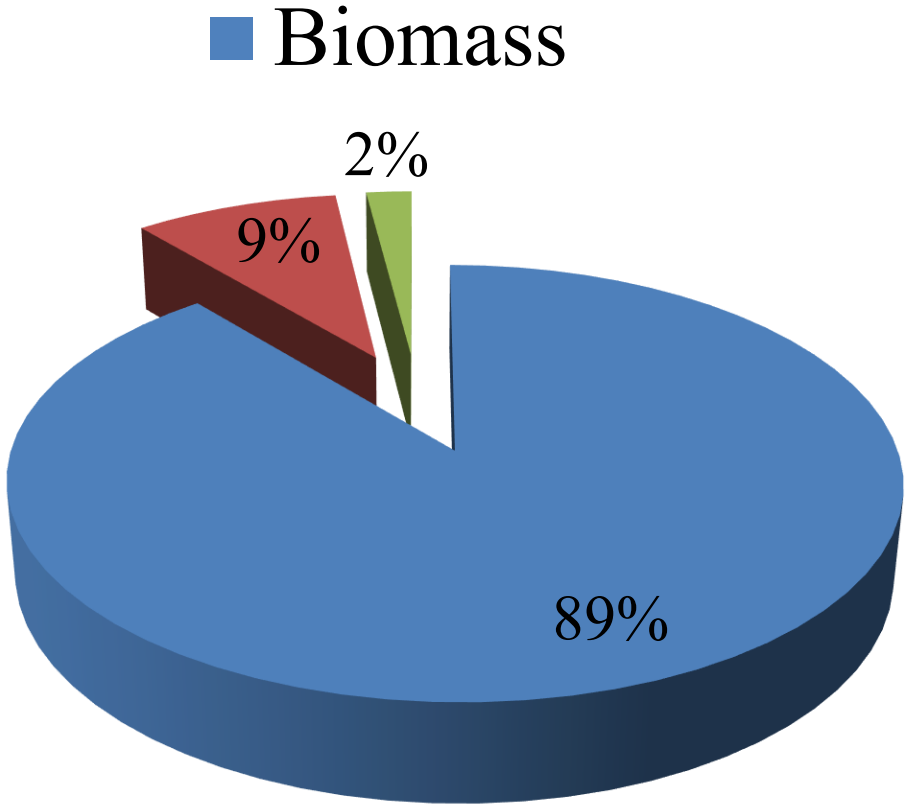
Thermal: Minimal (diesel backup).

Ethiopia's Primary Energy Supply (ktoe) /2013–2022/

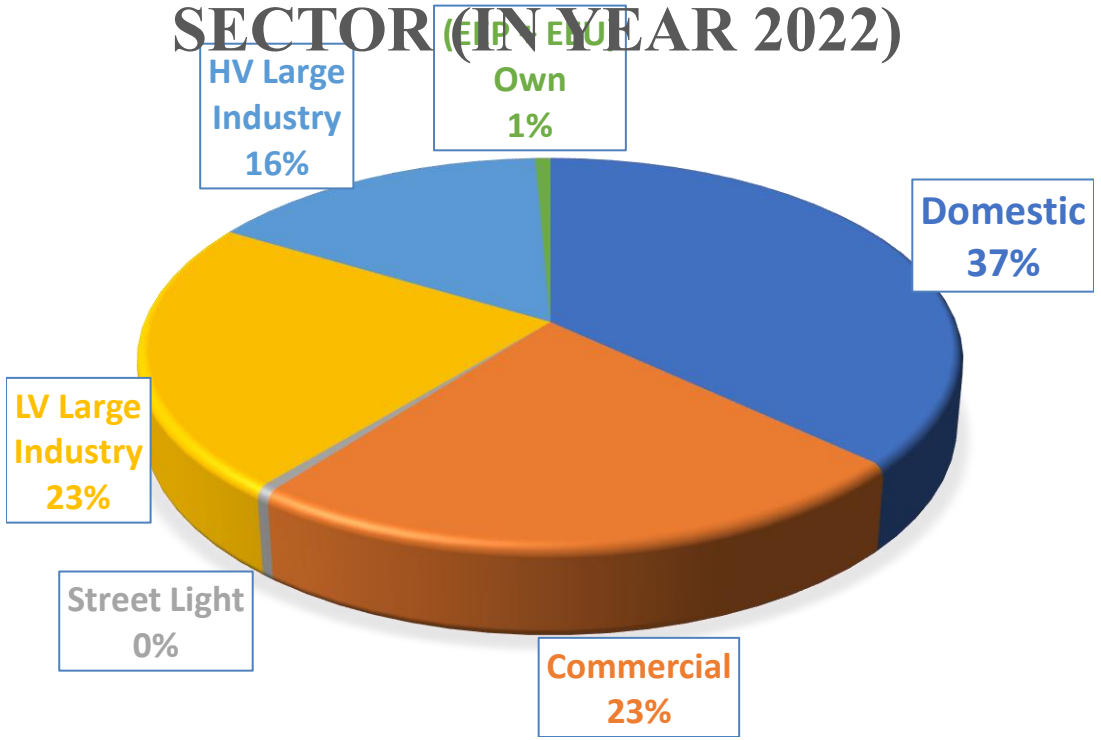
Year	Total Production	Biomass	Hydro	Oil	Other Renewables	Imports	Exports	Total Supply (TPES)
2013	32,780	29,950	1,910	50	870	2,840	0	35,620
2014	33,230	30,100	2,080	55	995	3,110	0	36,340
2015	33,890	30,400	2,300	60	1,130	3,420	0	37,310
2016	34,650	30,600	2,750	65	1,235	3,860	5	38,505
2017	35,820	30,750	3,400	70	1,600	4,320	20	40,120
2018	37,210	30,900	4,100	75	2,135	4,910	35	42,085
2019	39,050	31,000	5,300	80	2,670	5,550	55	44,545

Energy Supply and Consumption

Share of Fuel Consumption



SHARE OF ELECTRICITY CONSUMPTION BY SECTOR (IN YEAR 2022)



Energy Demand & Supply (2013 vs. 2023/2024)

Indicator	~2013	~2023	2024 (Est.)
Installed Capacity	2,300 MW	5,300 MW	~6,000 MW
Hydropower Share	~90%	~90%	~85%
Access to Elect.	27%	55%	~60%
Biomass	~90%	~85%	~82%
Petroleum Imports	95,000 bpd	125,000 bpd	130,000 bpd

Annual Electricity Generation (GWh) by Source:

Year	Hydro	Wind	Geothermal	Solar	Thermal (Oil/Diesel)	Total
2013	~7,900	~90	0	0	~10	~8,000
2014	~8,500	~120	0	0	~15	~8,635
2015	~9,200	~150	0	0	~20	~9,370
2016	~9,800	~180	0	0	~25	~10,005
2017	~10,500	~230	0	<1	~30	~10,760
2018	~11,200	~400	0	<5	~35	~11,635
2019	~12,000	~550	**~35**	~5	~40	~12,630
2020	~13,100	~750	~70	~10	~50	~13,980
2021	~14,500*	~900	~100	~15	~60	~15,575
2022	~15,800*	~1,000	~130	~25	~70	~17,025
2023	~16,500*	~1,100	~150	~40	~80	~17,870

Estimated CO_2 Emissions by Sector ($MtCO_2$/year):

Year	2000	2005	2010	2015	2020
Total	159	201	244	264	299
Energy	4	4	2	8	11
Transport	2	2	3	4	5
Energy w/o transport	2	2	3	4	5
Land	75	51	116	112	122
Agriculture	76	89	116	134	153
Industry	0	1	1	3	4
Waste	4	5	5	7	9

Projected Final Energy Consumption (ktoe) by Sector & Source

Sector	Energy Source	2030	2040	2050
Residential	Biomass (Trad.)	7,000-8,500	5,500-7,000	3,000-5,000
	Electricity	1,000-1,500	2,500-3,500	4,500-6,500
	LPG & Biogas	300-600	1,000-1,800	2,000-3,500
	Kerosene/Other	100-300	50-200	<100
Transport	Oil Products	2,500-3,000	3,500-4,500	4,500-6,000
	Electricity	50-150	500-1,500	2,000-4,000
	Biofuels	50-150	300-800	800-1,500
	Natural Gas	0-50	100-300	300-1,000

Energy Supply Projection (2030-2050) (ktoe)

Energy Source	2030	2040	2050
Traditional Biomass	~45,000	~40,000	~35,000
Modern Renewables	~20,000	~45,000	~75,000
Oil Products	~5,500	~8,000	~10,000
Natural Gas	~500	~2,000	~5,000
Coal	Negligible	Negligible	Negligible
Total Supply	**~71,000**	**~95,000**	**~125,000**

Current energy policy and measures

National Energy Policy (1994, under revision):Draft 2015 and 2018 now near to approval

Key aspects of the energy policy and measures:

Expanding Hydropower:

The policy prioritizes the development and utilization of Ethiopia's abundant hydropower resources.

Diversifying Renewable Energy:

Ethiopia is actively diversifying its energy mix by developing solar, wind, and geothermal power sources.

Promoting Energy Conservation and Efficiency:

The policy emphasizes energy conservation measures across all sectors, including residential, industrial, and transportation.

Major Difficulties and Bottlenecks Currently faced in formulating energy policies

- Ethiopia's energy policy formulation faces significant hurdles including insufficient generation capacity, low grid connectivity, and poor reliability, hindering development. Institutional challenges like weak coordination between government agencies and inconsistent policies also create uncertainties for investors. Furthermore, the lack of technical expertise, financial constraints, and underdeveloped rural infrastructure further complicate the situation.
- technical challenges in renewable energy development. These issues hinder the country's ability to achieve its energy targets, particularly in expanding access to electricity and promoting sustainable energy sources.

Subjects I would Like to learn in this program

- a wide range of topics including: energy policy formulation, renewable energy, nuclear energy, energy efficiency, and international energy relations. Japan's specific energy challenges and strategies, including its policies on renewable energy, nuclear power, and energy conservation.
- Experiences of participating countries (mutual learning process)

Expectation of My Superior & Mine

- provide policy & strategic oversight to the National Electrification Program(2030)
- play a pivotal role in terms of policy choices that will help our communities to provide with a reliable electricity with affordable price in a short period of time;
- do tasks in a more efficient and effective way.
- be equipped with cutting edge policy analysis techniques
- be able to make robust policy choices to address the dire energy need of our society.

Thank you

Appendix to the Country Report

1.Energy Prices

- Ethiopia's electricity prices are relatively low compared to other African countries, but they are also subject to recent and planned increases. The Ethiopian Electric Utility (EEU) is implementing a new tariff structure that will see prices rise significantly over the next few years.
- Here's a breakdown of the current situation and upcoming changes:

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Current Electricity Tariffs:

- Ethiopia has a tiered residential tariff system, meaning the price per kWh varies depending on the consumption level.
- As of the latest information, those consuming between 51 and 100 kWh will pay 1.49 ETB per kWh, those between 101 and 200 kWh will pay 2.67 ETB, and those between 201 and 300 kWh will pay 3.84 ETB, according to Addis Insight.
- Ethiopian Electric Utility clients using 50 kilowatts will see their monthly utility fees rise from 24 birr to an estimated 41 birr by the end of the 2024/25 year and to around 92 birr by the end of 2027/28.

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Planned Increases and Reasons:

- The government is gradually reducing subsidies on electricity, leading to tariff increases.
- Low energy prices are a "major challenge in the sector" due to the high cost of maintaining the infrastructure.
- The new tariff structure is expected to significantly increase costs for all users, especially those in the lower consumption brackets.

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Impact on Consumers:

- The tariff increases are expected to be phased in over several years.
- Consumers are advised to use energy-efficient appliances and reduce consumption to mitigate the impact of the price increases.
- The increase in tariffs is intended to improve the financial viability of the EEU and enable further investment in infrastructure.

Overall:

- Ethiopia is experiencing a shift in its electricity pricing policy, moving towards a more realistic cost recovery system. While this will lead to higher electricity bills for consumers, it is intended to improve the long-term sustainability of the electricity sector and potentially enable greater investment in energy access and infrastructure.

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The new electricity tariff adjustment

1. **The importance of the tariff reform**

• The tariff reform that was supposed to be improved two years ago has not been improved within the set deadline,

• The fact that electricity infrastructure resources are purchased from the international market and do not cover the cost of reconstruction work from distribution to transmission lines and do not reflect the actual cost,

• The fact that the current electricity infrastructure has been used for a long time and is old and requires extensive reconstruction work, and therefore requires a lot of money to carry out reconstruction works,

• The increase in the demand for electricity by energy users and the lack of electricity infrastructure to meet the growing demand for

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• The increase in the purchase price of electricity infrastructure resources, for example, in 2012, 18.3 percent, in 2013, 21.8 percent, in 2014, 34.7 percent, and in 2015, the market price has increased by 3.4 billion birr, which is the amount of investment that the institution predicted to be needed in 2012, to 5.5 billion birr. It forced the institution to spend billion birr. Similarly, in 2013, it increased from 4.5 billion birr to 6.4 billion, and in 2014, it increased from 5.8 to 7.7 billion birr.

• The fact that more than 80 percent of the institution's resources are provided from abroad due to the increase in foreign exchange: for example, in 2013, it was 39 birr, in 2014, it was 48.5 birr, and in 2015, it was 53.3 birr. The increase in foreign exchange forced the institution to spend 5 billion to 7.7 billion birr on infrastructure construction in 2013; for this, the institution showed an increase of 2.7 billion birr compared to the 5 billion birr it claimed it needed. Similarly, it increased investment expenditure from 5.5 billion birr to 9.4 billion birr in 2014. •

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- In general, this tariff review study was studied for one year by a third-party expert group and senior experts from Ethiopian Electric Power and Ethiopian Electricity Service, and after being approved by the Oil and Energy Authority, it was submitted to the Council of Ministers for approval.

2. **Our country's electricity tariff compared to that of sub-Saharan African countries**

• Our country's electricity tariff is very cheap and very low compared to the tariff of other countries in Sub-Saharan Africa. For example, at the exchange rate before the implementation of the new foreign exchange rate, the average price of one kWh in Liberia was 57 birr, in Sierra Leone 30 birr, in Togo 29 birr, in Benin 27 birr, in Gabon 24 birr, in Kenya 17 birr, in Sudan 6 birr and in our country Ethiopia 5 birr.

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3. **Content of tariff revision**

• The current electricity tariff reform includes residential, commercial, small and medium-sized industrial, and street lighting tariffs, and includes service charges, energy consumption bills, and high-power loads.

4. **Date of approval of the electricity tariff amendment and the approving body**

- Electricity tariff revision is stipulated in the Electricity Tariff Determination Directive No. 008/2012 issued by the Fuel and Energy Authority and is revised every 4 years, however, the current implementation of the electricity tariff revision study was approved by the Council of Ministers at its 36th regular meeting held on June 13, 2016.

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- To illustrate how the cost of living and pressure can be reduced by dividing the electricity tariff into periods, follow the following calculation: Monthly energy consumption = Monthly consumption in kWh * Rate of one kWh at that level + Service charge •

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- for customers using 51 to 100 kWh, the price was reduced by 61 percent from 6.01 to 2.34. For customers using 101 to 200 kWh, the price was reduced by 35 percent from 6.01 to 3.91. • The result of
the subsidy for example, if a customer using 50 kWh per month had not been subsidized, the electricity bill he would have paid would have been 50*6.01+10.24 = 310.74 birr; however, with the subsidy, he would have paid 50*0.98+10.24 = 59.24. This means that 252 birr has been reduced due to the 84 percent subsidy.

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- **In Ethiopia, gasoline currently costs 112.67 ETB per liter, while white diesel costs 107.93 ETB per liter. These prices are based on recent adjustments announced by the Federal Ministry of Trade and Regional Cooperation. The prices are subject to change based on global oil market fluctuations and the government's policies.**

2.Energy-related investment for domestic and overseas

Power Generation Projects open for private sector investment

Solar							
No.	Name of the project	Capacity(MW)	Project Status	Planned Project Mode	Location/Region	Project Finance Status	Remark
1	Welenchiti	150	Feasibility study Completed. It is waiting for Debit restricting to secure finance	EPC	Oromia	Loan in a process	The project has been approved by the Ministry of Finance. FS and ESIA has been approved. It is waiting for Debit restricting to secure finance
2	Gad-1	125	Booked for MASDAR	PPP/IPP	Somali	Not found	
3	Gad-2	125	Procurement stage	PPP/IPP	Somali	"	
4	Humera	150	Pended	PPP/IPP	Tigray	"	
5	Dicheto	125	Booked for MASDAR	PPP/IPP	Afar	"	
6	Weranso-1 (IPP)	100	Procurement stage	PPP/IPP	Afar	"	
7	Weranso -2 (EPC)	125	Under feasibility study	EPC	Afar	AfDB	AfDB has promised to finance the project after FS
8	Awash - Amibara	150	Pre-feasibility study completed	Not defined	Afar		
9	Awash- Didub	150	Under pre-feasibility study	Not defined			
10	Shiraro	150	Screening	PPP/IPP	Tigray	"	
11	Guhala	150	Under feasibility study	PPP/IPP	Amara	"	

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Wind							
1	Adigala	150	FS completed	PPP/IPP	Somali	Not found	
2	KebriBeyah	150	FS completed	PPP/IPP	Somali	"	
3	Aysha 3	125	Under FS	PPP/IPP	Somali	"	
4	Debre Derhan	125	Under FS	PPP/IPP	Amhara	"	
5	Aysha 1	300	PPA Signed with AMEA and waiting for Financial close	PPP/IPP	Somali	In a process	
6	Gode		Energy Resource Assessment Completed	Not defined yet	Oromia	Not found	
7	Tulu Guled	150	Under pre-feasibility study	"	Somalia	"	
8	Tarmaber	80	Pre-feasibility study completed	"	Amara	"	
9	Batu-Koshe	150	Pre-feasibility study completed	"	Oromia- Central Ethiopia	"	
10	Mega	150	"	"	Oromia	"	
11	Dire Dawa	125	"	"	Dire Dawa	"	It is low wind speed site
12	Deday	125	"	"	Afar	"	It is low wind speed site
Hydropower							
1	Didessa	301	Under new feasibility study	PPP/IPP	Oromia	Not found	
2	Chemoga-Yeda Stage 1and 2	280	Under feasibility study update	PPP/IPP	Amara	"	
3	Genale Dawa 5	100		PPP/IPP	Oromia	"	
4	Geba stage 1 & 2	371		PPP/IPP	Oromia	"	