



ETHIOPIAN ELECTRIC POWER FACTS IN BRIEF

2010
E.C



Overview

ETHIOPIA

Location

Horn of Africa

Area

1.1 million km²

Land

1.0 million km² – (90.56 %)

Water

104,300 km² – (9.44 %)

Population

95.1 million

Climate

Tropical monsoon with wide topographic – induced variation

Natural resource

resource of gold, platinum, copper, potash, natural gas, hydro power, geothermal power and wind power.

Electric Energy Potential

Hydro power: more than 50,000 MW

Wind power: more than 1,350,000 MW

Geothermal power: more than 10,000 MW

EEP Establishment

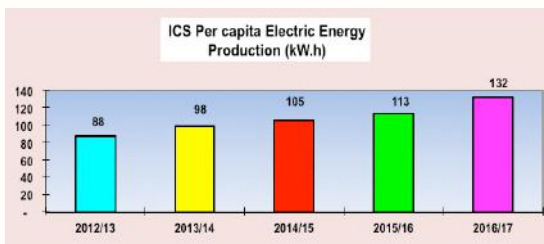
The Ethiopian Electric Light and Power Authority (EELPA) , which was established in 1956, after having undergone restructuring was reorganized as the Ethiopian Electric Power Corporation (EEPCO).EEPCO later splitted into two companies and one of these companies is the Ethiopian Electric Power(EEP).The EEP, which was established in 2013 by the Council of Ministers Regulation No.302/2013 is responsible for generating, transmitting and wholesale of electricity nationwide and to neighboring countries.

Electric Supply System

Presently the company maintains the Interconnected System (ICS), which is mainly supplied from hydro power plants and wind farms.

ICS Per Capita Electric Energy Generation

The increase of electrification in rural areas and the growth of demand in the country brought increment in the generation capability and show the growth trend of the ICS per capita generation.



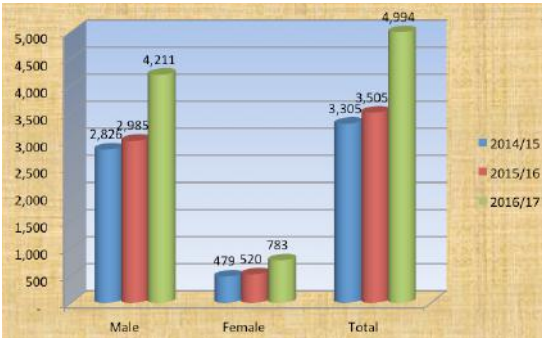
NOTE: - All data contained here in are based on the 2009 EFY (Ethiopian Fiscal Year) - the period from July 8, 2016 to July 7, 2017.

MANPOWER

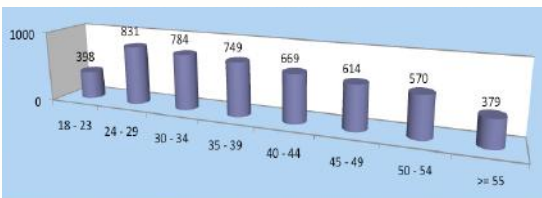
Number of Employees by Sex

Sex	2012	2013	2014	2015	2016
	2013	2014	2015	2016	2017
Male	-	-	2,826	2,985	4,211
Female	-	-	479	520	783
Total	-	-	3,305	3,505	4,994

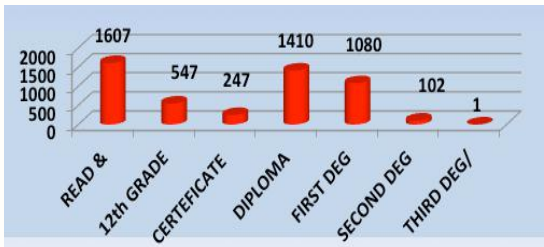
Number of Employees by Sex from 2007 - 2009 EFY



Man Power Distribution by Age group for 2009



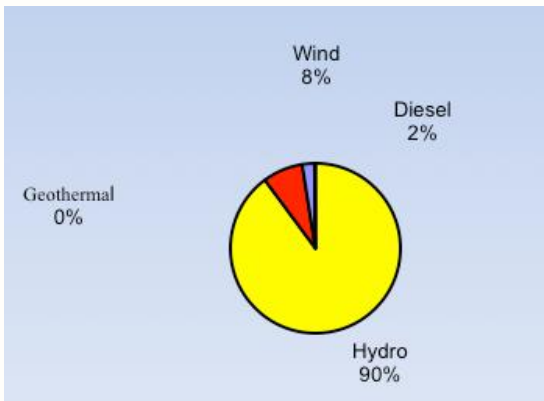
Number of Employees by Educational Level for 2009 EFY

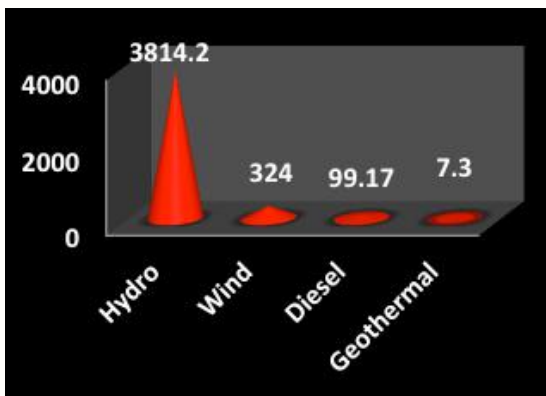


GENERATION

EEP has one generation system namely ICS, main Grid system.

- **Inter Connected System (ICS):** The ICS consists of 14 hydro, six diesel standbys, one geothermal and three wind farm power plants with installed capacity of 3,814.20 MW, 99.17 MW, 7.30 MW and 324 MW respectively which brought a total of 4,244.67 MW.



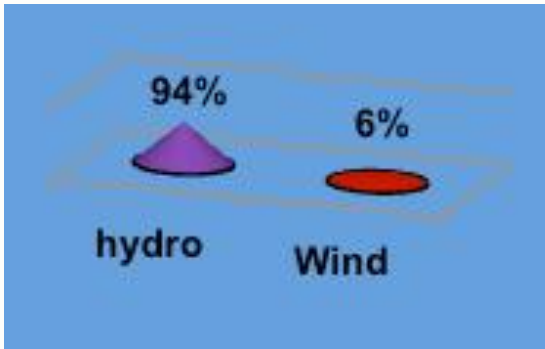


Installed capacity (MW) of ICS as of 2009 EFY (2016/17)

Share of Installed Capacity by Source

Installed Capacity (MW)							
No.	Power Plant	Hydro	Diesel	Geo-thermal	Wind	Total	In-service date
1	Koka	43.20	0.12	-	-	43.32	1960
2	Awash II	32.00	0.10	-	-	32.10	1966
3	Awash III	32.00	-	-	-	32.00	1971
4	Finchaa	134.00	0.20	-	-	134.20	1973/2003
5	Meleka Wakena	153.00	-	-	-	153.00	1988
6	Tis Aby I	11.40	-	-	-	11.40	1964
7	Tis Abay II	73.00	-	-	-	73.00	2001
8	Gilgel Gibe I	184.00	-	-	-	184.00	2004
9	Aluto Langano	-	-	7.30	-	7.30	1999
10	Kaliti	-	14.00	-	-	14.00	2004
11	Dire Dawa	-	40.00	-	-	40.00	2004
12	Awash 7 killo	-	35.00	-	-	35.00	2004
13	Tekeze	300.00	-	-	-	300.00	2009
14	Gilgel Gibe II	420.00	-	-	-	420.00	2010
15	Beles	460.00	-	-	-	460.00	2010
16	Amerti Neshi	95.00	-	-	-	95.00	2011
17	Gibe III	1,870.00	-	-	-	1870.00	2015
18	Abasamuel	6.60	-	-	-	6.60	2016
19	Adama I	-	-	-	51.00	51.00	2012
20	Ashegoda	-	-	-	120.00	120.00	2012
21	Adama II	-	-	-	153.00	153.00	2014
Sub Total		3,814.60	89.42	7.30	324.00	4,234.92	
1	Dire Dawa (mu)	-	3.60	-	-	3.60	1965
2	Axum	-	3.15	-	-	3.15	1975,92
3	Adwa	-	3.00	-	-	3.00	1998
Sub Total		-	9.75	-	-	9.75	
ICS Sub Total		3,814.20	99.17	7.30	324.00	4,244.67	

Share of Energy Production by Source for 2009 EFY

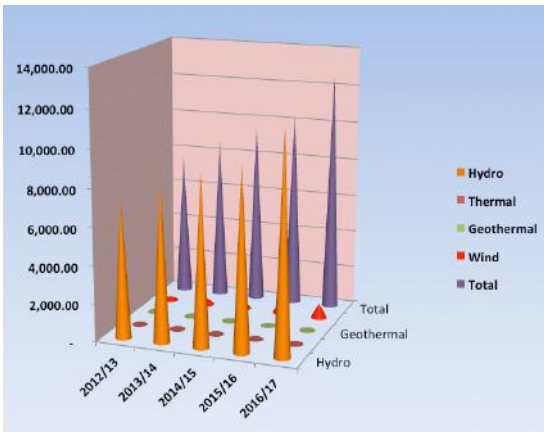


Energy Production (MWh)

Name of Power Plant	Hydro	Diesel	Geo-thermal	Wind	Total	Share of energy by the plant
Gibe III	4,943,999	-	-	-	4,943,999	39.44
Tana Beles	2,457,344	-	-	-	2,457,344	19.60
Gilgel Gibe II	1,499,011	-	-	-	1,499,011	11.96
Finchaa	736,137	-	-	-	736,137	5.87
Tekeze	687,297	-	-	-	687,297	5.48
Gilgel Gibe I	685,402	-	-	-	685,402	5.47
Adama II	-	-	-	429,673	429,673	3.43
Melka Wakena	404,362	-	-	-	404,362	3.23
Ashegoda	-	-	-	222,228	222,228	1.77
Adama I	-	-	-	131,897	131,897	1.05
Amerti Neshe	109,297	-	-	-	109,297	0.87
Koka	86,825	-	-	-	86,825	0.69
Awash II	75,684	-	-	-	75,684	0.60
Awash III	42,132	-	-	-	42,132	0.34
Aba Samuel	14,452	-	-	-	14,452	0.12
Tis Abay II	10,883	-	-	-	10,883	0.09
Dire Dawa	-	68	-	-	68	0.00
ICS Total	11,752,824	68	-	783,798	12,536,690	100.00
% Share in	93.75	0.00	-	6.25	100.00	

ICS Energy Production (GWh) by Source for the last five years

Source of Energy	2012/13	2013/14	2014/15	2015/16	2016/17
Hydro	7,384.01	8,336.41	9,014.01	9,674.16	11,752.82
Wind	191.78	356.04	497.69	785.51	783.80
Diesel	0.04	-	3.36	1.02	0.07
Geothermal	-	-	-	-	-
Total	7,575.83	8,692.44	9,515.06	10,460.68	12,536.69



ICS Peak Load (MW) for the last five years

Description	2012/13	2013/14	2014/15	2015/16	2016/17
Peak Load	1,378	1,440	1,643	1,942	2,208

**) The ICS peak load data is a suppressed peak load and it does not reflect the true value.*

Inter connected System - ICS - Peak Demand (MW)

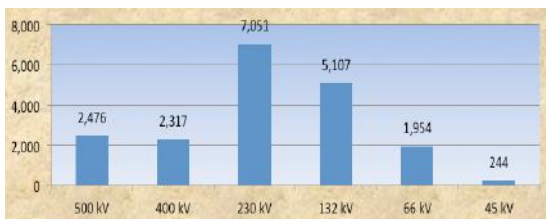


Transmission and Substation Network

The electric energy generated from the major hydro power plants is transported through high voltage transmission lines rated 45, 66, 132, 230, 400 and 500 kV. The total length of the existing electric circuit transmission lines is about 19,149 km. The existing transmission lines status by voltage level is categorized as:

Year	Electric Circuit of Transmission Network Distance (km) by Voltage Level						
	500 kV	400 kV	230 kV	132 kV	66 kV	45 kV	Total
2012/13	-	908	3,597	4,871	1,969	252	11,597
2013/14	-	908	4,020	4,871	1,969	252	12,020
2014/15	-	1,511	5,161	5,048	1,969	252	13,941
2015/16	1,240	1,609	6,053	5,048	1,969	252	16,171
2016/17	2,476	2,317	7,051	5,107	1,954	244	19,149

Existing Length of Electric Circuit Transmission Lines (km)

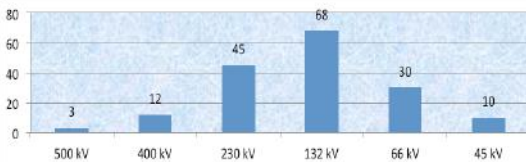


Supply of the distribution network of the country is provided by step down substations connected to the respective transmission and sub-transmission voltages of EEP. In total there are 163 transmission substations.

The existing substations located in different areas of the country by their voltage level are categorized as.

Year	Number of substations by voltage level						Total
	500 kV	400 kV	230 kV	132 kV	66 kV	45 kV	
2012/13	-	8	22	59	30	13	132
2013/14	-	8	27	60	30	13	138
2014/15	1	11	30	64	30	13	149
2015/16	3	12	41	64	30	13	163
2016/17	3	12	45	68	30	10	168

Existing Number of Substations by voltage Level

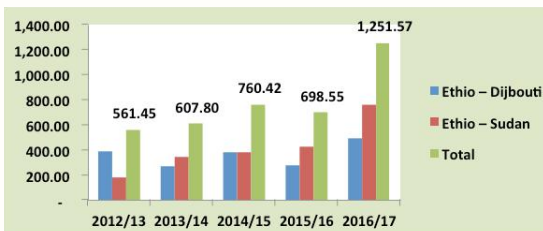


Historical Wholesales Energy in GWh

The energy wholesales includes export of energy to Djibouti and Sudan.

Interconnections	Energy wholesales (GWh)				
	2012/13	2013/14	2014/15	2015/16	2016/17
Ethio – Djibouti	386.14	267.39	379.15	271.53	492.05
Ethio – Sudan	175.31	340.41	381.27	427.02	759.52
Total	561.45	607.80	760.42	698.55	1,251.57

Wholesales Energy (GWh) for the Last Five Years





SAFETY FIRST

Publisher

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