Arab Republic of Egypt

Ministry of Electricity & Renewable Energy

Egyptian Electricity Holding Company

Annual Report

2018/2019

Minister of Electricity & Renewable Energy
President of the General Assembly of EEHC

Dr. **Mohamed Shaker El-Marqaby**

Chairman of EEHC
President of the General Assembly of the Affiliated Companies

Eng. **Gaber Dessouki Mustafa**

Contents:

Egyptian Electricity Holding Company (EEHC)

The Egyptian Electricity Holding Company (EEHC) is an Egyptian Joint-stock company subject to the provisions of Law no. 159 of 1981 and its amendments and Executive Regulation to the extent that does not conflict with Law no. 164 of 2000 regarding transformation of the former Egyptian Electricity Authority to an Egyptian joint-stock company and the Electricity Law no. 87 of 2015 and its Executive Regulation.

Headquarter	Issued Capital (Billion EGP)	Authorized Capital (Billion EGP)	Address	Phone Numbers
Cairo	29.3	50.0	Abbasseya, Cairo	02/22616487 02/22616306 Fax: 02/22612239 Website: www.eehc.gov.eg

Vision

"World Class Leadership and Excellence for Sustainable Electrical Energy"

Mission

Provide sustainable electrical energy for all customers through available resources according to international standards at competitive prices by corporate effort adopting quality standards, optimal utilization of resources and environment conservation based on high-efficient human potentials and technologies performing work in an ethically responsible manner for the benefit of our customers, employees and society.

Foreword by the Chairman

Increased reliability of energy supply is one of the most critical strategic objectives for enhancing Egypt's competitiveness in attracting investment and achieving economic growth, social satisfaction and stability.

Over the past years, EEHC and its affiliated companies have made great efforts to bring about a quantum leap that lifted the suffering of consumers from power cut-offs and ended the problem of insufficient energy supply. It has also achieved sufficient surplus to satisfy the requirements of the network security and meet current and future development needs, **where the Company persistently worked on the following:**

- Implementing projects for producing energy using the latest world technologies of highest efficiency approached to 62% which has achieved more flexibility, security and sustainability for energy supply while preserving the environment.
- Developing transmission and distribution networks to increase their capability of satisfying current and future demand, and accordingly meeting the State sectors' requirements of electric energy.
- Caring about energy efficiency in production, transmission and distribution operations and rationalization of consumption.
- Coordinating constantly with the Petroleum Sector for providing adequate quantities of fuel, especially natural gas, of appropriate specifications.
- Paying special attention for staff training to be aware of the latest global developments in the fields of production and networks.
- Cooperating continually with the Electricity Utility and Consumer Protection Regulatory Agency (Egypt ERA) to attain justice and transparency.

- The company sets out towards the future with open perspective, as it works for:

- Coordination with the competent authorities to diversify energy sources by way of utilizing all available sources for producing electric energy.
- Achievement of the Sector plan and getting new and renewable energies to reach 20% of the total load in 2022 and 42% of the electrical energy in 2035 with the participation of the private sector, and implementation of the necessary transmission network projects for evacuation of the generated capacities.
- Attention to electrical interconnection projects with the neighbouring countries in all directions to make Egypt a regional hub for energy exchange.
- Construction and development of control centres using state-of-the-art global technologies in communications and computers.
- Localization of information and communication systems and technologies.
- Working to meet the requirements of electricity consumers using the latest systems and technologies.

- The most notable achievement of these efforts was the hike in the total installed capacity connected to the national grid to 58.353 GW and meeting the peak load of 31.400 GW, while maintaining stability of electricity supply to about 36.4 million subscribers. This was accompanied by an improvement in the average rate of fuel consumption at thermal power plants that reached 191.5 g/Kwh generated (including BOOT projects) and a rise in the generating stations' availability to 89.7% that is equivalent to the global rates, in addition to the development of networks on different voltages. These efforts have won great acclaim of the Electricity Sector in all forums for its role in contributing to the nation's welfare and its constant progress year after year.

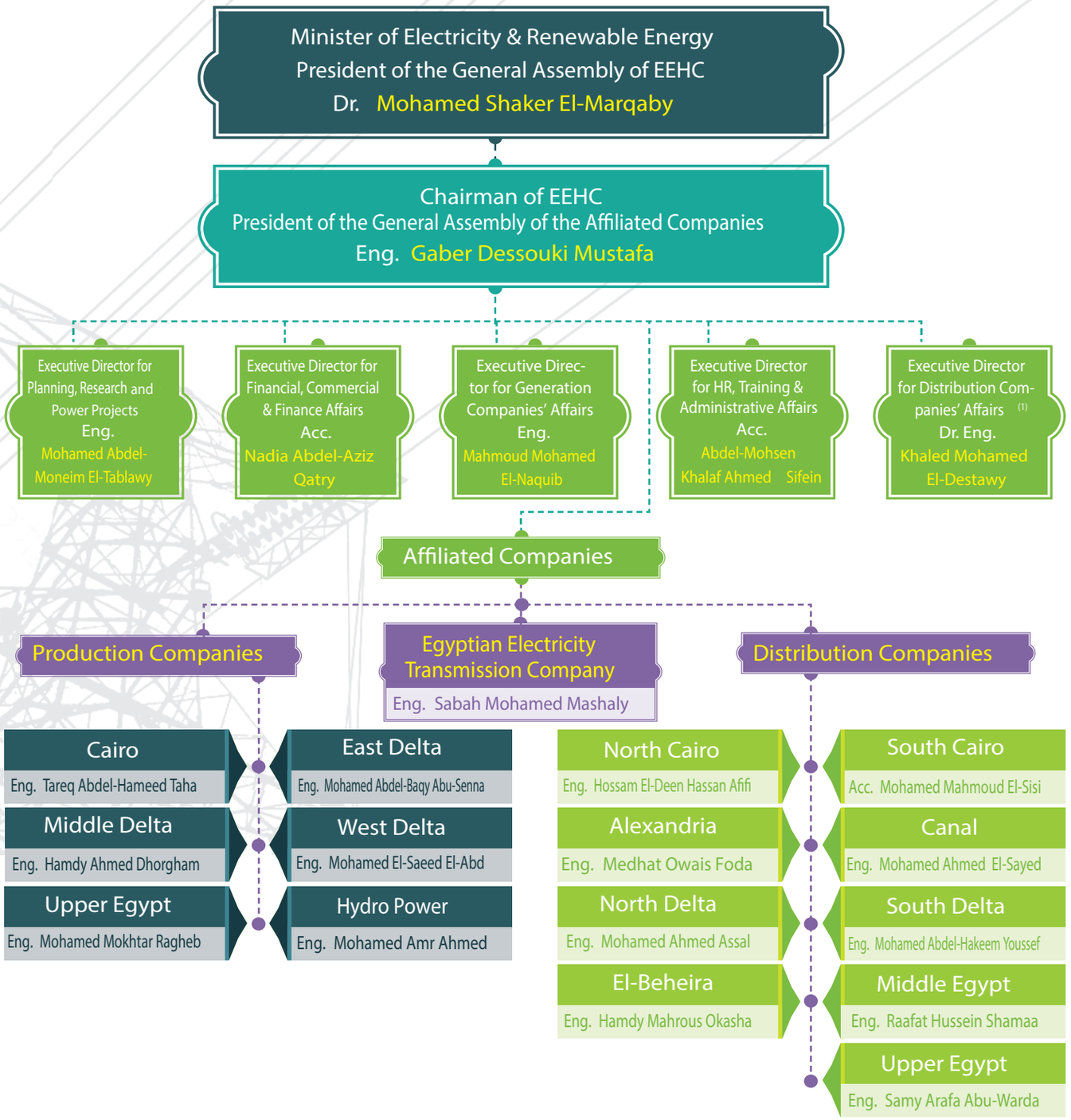
- Driven by its belief of the importance of documenting information, EEHC is privileged to issue this Statistical Report on its activities and accomplishments in 2018/2019 which we sincerely hope it would serve as a useful reference for those who are interested in the affairs of electrical energy.

- In a final word, it gives me pleasure to express my thanks and appreciation to all employees of EEHC and its affiliated companies who participated in all the achievements referred to in this Report.

Eng. Gaber Dessouki Mustafa

Chairman

Organizational Structure of EEHC



(1) On 15 January 2019, Ministerial Decree no. 11 of 2019 was issued in appointment of Dr. Eng. Khaled Mohamed El-Destawy as Executive Director for Distribution Companies' Affairs.

(30 - 6 - 2019)

Board of Directors

Eng. Gaber Dessouki Mustafa
Chairman of EEHC
President of the General Assembly of the Affiliated Companies

Eng. Mohamed Abdel-Moneim El-Tablawy
Executive Director for Planning,
Research and Power Projects

Acc. Nadia Abdel-Aziz Qatry
Executive Director for Financial,
Commercial & Finance Affairs

Eng. Mahmoud Mohamed ElNaquib
Executive Director for
Generation Companies' Affairs

Acc. Abdel-Mohsen Khalaf Ahmed Sifein
Executive Director for HR,
Training & Administrative Affairs

Dr. Khaled Mohamed El-Destawy
Executive Director for Distribution
Companies' Affairs

Dr. Mohamed Moussa Omran
First Undersecretary for Research and
Planning, Ministry of Electricity and
Renewable Energy

Mr. Abdel Naby Abdel Aziz Mansour
Head of the final accounts sector,
Ministry of Finance

Mr. Hamed Abul Magd Mahran
Assistant Undersecretary for External
Relations, the Central Bank of Egypt

Mr. Mohamed Farid Abdel Fattah
Head of the infrastructure, production activities
and services sector - Ministry of Planning

Mr. Walid Eid Mahmoud Al-Haddad
Head of the Central Department for
Cooperation with East Asian Countries,
Ministry of International Cooperation

Eng. Osama Ahmed Wafik El-Baqali
Chairman of the Board of Directors of the
Natural Gas Holding Company «EGAS»

Eng. Mohamed Mohamed Abdel-Aty
Head of the Mechanics and Electricity
Authority

Mr. Adel Nazmy Ali Hassan ,
member of the Board of Directors,
representing employees

(30 - 6 - 2019)

Objectives of the Egyptian Electricity Holding Company (EEHC):

1. Working to provide electrical energy on the different voltages for all uses with high efficiency at affordable prices.
2. Carrying out planning, studies and designs in the field of competence of the Company and its affiliated companies.
3. Managing the Company's securities portfolio and investing its funds through the affiliated companies and other entities in the fields of production, transmission and distribution of electrical energy and other complementary and related works.
4. Purchasing the electrical energy produced in power plants constructed by authorized local and foreign investors and selling it on the ultra-high voltage networks.
5. Working on rectifying the financing structures and the economic path of the affiliated companies, maximizing their profitability and rationalizing costs.
6. Conducting researches and tests of electrical equipment of different voltages.
7. Implementing projects for producing electrical energy from different sources (other than nuclear power) in accordance with global technologies, and the associated projects for the construction and management of desalination plants and selling desalinated water.
8. Carrying out consultancy and service works in the field of electrical energy production, transmission and distribution locally and internationally.
9. Implementing electrical interconnection projects and exchange of electrical energy with other countries and selling and buying it according to needs to and from the electrical networks connected to the Egyptian grid.
10. Providing medical services.

The Company exercises its powers on its own or through its affiliated companies or the joint-stock companies that it establishes on its own or in association with others.

Electricity in 2018/2019

Description		2017/2018	2018/2019	Variation %
■ Total Installed Capacity [1]	**MW**	55213	58353	5.7
Hydro	MW	2832	2832	-
Thermal (Affiliated Companies & EEHC Plants) [2]	MW	49176	51226	4.2
New and Renewable Energy (Wind & Solar) [3]	MW	1157	2247	94.2
Private Sector BOOT (Thermal)	MW	2048	2048	-
Peak Load	MW	30800	31400	2
■ Total Power Generated	**GWh**	196760	199843	1.6
Hydro	GWh	12726	13121	3.1
Thermal [4]	GWh	169380	170440	0.6
New and Renewable Energy [5]	GWh	2871	4543	58.2
Energy Purchased from (IPPs)	GWh	42	43	2.4
Private Sector (BOOT)	GWh	11626	11554	(0.6)
Power Generated from Isolated Plants	GWh	115	142	23.5
■ Total Fuel Consumption [6]	**Ktoe**	37335	34778	(6.8)
Production Companies (including EEHC Plants)	Ktoe	34935	32309	(7.5)
Private Sector (BOOT)	Ktoe	2400	2469	2.9
Fuel Consumption Rate at Production Companies (gen.)	gm/KWh	206.3	189.6	(8.1)
Fuel Consumption Rate, including BOOT (gen.)	gm/KWh	206.3	191.1	(7.4)
Thermal Efficiency (including Private Sector BOOT)	%	42.5	45.9	8
N.G Ratio to Total Fuel including BOOT	%	84.4	92.8	10
N. G ratio for power plants connected to gas grid Including BOOT	%	85.5	94.7	10.8
T. Length of Transmission Lines & Cables on HV & Extra HV	Km	46890	48832	4.1
T. Substation Capacities on HV and Extra HV	MVA	130868	145840	11.4
T. Length of Distribution MV&LV Lines and Cables	Km	486608	522606	7.4
T. Capacity for distribution transformers MV&LV	MVA	79620	86224	8.3
No. of Customers at Distribution Companies	Million	35.1	36.4	3.7
No. of Customers at EETC	Customer	134	139	3.7
No. of Employees at EEEC and Subsidiaries	Thousand	161.6	156.8	(2.9)

1- There are isolated plants with a total installed capacity of 205 MW.

2- EEHC plants (Beni Suef - Burullus - New Capital) Units have been implemented in - Cooperation with Siemens.

3- Include the solar component of kuriemat Solar/Thermal Plant 20 MW.

4- Include operation test and EEHC Plants.

5- Connected to the national unified grid (wind & solar).

6- In addition to the total consumed fuel at the isolated plants amounting to 30.2 K toe.

Generation of Electrical Energy

The Electricity Production Companies are:

- Cairo Electricity Production Company
- West Delta Electricity Production Company
- East Delta Electricity Production Company
- Upper Egypt Electricity Production Company
- Middle Delta Electricity Production Company
- Hydro-Power Plants Electricity Production Company

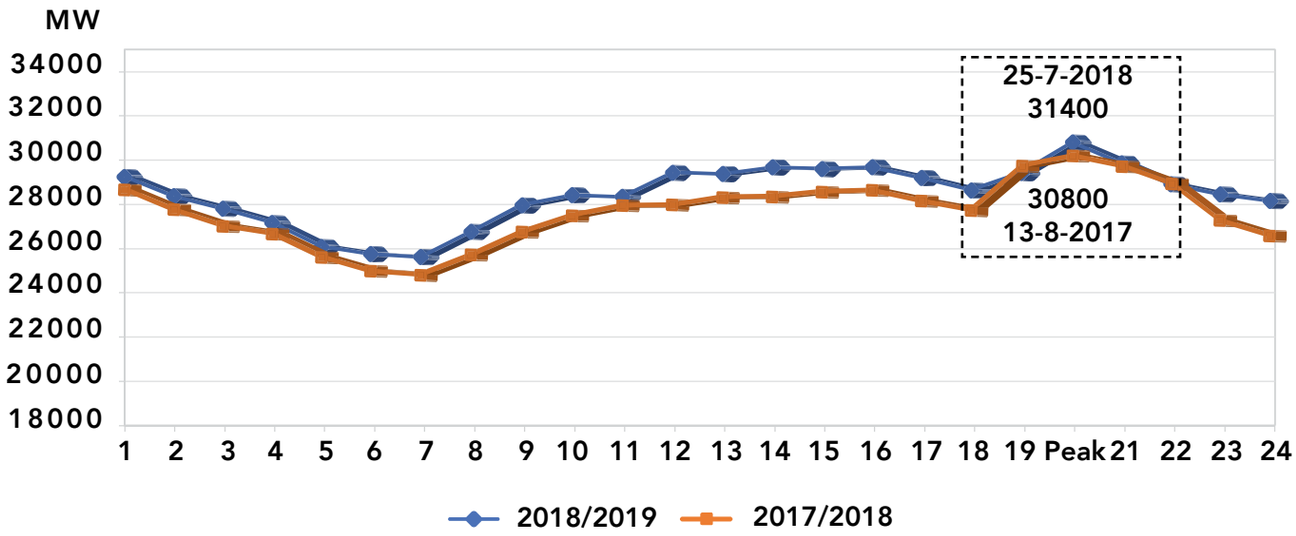
Objectives of the Production Companies:

1. Production of electric energy at the affiliated power plants.
2. Management, operation and maintenance of the affiliated power plants, and execution of rehabilitation and replacement operations as necessary, all in full compliance with the directions of the National Dispatch Center of the unified grid, particularly in relation to loads and maintenance of the generation units and in accordance with the economical operation requirements to ensure optimum operation of the system technically and economically.
3. Selling electrical energy produced at the affiliated power plants to the Egyptian Electricity Transmission Company (EETC), and to Distribution Companies where energy is sent on medium voltages.
4. Implementation of power plant projects upon the approval of EEHC's Board of Directors and according to their planned time schedules.
5. Conducting researches and studies within the scope of the Company's activities.
6. Carrying out any activities or works related to, or complementing, the Company's objectives

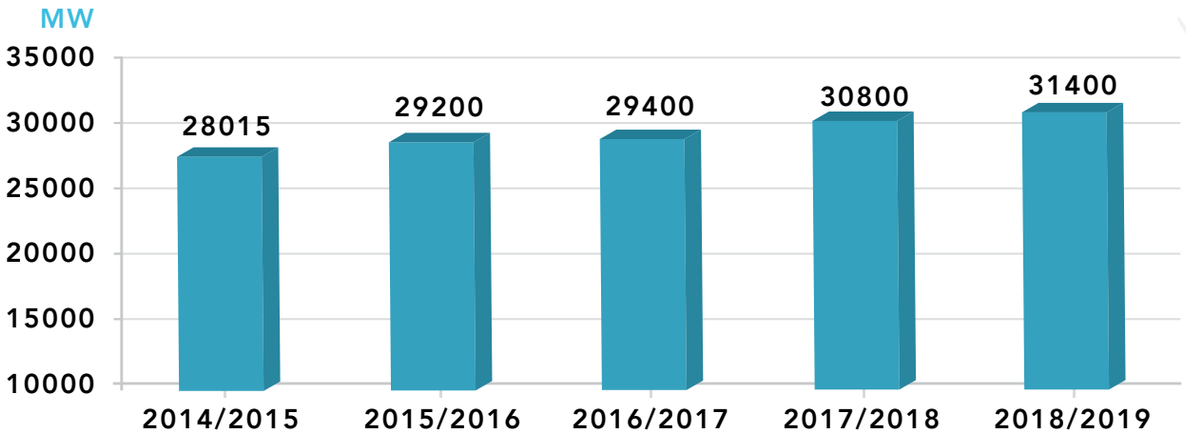
Peak Load

Description	2017/2018	2018/2019	Variation %
Peak Load (MW)	30800	31400	2%

Load Curve for Peak Load Day



Development of Peak Load



Installed Generation Capacities *

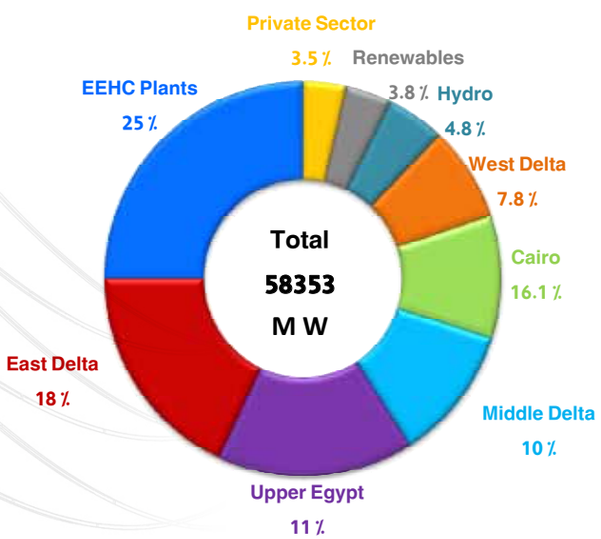
30-6-2019

Description	2017/2018	2018/2019	Variation %
Installed Generation Capacity (MW)	55213	58353	5.7%

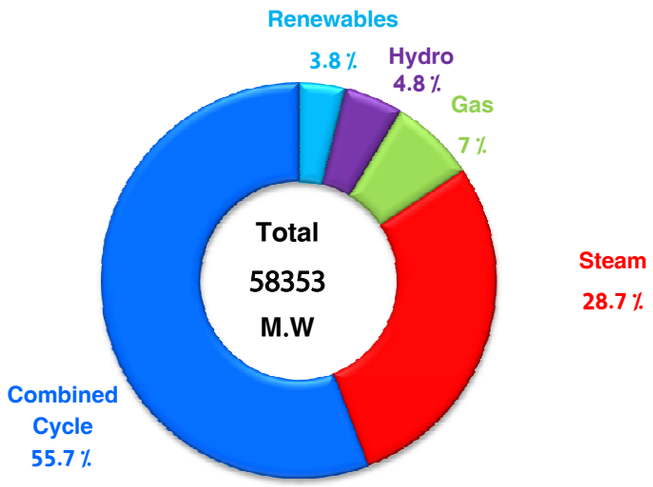
Company / list	Cairo	East Delta	Middle Delta	West Delta	Upper Egypt	Hydro	EEHC Plants	Private Sector	Renew-ables	Total
Gas	1215	2130	336	24	350	0	0	0	0	4055
Steam	3320	4156	420	3651	3154	0	0	2048	0	16749
Combined Cycle	4855	4200	5107	908	3000	0	14400	0	0	32470
Hydro	0	0	0	0	0	2832	0	0	0	2832
Renewables	0	0	0	0	0	0	0	0	2247	2247
Total	9390	10486	5863	4583	6504	2832	14400	2048	2247	58353

* In addition to isolated and reserve units with a total installed capacity of 205 MW.

Installed Capacity by Companies %



Installed Capacity by Type %



Development of Installed Capacities by Generation Type (MW)

Description	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Gas	4874	7845	13345	5745	4055
Steam	15082	14798	15449	15449	16749
C. Cycle	11880	12630	12630	30030	32470
Hydro	2800	2800	2800	2832	2832
Renewables	687	887	887	1157	2247 *
Total	35323	38960	45111	55213	58353

*Renewables include wind farms capacity of 1127 MW, Solar/Thermal Kuriemat P.P. capacity of 140 MW of which the solar component amounts to 20 MW, and 980 MW solar PV in Benban region.

Installed Capacities of Power Plants (30/6/2019) (1)

Comp	Station		No. of Units	Installed capacity (MW)	Actual capacity (MW)	Main Fuel	Connect to network	Commissioning Date
Cairo	Shoubra El-Kheima	(St)	4 x 315	1260	1260	N.G-H.F. O	83-84-85-1988	84-85-1988
	Shoubra El-Kheima	(G)	1 x 35	35	35	N.G	1985	1986
	Cairo West Ext	(St)	2 x 330 + 2 x 350	1360	1360	N.G-H.F. O	94-95-2010-	1994-2011
	Cairo South	(G)	3 x 110	330	300	N.G-L.F. O	2011	1989
	Cairo South	(CC)	1 x 110 + 1 x 55	165	150	N.G-L.F. O	1989	1994
	Cairo North	(CC)	4x 250 +2 x 250	1500	1500	N.G-L.F. O	1994	2004-2006-
	Wadi Hof	(G)	3 x 33.3	100	75	N.G-L.F. O	04-05-06-2007	2008
	El-Tebeen	(St)	2 x 350	700	700	N.G- H.F.O	1985	1985
	6 October	(G)	4 x 150	600	600	N.G-L.F. O	2010	2010
	6 October Ext. (2)	(CC)	4x150+1 x340	940	918.7	N.G-L.F. O	2012	2012
	North Giza	(CC)	6x 250 +3 x 250	2250	2250	N.G-L.F. O	2015-2018	2018-2019
	Heliopolis	(G)	2 x 25	50	50	L.F.O	2014-2015	2014-2015
	East Cairo	(G)	2 x 25	50	50	L.F.O	2015	2016
	El-Bsateen	(G)	2 x 25	50	50	L.F.O	2015	2016-2017
	Total			**9390**	**9299**			
East Delta	Ataka (3)	(St)	2 x 150 + 2 x 300	900	840	N.G-H.F. O	76-83-1986	85-88-1989
	Abu Sultan	(St)	4 x 150	600	600	N.G-H.F. O	79-81-1984	83-84-1986
	El-Shabab(4)	(G)	2 x 33.5	67	36	N.G-L.F. O	1981	1982
	New El- Shabab	(CC)	8 x 125 + 2 x 250	1500	1500	N.G-L.F. O	11-17-2018	2011-2018
	Arish	(St)	2 x 33	66	66	N.G	1993	1995-1996
	Oyoun Mousa	(St)	2 x 320	640	640	N.G-H.F. O	1997	2001
	New Gas Damietta	(G)	4 x 125	500	500	N.G-L.F. O	2011	2011
	West Damietta	(cc)	4 x 125 + 1 x 250	750	750	N.G-L.F. O	2012-2013	2012-2013-2018
	Damietta	(CC)	6 x 132 + 3 x 136	1200	1164	N.G-L.F. O	1989-1992	89-1993
	West Damietta Ext(5)	(CC)	4 x 125+1x250	750	750	N.G-L.F.O	2015-2018	2016-2018
	Sharm El-sheikh (6)	(G)	1 x 23.7 + 2x24.2	72	39	L.F.O	75-76-1978	75-79-1997
	EL-Masaid (6)	(G)	2x24.2	48	30	L.F.O	-	-
	Hurghada (7)	(G)	3 x 23.45 + 3x24.27	143	90	N.G-L.F. O	1976	1977-1979
	Ain Sokhna	(St)	2 x 650	1300	1300	N.G-H.F. O	2014	2015
	Suez	(St)	1 x 650	650	650	N.G-H.F. O	2016	2017
	Ataka Gas	(G)	2x164 + 2x156	640	640	N.G-L.F. O	2015	2015
	Port Said Ext.	(G)	2x42	84	84	N.G-L.F. O	2015	2017
	Hurghada Ext.	(G)	6x48	288	288	N.G	2015	2017
	Sham El-Sheikh Ext	(G)	6x48	288	288	N.G-L.F. O	2015	2017
	Total			**10486**	**10255**			
Middle Delta	Talkha	(CC)	8 x 24.7 + 2 x 45.9	290	236	N.G	1978-1979-1988	79-80-1989
	Talkha 210(8)	(St)	2 x 210	420	360	N.G-H.F.O	1992-1994	1993-1995
	Talkha 750	(CC)	2 x 250 +1 x 250	750	750	N.G	2006-2010	2006-2010
	Nubaria	(CC)	6 x 250 + 3 x 250	2250	2250	N.G-L.F. O	05-06-09-2010	2005-2006-2010
	Mahmoudia	(CC)	8 x 25+ 2 x 58.5	317	268	N.G-L.F. O	1982-1994	1983-1995
	New Mahmoudia	(G)	2 x 168	336	336	N.G-L.F. O	2015	2016
	El-Atf	(CC)	2 x 250 + 1 x 250	750	750	N.G-L.F. O	2009-2010	2009- 2010
	Benha	(CC)	2 x 250+ 1 x 250	750	750	N.G-L.F. O	2013-2014	2014-2015
	Total			**5863**	**5700**			
West Delta	Kafr El-Dewar	(St)	4 x 110	440	320	N.G-H.F. O	79-84-1985	80-84-1986
	Damanhur Ext300	(St)	1 x 300	300	300	N.G-H.F. O	1990	1992
	Damanhour(9)	(CC)	4 x 25 + 1 x 58	158	130	N.G-L.F. O	1984-1994	1985-1995
	New Abu Kir	(St)	2 x 650	1300	1300	N.G-H.F. O	2012	2012-2013
	Abu Kir	(St)	4 x 150 + 1 x 311	911	780	N.G-H.F. O	82-83-1990	83-84-1991
	Abu Kir	(G)	1 x 24	24	23	L.F.O	1982	1983
	Sidi Krir	(St)	2 x 320	640	640	N.G-H.F. O	1998-1999	1999-2000
	Sidi Krir (1&2)	(CC)	2 x 250 + 1 x 250	750	750	N.G-L.F. O	2009-2010	2009-2010
	Matrouh	(St)	2 x 30	60	60	N.G	1989	1990
	Total (10)			**4583**	**4303**			

(G): gas unit (St.): steam unit (CC): combined cycle unit

Comp	Station		No. of Units	Installed capacity (MW)	Actual capacity (MW)	Main Fuel	Connect to network	Commissioning Date
Upper Egypt	Walidia	(St)	2 x 300	600	600	H.F.O	1992-1997	1992-1997
	Kuriemat	(St)	2 x 627	1254	1254	N.G-H.F.O	1997-1998	1997-1998
	Kuriemat 1	(CC)	2x250+1x250	750	750	N.G	2006-2007-2008	2007-2009
	Kuriemat 2	(CC)	2x250+1x250	750	750	N.G	2008-2010	2009-2011
	West Assuit [11]	(CC)	8 x 125 +2 x 250	1500	1500	L.F.O- N.G	2015-2018	2015-2019
	South Helwan [12]	(ST)	2x650	1300	1300	N.G-H.F.O	2018-2019	2019
	New Assuit	(G)	2 x 25	50	50	L.F.O	2015	2016
	Red Assuit	(G)	4 x 25	100	100	L.F.O	2015	2016
	Samalot	(G)	2 x 25	50	50	L.F.O	2015	2016-2017
	West Mlawy	(G)	2 x 25	50	50	L.F.O	2015	2017
	Gerga	(G)	2 x 25	50	50	L.F.O	2015	2016
	Bany Ghaleb	(G)	2 x 25	50	50	L.F.O	2015	2016
	Total			**6504**	**6504**			
EEHC Stations	Burulls	(CC)	8 x 400 + 4 x 400	4800	4800	N.G	2016-2017-2018	2017-2018
	Beni Suef	(CC)	8 x 400 + 4 x 400	4800	4800	N.G	2016-2017-2018	2017-2018
	New Capital	(CC)	8 x 400 + 4 x 400	4800	4800	N.G	2016-2017-2018	2017-2018
	Total			**14400**	**14400**			
New & Renwable	Zafarana		105x0.6+117x0.66+478x0.85	547	120	Wind	From 2001:2008	From 2007:2010
	Gabal El-Zeit 1 [13]		120 x 2	240	145	Wind	2015-2016-2019	2016-2018-2019
	Gabal El-Zeit 2		110 x 2	220	120	Wind	2018	2018
	Gabal El-Zeit 3 [14]		2 x 60	120	72	Wind	2018	2019
	Kuriemat Solar /ST		1 x 70 + 1 x 50 + 1 x 20	140	140	Solar/ N.G	2010	2011
	Benban(PV) [15]		19 x 50+1x30	980	980	Solar	2017-2018-2019	2018-2019
	Total			**2247**	**1577**			
Private Sector	Suez Gulf	(St)	2 x 341.25	682.5	682.5	N.G-H.F. O	2002	2003
	Port Said East	(St)	2 x 341.25	682.5	682.5	N.G-H.F. O	2002	2003
	Sidi Krir (3&4)	(St)	2 x 341.25	682.5	682.5	N.G-H.F. O	2001	2002
	Total			**2048**	**2048**			
Hydro Plants	High Dam		12 x 175	2100	2100	Hydro	1967	1967
	Aswan Dam I		7 x 40	280	280	Hydro	1960	1960
	Aswan Dam II		4 x 67.5	270	270	Hydro	1985	1985-1986
	Esna		6 x 14.28	86	86	Hydro	1993	1993
	Naga Hamadi		4 x16	64	64	Hydro	2008	2008
	Assuit		4 x 8	32	32	Hydro	2018	2018
	Total			**2832**	**2832**			
Total				**58353**	**56918**			

(G): gas unit (St.): steam unit (CC): combined cycle unit

1- In addition to 205 MW isolated and reserve units.
2- The steam units (1x340 MW) of 6 October Ext. was put into commercial operation in March 2019.
3- The actual Capacity of Ataka steam was reduced by 60 MW in June 2019.
4- The gas unit (1 × 33.5 MW) of El-Shahab has been retired in October 2018.
5- The steam unit (1x250 MW) of West Damietta Ext Combined Cycle was put into commercial operation in December 2018.
6- The two Steam units (2x24.2 MW) of Sharm ElSheikh were transferred to Masaid steam station in November 2018 and March 2019.
7- The actual Capacity of Hurghada (gas) was reduced by 41 MW in April 2019.
8- The actual capacity of Talkha steam 210 was reduced by 60 MW in June 2019.
9- The actual capacity of Damanhur combined cycle was reduced by 28 MW in February 2019.
10- The steam unit (23MW) of Karmouz has been retired in July 2018 and the steam unit (33MW) of El-Seuf has been retired in November 2018.
11- The steam unit (250MW) of West Assuit combined cycle was connected to the grid in August 2018.
12- The steam station (2x650MW) of South Helwan were connected to the grid in December 2018, February 2019.
13- Adding 40 MW to Gabal El-Zeit wind farm (1) was put into commercial operation in June 2018.
14- Gabal El-Zeit Wind warm (3) 120 MW was put into commercial operation in December 2018.
15- Benban Solar PV - Private sector - (980 MW) was put into commercial operation during December 2017 till February 2019.

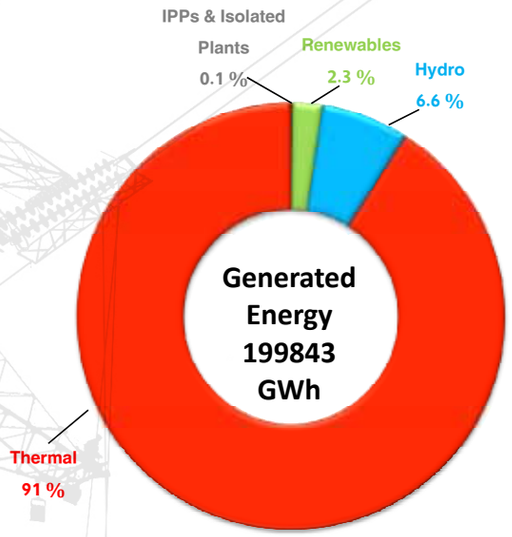
Generated and Purchased Energy *

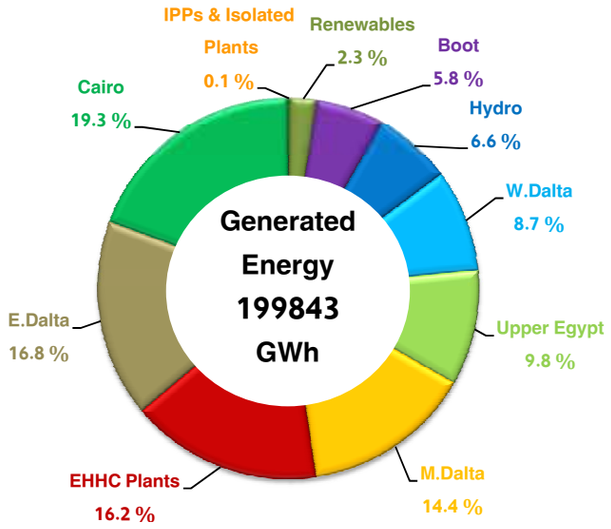
By Generation Type (GWh)*:

Type		2017/2018	2018/2019	Variation%
Steam	Subsidiaries	60765	48606	(20)
	Private Sec.	11626	11554	(0.6)
Gas	Subsidiaries	11913	6203	(47.9)
	EEHC Plants	20499	-	-
Combined. Cycle	Subsidiaries	76203	83138	9.1
	EEHC Plants	-	32493	-
Total Thermal*		181006	181994	0.5
Hydro Plants		12726	13121	3.1
New & Renewable	Wind	2334	3018	29.3
	Solar	537	1525	184
Total Grid		196603	199658	1.6
Isolated Units		115	142	23.5
Purchased from IPPs		42	43	2.4
Grand Total		196760	199843	1.6

By Production Company (GWh)*:

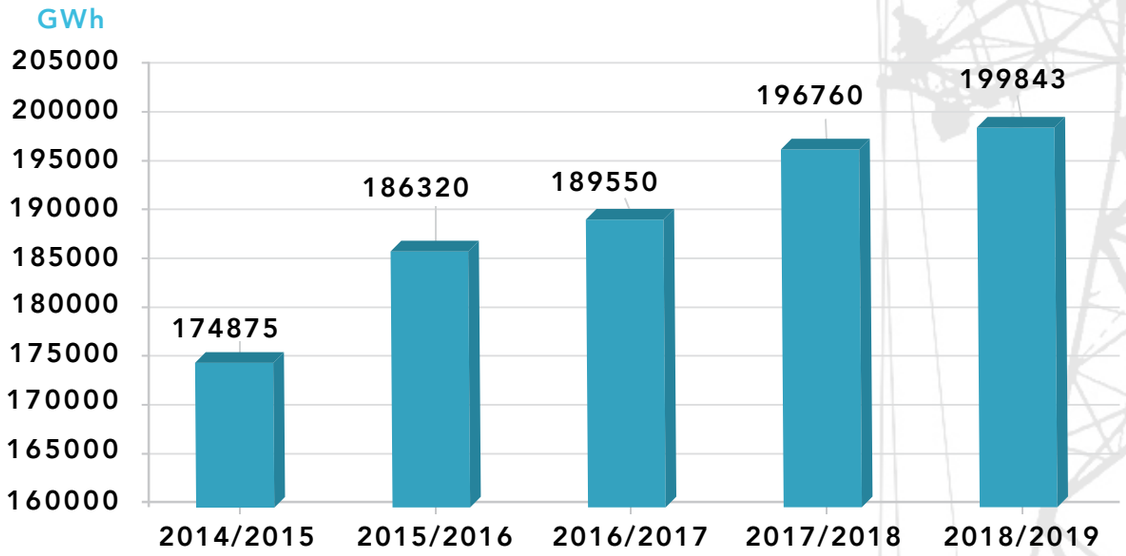
Company	2017/2018	2018/2019	Variation %
Cairo	41115	38540	(6.3)
East Delta	36000	33540	(6.8)
Middle Delta	32569	28827	(11.5)
West Delta	21400	17414	(18.6)
Upper Egypt	17797	19626	10.3
EEHC Plants	20499	32493	58.5
Hydro plants	12726	13121	3.1
New & Renewables	2871	4543	58.2
Private Sector	11626	11554	(0.6)
Isolated Units	115	142	23.5
Purchased from IPPs	42	43	2.4
Total	196760	199843	1.6





* Including Commissioning tests, Private Sector and unconnected Plants.

Development of Gross Energy Generated (GWh)



Development of Energy Generated in Power Plants (GWh)

Comp.	Station		2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Cairo	Shoubra El-Kheima	(St)	6973	7306	6909	7205.8	5983.4
	Cairo West Ext.	(St)	7494	6793	6390	5568.5	4288.1
	Cairo South	(G)	1472	2141	2217	1510.1	1198.6
	Cairo South	(CC)	222	1087	959	943	1063.4
	Cairo North	(CC)	6861	7765	7466	7794.7	7339.7
	Wadi Hof	(G)	181	105	74	106.4	7.4
	Tebbin	(St)	2734	5195	5230	4195.3	4524.2
	6 October	(G)	2969	2617	2611	2374.3	730
	6 October Ext.	(CC)	-	-	-	-	2797.7
	Giza North	(CC)	1728	7714	13009	11391	10577.1
	Helioples	(G)	-	47.8	12.6	5.2	4.5
	Cairo East	(G)	-	55.6	14.7	12.1	14.03
	Al-Basateen	(G)	-	52.6	15.4	8.2	11.6
	Total		**30634**	**40879**	**44907.7**	**41114.6**	**38540**
East Delta	Ataka	(St)	1093	1148	1842	1657.9	34.1
	Abu Sultan	(St)	3367	3197	3639	3429.7	1935.3
	El-Shabab	(G)	346	314	290	135.4	78.8
	New EL-Shabab	(CC)	4306	3273	3819	6732.8	8661.1
	Arish	(St)	524	548	538	534.7	399.9
	Oyoun Mousa	(St)	3886	4110	3363	3297.7	2487.5
	New Damietta	(G)	3149	1916	1764	1290.5	1067.5
	West Damietta	(G)	3275	1755	1629	1504.9	2700.9
	Damietta	(CC)	7334	6591	7369	7114.7	6196.5
	Sharm El-Sheikh	(G)	59	16	12	0.9	0.013
	El-Huraghda	(G)	386	224	307	171.4	214.1
	Port Said	(G)	84	-	-	-	-
	Ein-Sokhna	(St)	3962	6516	6137	5305.5	3663.2
	Suez	(St)	-	-	1887	2824.4	2386.8
	Ataka Gas	(G)	146	1954	1326.5	337.4	408.2
	Port Said Ext.	(G)	-	18	6.3	90.3	25.9
	Hurghada Ext.	(G)	-	455	437	700.7	785.3
	Sharm El-Sheikh Ext.	(G)	-	112	5.5	87.3	91.4
	West Damietta Ext.	(G)	-	1142	1033	782.8	2403.5
	EL-Masaid	(G)	-	-	-	-	0.023
	Total		**31917**	**33289**	**35404.3**	**35999**	**33540**
Middle Delta	Talkha	(CC)	1748	1611	1765	1253.8	703.9
	Talkha steam 210	(St)	2004	2134	2162	1576.2	1634.1
	Talkha 750	(CC)	5688	5185	4558	5432.3	4744.8
	Nubaria	(CC)	14695	13285	13226	12990.1	11823.7
	Mahmoudia	(CC)	2276	1950	1905	1305.5	459.8
	New Mahmoudia	(CC)	-	475	39	23.2	3.1
	El-Atf	(CC)	4740	5224	5171	5217.6	5272.7
	Banha	(CC)	4513	5108	4849	4770.8	4184.9
	Total		**35664**	**34972**	**33675**	**32569.5**	**28827**
West Delta	Kafr El-Dawar	(St)	2755	2568	1978	1769.1	227
	Damanhour Ext.300	(St)	1765	1078	1614	1855.5	1834.7
	Damanhour	(St)	751	154	-	-	-
	Damanhour	(CC)	1082	928	907.7	801.6	214.7
	New Abu Kir	(St)	7064	8168	6006	4925.9	4400.4
	Abu Kir	(St)	5481	4131	4625	4352.3	3643.6
	El-Seiuf	(G)	409	93	6	0.335	-
	Karmouz	(G)	8	1	0.35	0.222	-
	Sidi Krir (1&2)	(St)	3386	3366	3471	3488.1	2561.4
	Sidi Krir	(CC)	4612	4760	3826	3842.9	4190.3
	Matrouh	(St)	344	415	369	364.5	341.9
	Total		**27657**	**25662**	**22803**	**21400.5**	**17414**

(St.): steam unit (G): gas unit (CC): combined cycle unit

Comp.	Station		2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Upper Egypt	Walidia	(St)	2226	4011	2480	1912	2875.2
	Kuriemat	(St)	7921	6954	6293	6501.6	4188.4
	Kuriemat 1	(CC)	5082	5274	4183	5528.1	4884.4
	Kuriemat 2	(CC)	3574	3771	5047	1084.6	3712.9
	South Helwan	(St)	-	-	-	-	1197.9
	Assiut	(St)	198	12	-	-	-
	West Assiut	(CC)	101	1928	1103.7	2606.3	2625.6
	New Assiut	(G)	2.6	44.9	34.5	22.9	26.2
	Red Assiut	(G)	4.9	94.7	60.5	21.2	16.1
	Samalot	(G)	3.3	47.5	26.7	12.2	16.8
	West Malwy	(G)	4.2	42.7	25.2	25.9	9
	Gerga	(G)	2.9	37.3	25.5	38.1	49
	Bani Ghaleb	(G)	3.1	36.9	31.9	44.1	24.5
	Total		**19123**	**22254**	**19311**	**17797**	**19626**
EEHC Plants	Burulls	(CC)	-	-	1423	5456.1	9000
	Beni Suef	(CC)	-	-	3346	11663.3	15439.4
	New Capital	(CC)	-	-	747	3380	8053.6
	Total		**-**	**-**	**5516**	**20499.4**	**32493**
Hydro Plants	High Dam		9805	9484	8859	8747.1	8992.6
	Aswan Dam I		1543	1578	1489	1403.4	1409.7
	Aswan Dam II		1567	1523	1547	1607.6	1594.7
	Esna		459	507	501	481.8	471
	Naga Hamadi		448	453	454	453.2	446
	Assiut		-	-	-	32.9	207
	Total		**13822**	**13545**	**12850**	**12726**	**13121**
Total	Total-Thermal*		144995	157056	161617	169380	170440
	Total-Hydro		13822	13545	12850	12726	13121
Renewable Energy	Wind		1444	2058	2200	2334	3018
	Kuriemat Solar/ST		-	168	580	484	733
	Benban PV		-	-	-	53	792
	Total Renewables		1444	2226	2780	2871	4543
Private Sector (BOOT)	Sidi Krir 3&4	(St)	4318.5	4556	4311	4275	4256.8
	Suez Gulf	(St)	4311	4461	3797	4011	3617.6
	Port Said East	(St)	5708.5	4290	4037	3340	3679.6
	Total BOOT		14338	13307	12145	11626	11554
Purchased from IPP's			32	42	35	42	43
Isolated plant units			244	144	123	115	142
Grand Total*			174875	186320	189550	196760	199843

(St.): steam unit (G): gas unit (CC): combined cycle unit

* Energy generated including Commissioning tests.

Variant Statistics of Power Plants

Comp.	Station	Gross Gen. GWh	Net Gen. GWh	Consumed power %	TOTAL fuel K toe	Fuel consumption gm/KWh	Thermal EFF. %	Peak load MW	load Factor %	Cap. factor%	AV. Factor%
Cairo	Shoubra El-Kheima	5983.4	5683.4	5	1444.7	241.5	36.3	1255	54.4	52.7	82
	Cairo West Ext.	4288.1	4024.7	6.1	992.2	231.3	37.9	1105	44.3	36	92.9
	Cairo South 1	1198.6	1188.6	0.83	358.8	299.4	29.3	280	48.8	45.6	95.3
	Cairo South 2	1063.4	1040.4	2.2	207.3	194.9	45.03	154	78.8	80.9	89
	Cairo North	7339.7	7158.7	2.5	1226.3	167.1	52.5	1353	61.9	55.9	87.6
	Wadi Hof	7.4	6.9	6.4	3.1	418.9	20.9	68	1.2	1.1	98.1
	Tebbin	4524.2	4233.8	6.4	948.7	209.70	41.8	700	73.8	73.8	89.2
	6 October	730	716.8	1.80	218.1	298.9	29.4	601	13.9	13.9	90.3
	6 October Ext.	2797.7	2731.6	2.4	622.9	222.6	39.4	640	43.7	46.6	93.5
	Giza North	10577.1	10396.5	1.7	1727	163.3	53.7	2214	54.5	53.7	91.9
	Helioples	4.5	4.2	6.7	1.3	284	30.9	34	1.5	1.02	93.4
	Cairo East	14.03	14.02	0,03	3.9	276.5	31.7	48	3.3	3.20	99.2
	Al-Basateen	11.6	11.5	0.71	3.5	301.7	29.1	45	2.9	2.6	100
	Total	**38540**	**37211.2**	**3.45**	**7758**	**201.3**	**43.60**	**7008**	**62.2**	**46.8**	**90.0**
East Delta	Ataka	34.1	24.4	28.4	10.9	319.8	27.4	95	4.1	0.7	87.3
	Abu Sultan	1935.3	1776.3	8.2	500.1	258.4	34	415	53.2	36.8	67.8
	El-Shabab	78.8	78.2	0.8	35.1	445.1	19.7	44	20.4	25	93.4
	New El-Shabab (c.c)	8661.1	8482.3	2.1	1538.7	177.6	49.4	1420	69.6	65.9	95.8
	Arish	399.9	368.4	7.9	106.3	265.8	33	62	73.6	69.2	96.6
	Oyoun Mousa	2487.5	2361.3	5.1	556.5	223.7	39.2	600	47.3	44.4	93.2
	New Gas Damietta	1067.5	1049.8	1.7	294.1	275.5	31.9	511	23.8	24.4	95.8
	West Damietta	2700.9	2644.2	2.1	538.5	199.4	44	687	44.9	41.1	93
	Damietta	6196.5	6048.8	2.4	1177.3	190	46.2	1057	66.9	60.8	91.5
	Sharm El-Sheikh	0.013	-	100.00	0.01	485.7	18.1	-	-	-	100.0
	El-Huraghda	214.1	213.2	0.4	87.9	410.6	21.4	71	34.4	27.2	99.6
	Ein-Sokhna	3663.2	3533.8	3.5	757.2	206.7	42.5	992	42.2	32.2	91.2
	Suez Thermal	2386.8	2301.7	3.6	526.7	220.7	39.8	640	42.6	41.9	58.7
	Ataka Gas	408.2	398	2.5	112.6	275.8	31.8	494	9.4	7.3	99.2
	Port Said Ext.	25.9	25.3	2.4	6.01	231.9	37.8	68	4.3	3.1	90.9
	Hurghada Ext.	785.3	780.8	0.6	195.8	249.3	35.2	222	40.4	31.1	86.9
	Sharm El-Sheikh Ext.	91.4	90.1	1.4	23.2	253.8	34.6	178	5.9	3.6	100.0
	West Damietta Ext.	2403.5	2341.4	2.6	444.8	185.1	47.4	711	38.6	36.6	95.6
	El-Masaid	0.023	0.01	56.1	0.017	739.1	11.9	13	0.02	0.01	100.0
	Total	**33540**	**32518**	**3**	**6912**	**206.1**	**42.6**	**6226**	**61.5**	**38.4**	**89.7**
Middle Delta	Talkha	703.9	684.4	2.8	177.1	251.6	34.9	213	37.7	34.1	99.1
	Talkha (210)	1634.1	1507.8	7.7	412	252.1	34.8	380	49.1	51.8	85.6
	Talkha (750)	4744.8	4650.8	2	742.5	156.5	56.1	761	71.2	72.2	88.5
	Nubaria	11823.7	11611.1	1.8	1932.6	163.5	53.7	2211	65.2	60	94.8
	Mahmoudia	459.8	451.5	1.8	106.6	231.9	37.9	261	20.1	19.6	99.2
	New Mahmoudia	3.1	0.57	81.6	0.975	310.9	28.3	170	0.21	0.11	99.9
	El-Atf	5272.7	5166	2	858.4	162.8	53.9	814	73.9	80.35	95.8
	Benha	4184.9	4115	1.7	668.4	159.7	54.9	794	60.2	63.70	92.2
	Total	**28827**	**28187.2**	**2.2**	**4899**	**169.9**	**51.6**	**5080**	**64.8**	**57.7**	**93.9**
West Delta	Kafr El-Dawar	227	203.5	10.4	67.4	296.8	29.6	155	16.7	8.1	93.6
	Damanhour Ext 300.	1834.7	1779	3	424.8	231.5	37.9	300	69.8	69.8	90.7
	Damanhour	214.7	209.9	2.2	44.1	205.4	42.7	128.5	19.1	18.8	98.6
	Abu Kir	3643.6	3438.5	5.6	898.6	246.6	35.6	730	57	51.8	88.4
	New Abu Kir	4400.4	4214.7	4.2	950.5	216	40.6	970	51.8	38.6	99
	Sidi Krir 1&2	2561.4	2448.5	4.4	535	208.9	42	640	45.7	45.7	89.3
	Sidi Krir (C.C)	4190.3	4061.5	3.1	683.6	163.1	53.8	750	63.8	63.8	90.7
	Matrouh	341.9	315.7	7.7	98.3	287.5	30.5	52.5	74.3	65.1	96.6
	Total	**17414**	**16671.3**	**4.3**	**3702**	**212.6**	**41.3**	**3321**	**59.9**	**46.2**	**93**

Comp.	Station	Gross Gen. GWh	Net Gen. GWh	Consumed power %	TOTAL fuel K toe	Fuel consumption gm/KWh	Thermal EFF. %	Peak load MW	load Factor %	Cap. factor%	AV. Factor%
Upper Egypt	Walidia	2875.2	2739.7	4.7	673.9	234.4	37.4	532	61.7	54.7	72.8
	Kuriemat	4188.4	4045.9	3.4	898.9	214.6	40.9	1120	42.7	38.1	71.6
	Kuriemat 1	4884.4	4781.2	2.1	759.1	155.4	56.5	741	75.3	74.3	91.7
	Kuriemat 2	3712.9	3643.6	1.9	545.2	146.8	59.8	840	50.5	56.5	72.6
	South Helwan	1197.9	1058.7	11.6	284.8	237.7	-	1126	-	-	-
	West Assiut	2625.6	2576.1	1.9	709.5	270.2	32.5	920	31	28.5	93.5
	New Assiut	26.2	25.9	1.3	7.2	274.8	31.9	40	7.5	6	99.9
	Red Assiut	16.1	12.5	22.2	4.4	275	31.9	89	2.1	1.8	100
	Bani Ghaleb	24.5	24	1.9	6.7	274.3	32	46	6.1	5.6	100
	Gerga	49	48.8	0.3	13.6	276.9	31.7	50	11.2	11.2	99.7
	West Malwy	9	8.6	4.4	2.5	276.4	31.7	48	2.1	2	99.3
	Samalot	16.8	16.3	2.9	4.6	272.6	32.2	50	3.8	3.8	100
	Total	**19626**	**18981.3**	**3.3**	**3910**	**199.2**	**44**	**3462**	**60.3**	**34.4**	**81.9**
EEHC Plants	Burulls	9000	8613	4.3	1389.9	154.4	56.8	1346	24.0	24.1	86.9
	Beni Suef	15439.4	14932.5	3.3	2424.4	157	55.9	2911	60.5	36.7	80.9
	New Capital	8053.6	7769	3.1	1314	163.2	53.8	2106	43.6	18.5	78.3
	Total	**32493**	**31314.5**	**3.6**	**5128**	**157.8**	**55.6**	-	-	**25.8**	**84.1**
Hydro Plants	High Dam	8992.6	8932.1	0.7	0.0	0.0	83.6	2160	47.5	48.9	90.5
	Aswan Dam I	1409.7	1383.1	1.9	0.0	0.0	85.4	276	58.3	57.5	94.2
	Aswan Dam II	1594.7	1584	0.7	0.0	0.0	90.1	270	67.4	67.4	93.5
	Esna	471	462.7	1.7	0.0	0.0	83	80.1	67.1	62.7	92.4
	Naga Hamadi	446	439.6	1.4	0.0	0.0	85	66.9	76.1	79.5	95.3
	Assiut	207	202	2.4	0.0	0.0	86	40.1	59	73.9	93.8
	Total-Hydro	**13121**	**13003.5**	**0.9**	**0.0**	**0.0**	-	**2827**	**53**	**52.9**	**91.3**
Total	Total-Thermal**	**170440**	**164883.5**	**3.3**	**32309**	**189.6**	**46.3**	-	-	-	-
	Total-Wind	**3018**	**2999**	**2.6**	-	-	-	-	-	-	-
	Kuriemat Solar / Thermal	**733**	**702**	**4.1**	-	-	-	-	-	-	-
	Benban P.V	**792**	**792**	-	-	-	-	-	-	-	-
	Private Sector BOOT	**11554**	**10802**	**6.5**	**2469**	**213.7**	**41.1**	-	-	-	-
	Total	199658	193182	3.3	34778	191.1	45.9	-	-	-	-
	Purchased from IPPs	**43**	**43**	-	-	-	-	-	-	-	-
	Isolated Plants	**142**	**139**	-	-	-	-	-	-	-	-
	Grand Total *	199843	193364	-	-	-	-	31400	-	-	-

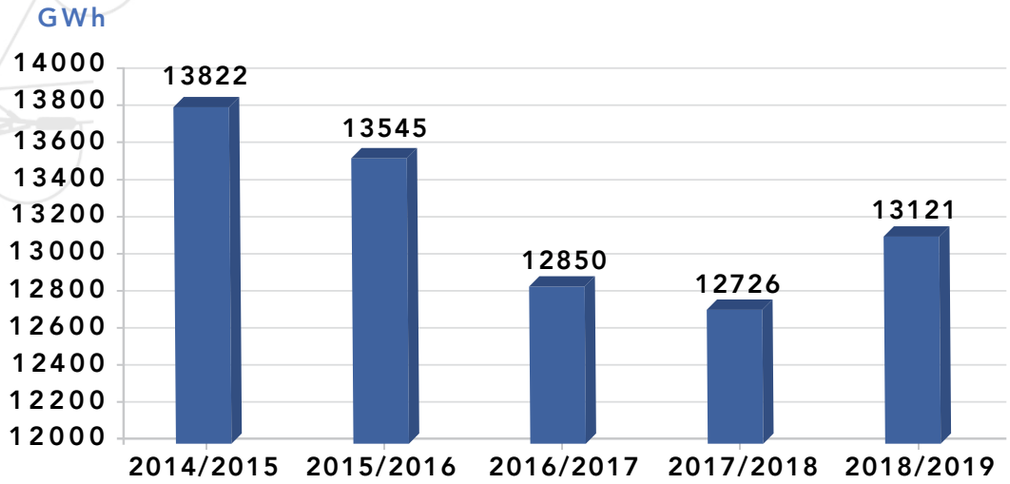
* Includes commissioning tests.
* Fuel consumption rate gm/kwh(gen) = Equ.fuel quantity / energy generated.
* Thermal Eff. % = {860 × 1000 / (9800 × Av. Fuel Consumption)} × 100.
* Average load MW = total energy generation / total period hours.
* Load Factor % = average load / maximum load during the period × 100.
* Capacity Factor % = average load / actual capacity × 100.
* Av. Factor % = (operation hours' + reserve hours') / period hours' ×100.

Hydro Power

Technical Indicators of Hydro Generation

Description		High Dam	Aswan1	Aswan2	Esna	Naga Hammady	Assiut	2018/2019
Generating Energy	(GWh)	8993	1410	1594	471	446	207	13121
Peak Load	(MW)	2160	276	270	80	67	40	2827
Max. daily generated energy	(GWh)	43.4	6.5	6.6	1.9	1.6	0.9	57.8
Min. daily generated energy	(GWh)	9.4	1.5	2.4	0.5	0.5	0.01	16.4
Efficiency	(%)	83.6	85.4	90.1	83	85	86	-

Development the Energy Generated from Hydro (GWh)



Fuel

1. The operation policy of the existing thermal power plants is based on considering natural gas as the primary fuel due to its evident economic and environmental advantages.

2. In 2018/2019The use of natural gas at power plants (including private sector power plants connected to the gas grid) reached 94.7%, representing 92.8% of the total fuel consumption.

Fuel Consumption by Type *

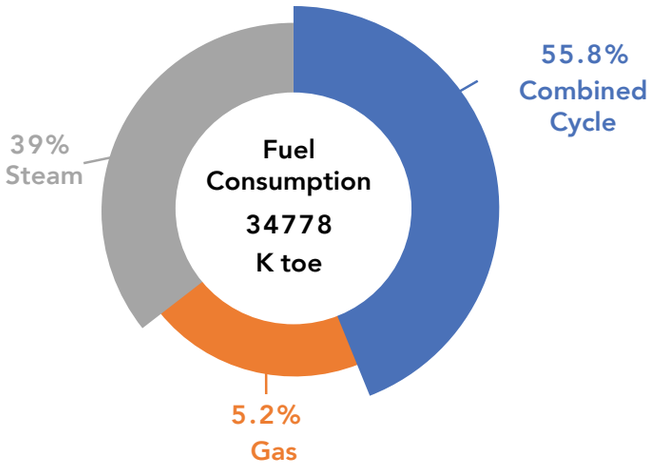
Item		2017/2018	2018/2019	Variation %
H.F.O.	(K tons)	5644	2458	(56.5)
N. G.	(million m³)	37008	38327	3.6
L.F.O. (Ordinary & Special)	(K tons)	224	54.2	(75.8)
Total	(K toe)	37335	34778	(6.8)

* Ktoe = Kilo Tonne of oil equivalent.

- Consumed fuel includes fuel for commissioning tests, BOOT power plants and EEHC Plants.
- Consumed fuel in BOOT power plants amounts to 2888 million m^3 of natural gas (with a total equivalent to 2469 K toe).
- Total consumed fuel in EEHC plants amounts to 6103 million m^3 of natural gas (with a total equivalent to 5128 K toe).
- Excluding consumed fuel in isolated plants amounting to 30.2 K toe.

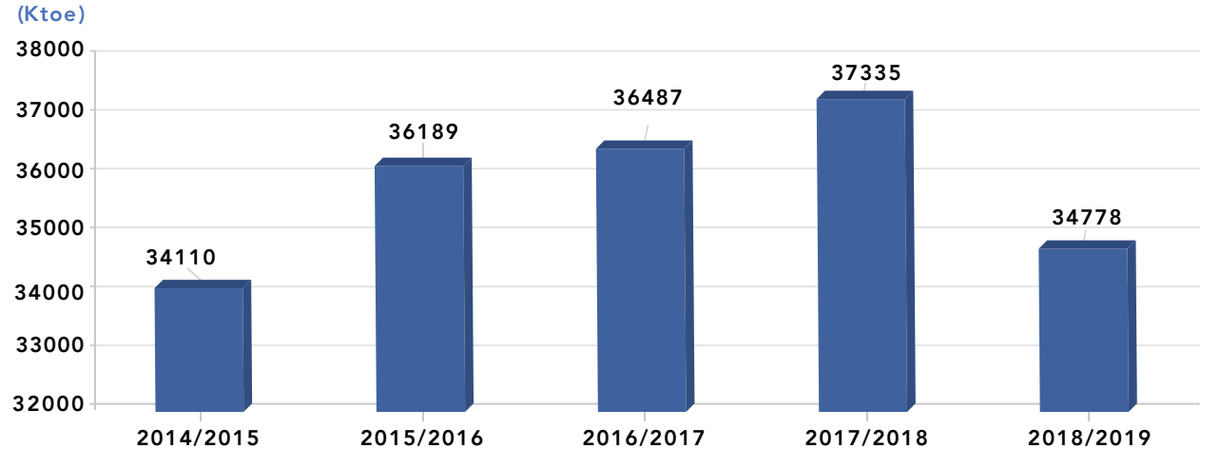
Fuel Consumption by Type of Generation (K toe) *

Type		2017/2018	2018/2019	Variation %
Steam	Subsidiaries	13990	11087	(20.8)
	Private Sec.	2400	2469	2.9
Gas	Subsidiaries	3316	1816	(45.2)
	EEHC Plants	4323	-	-
Combined Cycle	Subsidiaries	13306	14278	7.3
	EEHC Plants	-	5128	-
Total Thermal * (K toe)		37335	34778	(6.8)

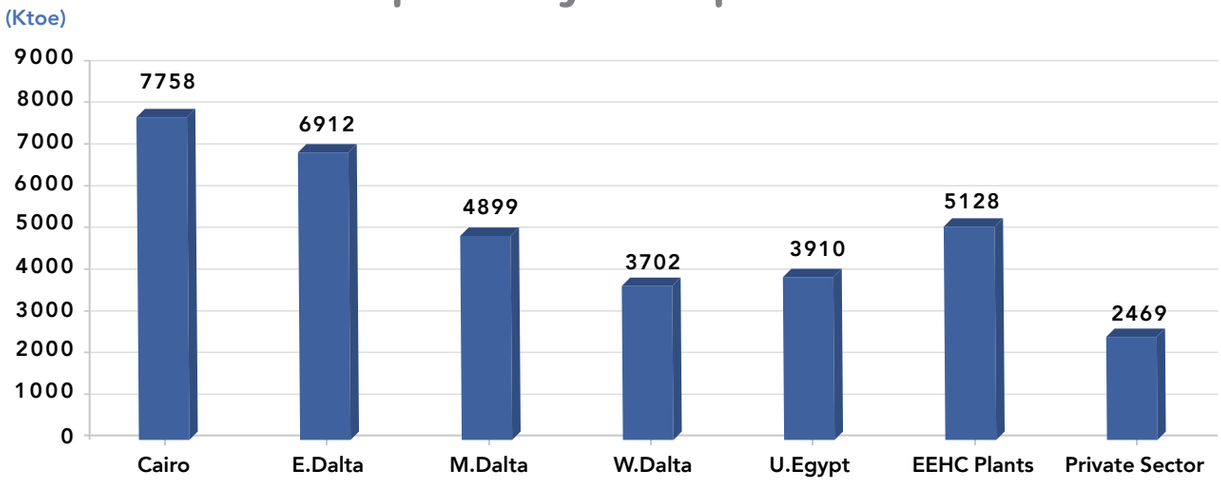


* toe = tonne of oil equivalent.

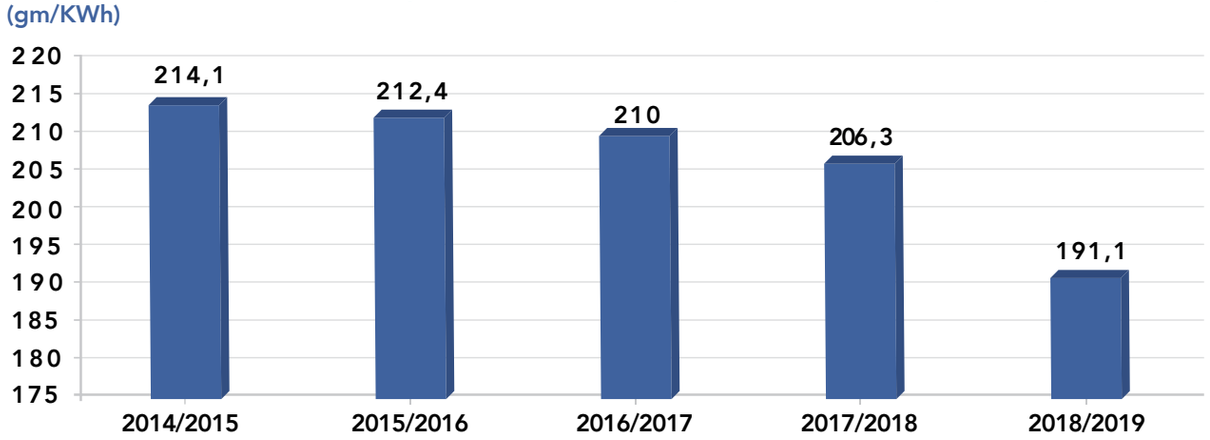
Development of Total Fuel Consumption



Fuel Consumption by Companies 2018/2019



Fuel Consumption Development Rate (Gen.) *



* Includes Private Sector EEHC Plants and comissioning tests

Development of Fuel Consumption by Power Plants (k toe) *

Comp	Station		2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Cairo	Shoubra El-Kheima	(St)	1689	1761.9	1667.6	1745.9	1444.7
	Cairo West	(St)	1697	1533	1462	1308.3	992.2
	Cairo South 1	(G)	364	613.3	649.6	444.9	358.8
	Cairo South 2	(CC)	60	214.74	214.1	198.4	207.3
	Cairo North	(CC)	1231	1368.5	1293.5	1298.7	1226.3
	Wadi Hof	(G)	72	43.42	30.6	45.3	3.1
	Tebbin	(St)	576	1058	1063	867.8	948.7
	6 October	(G)	804	749.66	738.6	662.3	218.1
	6 October Ext.	(CC)	-	-	-	-	622.9
	Giza North	(CC)	510	1583.79	2192.9	1867	1727
	Helioples	(G)	-	12.1	3.4	1.5	1.3
	Cairo East	(G)	-	15	3.9	3.4	3.9
	Al-Basateen	(G)	-	14.1	4.2	2.5	3.5
	Total		**7003**	**8967.5**	**9323.4**	**8446**	**7758**
East Delta	Ataka	(St)	282	331.5	508.7	447.6	10.9
	Abu Sultan	(St)	879	831.9	942.4	864.7	500.1
	El-Shabab	(G)	117	117.1	120.9	53.9	35.1
	New El-Shabab	(G)	1185	891.7	1031.7	1461.2	1538.7
	Arish	(St)	130	137.1	136.1	136.3	106.3
	Oyoun Mousa	(St)	849	890.2	746.4	716.5	556.5
	New Damietta	(G)	857	516.2	484	348.5	294.1
	West Damietta	(G)	872	464.7	439.4	383.7	538.5
	Damietta	(CC)	1449	1292.2	1418	1338	1177.3
	Sharm El-Sheikh	(G)	22	6.4	4.9	0.4	0.01
	Port Said	(G)	31	-	-	-	-
	Hurghada	(G)	155	89.4	124.5	66.6	87.9
	Suez	(St)	-	-	415.9	613.4	526.7
	Ein-Sokhna	(St)	851	1389.6	1304.1	1114.6	757.2
	Ataka Gas	(G)	40	491.9	351	88.6	112.6
	Port Said Ext.	(G)	-	4.3	1.6	21.6	6.01
	Hurghada Ext.	(G)	-	110.7	108	173.5	195.8
	West Damietta Ext .	(G)	-	303.5	284	219.9	444.8
	Sharm El-Sheikh	(G)	-	28	1.5	22	23.2
	El-Masaeed	(G)	-	-	-	-	0.017
	Total		**7719**	**7896.4**	**8423.1**	**8071**	**6912**
Middle Delta	Talkha	(CC)	478	448.78	439.1	322.72	177.1
	Talkha steam 210	(St)	522	557.8	558.9	417.76	412
	Talkha 750	(CC)	870	808.57	708	833.168	742.5
	Nubaria	(CC)	2393	2220.6	2236	2136.239	1932.6
	Mahmoudia	(CC)	506	468.44	437.3	299.12	106.6
	El-Atf	(CC)	797	845.99	835.3	850.82	858.4
	Bnha	(CC)	769	811.1	802.4	797	668.4
	New Mahmoudia	(CC)	-	143.46	11.4	6.76	0.975
	Total		**6335**	**6304.7**	**6028.4**	**5663.6**	**4899**

(St.): steam unit (G): gas unit (CC): combined cycle unit

Comp	Station		2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
West Delta	Kafr El-Dawar	(St)	792	723.6	562	508	67.4
	Damanhour Ext. 300	(St)	425	257.34	380	419.6	424.8
	Damanhour	(St)	238	52.2	-	-	-
	Damanhour	(CC)	235	202.9	198.2	173.8	44.1
	New Abu Kir	(St)	1533	1762.36	1288.4	1071.4	950.5
	Abu Kir	(St)	1415	1084.5	1146	1082.2	898.6
	El-Seiuf	(G)	159	36.6	3	0.156	-
	Karmouz	(G)	3	0.37	0.1	0.11	-
	Sidi Krir 1&2	(St)	728	715.8	732.3	723.6	535
	Sidi Krir	(CC)	758	793.58	682	724.5	683.6
	Matrouh	(St)	99	113.97	102	102.2	98.3
	Total		**6385**	**5743.2**	**5094**	**4805.5**	**3702**
Upper Egypt	Walidia	(St)	569	956.2	609.5	462.2	673.9
	Kuriemat	(St)	1678	1500.2	1358	1388.3	898.9
	Kuriemat 1	(CC)	776	829.39	685.5	837.2	759.1
	Kuriemat 2	(CC)	578	607.26	783	167.8	545.2
	South Helwan	(St)	-	-	-	-	284.8
	Assiut	(St)	63	4.1	-	-	-
	West Assiut	(CC)	30	543.7	317	725.3	709.5
	New Assiut	(G)	0.7	12.1	9.8	6.3	7.2
	Red Assiut	(G)	1.3	26.1	16.4	5.7	4.4
	Samalot	(G)	0.9	12.6	7.1	3.3	4.6
	West Malwy	(G)	1.1	11.5	6.7	7.3	2.5
	Gerga	(G)	0.8	10.1	6.6	10.7	13.6
	Bani Ghaleb	(G)	0.8	10.2	8.5	12.2	6.7
	Total		**3699.6**	**4523.5**	**3808.1**	**3626.3**	**3910**
EEHC Plants	Burulls	(CC)	-	-	338	1176	1389.9
	Beni Suef	(CC)	-	-	796	2371	2424.4
	New Capital	(CC)	-	-	167	776	1314
	Total		**-**	**-**	**1301**	**4323**	**5128**
Private Sector (BOOT)	Sidi krir 3, 4	(St)	870	914.19	868	863	878.4
	Suez Gulf	(St)	920	941.9	810	855	789.8
	Port Said East	(St)	1178	896.46	831	682	800.5
	Total BOOT		**2968**	**2752.55**	**2509**	**2400**	**2469**
	Grand Total		34110	36189	36487	37335	34778

(St.): steam unit (G): gas unit (CC): combined cycle unit

* Including commissioning tests.

* In addition to fuel of isolated power plants about in about 30.2 K toe.

Isolated Power Plants and Reserve Units (2018/2019)

There are isolated power plants in some affiliated companies which are not connected to the Unified National Grid. These are mainly constructed to meet the requirements of remote areas of electricity needed for touristic projects and other purposes, and the total installed capacity of these plants amounts to 205 MW in addition to 5 MW wind farm in Hurghada.

Installed Capacity and Energy Generated

Company	type	Installed Capacity (MW)		Energy Generated(GWh)		Energy sent (GWh)	
		2017/2018	2018/2019	2017/2018	2018/2019	2017/2018	2018/2019
Canal D.C.	Diesel	108	108.6	31	56.4	30.5	55.7
	Solar	28	14.0	9.1	7.8	8.9	7.8
El-Behera D.C.	Diesel	30.2	30.8	32.5	34.7	31.1	33.8
	Solar	10.2	10.2	10.2	10.2	10.1	10.2
Middle Egypt D.C.	Diesel	30.4	32.40	26.5	26.80	25.3	25.6
	Solar	6.0	6.0	5.7	6	5.6	6
Upper Egypt D.C.	Diesel	2.9	2.9	0.03	0	0.02	0
Total	Diesel	171.5	174.7	90	118	86.9	115.1
	Solar	44.2	30.2	25	24	24.6	24
	Diesel & Solar	215.7	205	115	142	111.5	139.1

The total consumed fuel amounted to 30.2 K toe.

Production Power Plant Projects

7th Five- year Plan (2012-2017) as Amended:

- The total capacities of the Plan amount to 27,401 MW at an estimated total investment cost of USD 17 billion.
- The Plan is implemented by the Electricity Sector and funded by soft loans from Arab and international financing institutions, in addition to executing part of the Plan on "EPC + Finance" basis.
- A total capacity of 25'451 MW has been completed by the end of 2018/2019.
- It is planned to operate 650 MW during the year 2019/2020.
- Another 1300 MW is targeted to be operated during the year 2020/2021.

8th Five-Year Plan (2017-2022):

- EEHC conducted a study to determine the generating capacity required to be added during the 8th Five-year Plan (2017-2022) for covering the expected loads to meet the needs of various sectors of the State and provide an appropriate reserve of generation capacity to cope with programmed maintenance, forced outage and generation unit problems due to obsolescence.
- The study revealed that there is no need to add new thermal generation capacities under the Plan (2017-2022).

9th Five-Year Plan (2022-2027):

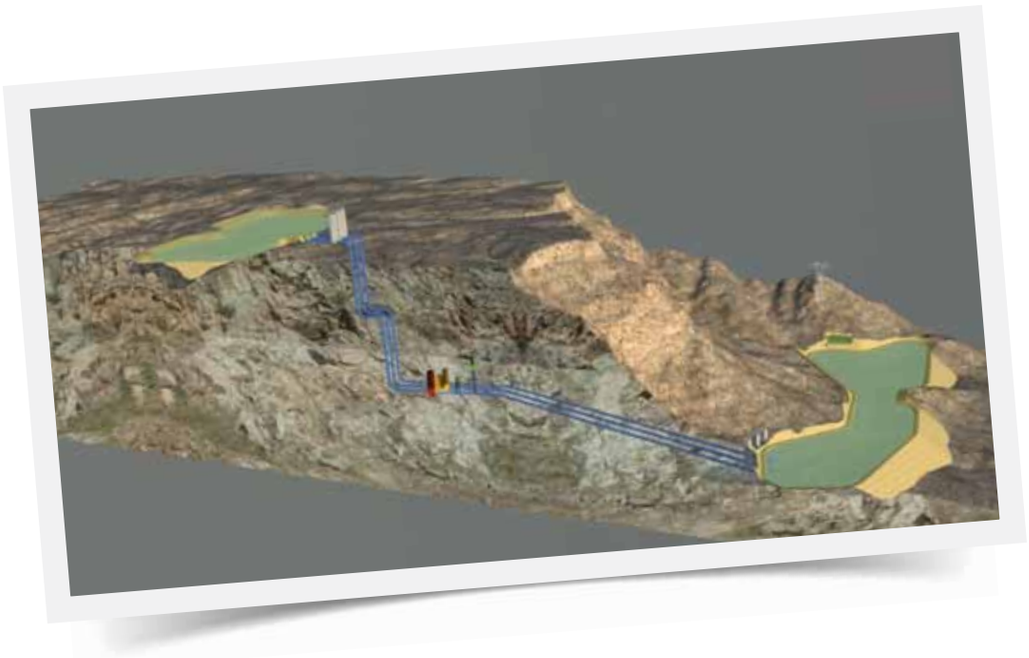
In light of the various scenarios for load and energy growth, a methodology has been developed for plans of future generation projects corresponding to load scenarios, as shown below:

Primary Priority:

- Luxor 2250 MW Combined Cycle Power Project executed by Aqua Power on BOO basis, scheduled to operate the 1st module of 750 MW in December 2023 and the last module of 1500 MW in July 2024.
- Pump & Storage 2400 MW Power Project in Ataqa Mount, Suez, executed on (EPC +Finance) basis with an initial cost of USD 2.7 billion.

Secondary Priority:

- In light of the low prices of new and renewable energies, coordination has been made with the Emirati investor of the Oyoun Moussa (Coal) Power Plant to replace the project with new and renewable energy projects (wind + solar) with capacities of 750 MW in BOO basis.
- Final decision in respect of the execution of a thermal (6x1000) MW coal-fired power plant in Hamrawein, the Red Sea, on "EPC + Finance" basis, or part of it, will be made according to the development of future loads.



- Power Purchase Agreements will be concluded between EETC and investors for projects to be executed on BOO basis.

- As well, the final decision on the implementation of the above projects will be made after reviewing the strategy prepared by TARES in light of the low prices of new and renewable energies and the development of anticipated future loads.

Information about Production Companies

Company	Geographical zone	Headquarter	Equity Capital (Million EGP)	Investments percentage	Address	Tel.
Cairo	Great Cairo	**Cairo**	998.960	4.3%	22 Shanan St. Sabteia	02-25793054 02-25740550 www.cairoepc.com
East Delta	Damietta, Ismailia, Port Said, Suez, South Sinai, North Sinai & Red Sea Governorates	**Ismailia**	2689.123	11.6%	Sheben Elkom St.	064-3204590 064-3201492 www.edepco.com.eg
Middle Delta	Qalyobeya Governorate (Except for Great Cairo Extension), Mahmoudeia City, Kom Hamada from Behera Governorate, Dakahlya Governorate.	**Dakahlya**	1266.755	5.5%	Compost road Talkha,	050-2524149 050-2524369 www.mdepc.gov.eg
West Delta	Alexandria, Matrouh & El Behera Governorates (Except for Mahmodeya city & kom Hamada)	**Alexandria**	751.805	3.3%	7 Riad St, Gleem	03-5761375 03-5756722 www.wdpc-alx.com
Upper Egypt	Giza (Except for extension of Great Cairo), Fayoum, Beni-Suef, El-Mania, Assiut, New Valley, Suhag, Qena, Aswan, & Luxor Governorates	**Giza**	2396.210	10.4%	Mohamed Dora St,	082-9210733 088-2321915 02-37610578 www.ueep.com
Hydro Power Plants	Affiliated Hydro Plants All over the Country (Aswan – Luxor – Qena - Assuit)	**Aswan**	433.160	1.9%	High Dam – West Aswan	097-3480412 097-3481974 www.hpge.com.eg

Transmission of Electrical Energy

Egyptian Electricity Transmission Company (EETC)

In accordance with the new Electricity Law No. 87 of 2015, the Egyptian Electricity Transmission Company has become an independent company. As an initial measure, the Prime Minister's Decree No. 1959 of 2017 was issued regarding the formation of the General Assembly of EETC, and the activity of the Company has been incorporated among the activities of EEHC with the inclusion of EETC's capital within the investments of the Holding Company until completion of the separation process.

Company Name	Geographical Zone	Head Office	Equity Capital (m. EGP)	Ratio of Company's Capital to EEHC's Investments	Address	Phone No.
Egyptian Electricity Transmission Company	Electricity transmission networks on ultra-high & high voltages across the country	Cairo	8612.083	37.3 %	Ramses St. Extension, Abbasseya, Cairo	02/22618579 02/26843824 02/26835199 www.eetc.net.eg

Objectives of the Egyptian Electricity Transmission Company :

1. Operating the electricity transmission system in a manner that achieves efficiency, stability and reliability.
2. Managing and maintaining the transmission grid and implementing electricity transmission projects on ultra-high and high voltages.
3. Transmitting electricity through its networks for a charge proposed by the Company on economic bases and approved by the Electricity Utility and Consumer Protection Regulatory Agency "EgyptERA".
4. Enabling connection to the transmission grid for a charge proposed by the Company on economic bases and approved by Regulatory.
5. Allowing others, without discrimination, to use its grids for supplying electricity distributors and consumers with their electricity needs in accordance with the transmission rules that include prices determined on the economic principles approved by Regulatory.
6. Providing the balance power required for safe and stable grid operation, thus ensuring equal opportunities and non-discrimination.
7. Meeting the Regulated Market needs of electricity by means of purchase from authorized producers, as well as purchase of transmission, distribution and sale services from the service licensees in favor of unqualified subscribers at prices proposed by the Company in accordance with proper economic principles and approved by Regulatory.
8. Receiving the difference between the two tariffs stipulated in Article (41) of the Electricity Law and allocating it to purposes set forth in the Executive Regulations.
9. Providing electricity to the qualified subscribers under temporary six month term contracts, renewable for similar period(s) or part of it, with the approval of Regulatory, at a tariff proposed by the Company and approved by Regulatory.
10. Announcing tenders for the construction of renewable energy power plants to investors, and purchasing the energy produced from these plants at competitive prices.
11. Participating with the Ministry and EEHC in studying expansions of electricity production and transmission to meet consumer needs.
12. Organizing electricity buying and selling procedures in accordance with the trade and settlement rules of the electricity market through the Market Operator.
13. Implementing electrical interconnection projects approved by the

Ministry and exchanging electricity with other countries in accordance with the agreements concluded in this regard, including participation in other companies for this purpose.

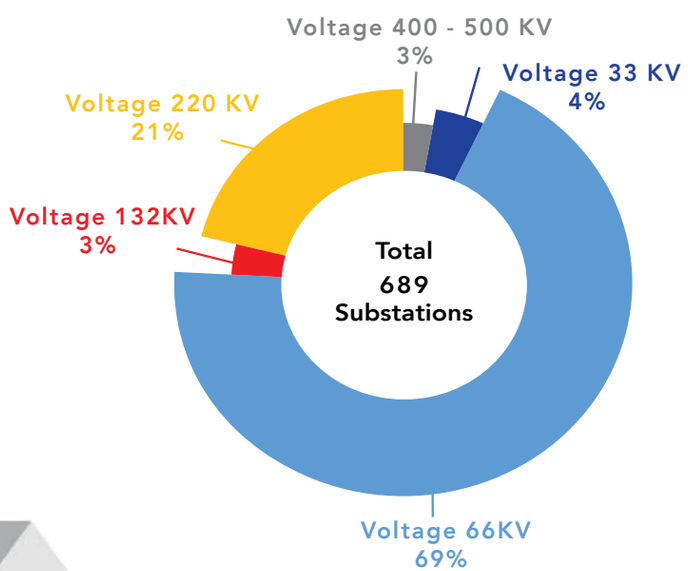
14. Organizing electrical energy sale, purchase and exchange on the interconnection grids.
15. Conducting studies, researches and development tasks in the field of its activity.
16. Setting and amending the electricity transmission rules in coordination with the production and distribution companies and the qualified and unqualified subscribers in accordance with Article (32) of the Electricity Law and its Executive Regulations.
17. Setting and amending the trade and settlement rules in coordination with the production and distribution companies and the qualified and unqualified subscribers. These rules and their amendments shall only become effective upon the approval of Regulatory and after publication in the Egyptian Gazette in accordance with Article (33) of the Electricity Law and its Executive Regulations.
18. Purchasing the electric power required for auxiliary services, and the Company may undertake the necessary measures in this regard with due consideration for equal opportunities and non-discrimination and such procedures are undertaken in accordance with commercial principles declared to all parties of the electricity utility.

Transmission Network Statistics
30-6-2019

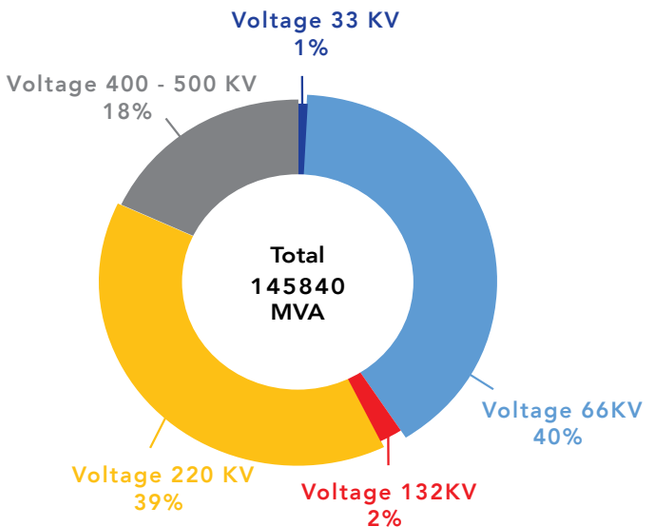
Voltage		2017/2018	2018/2019	Growth Rate (%)
Ultra-High and High Voltages	Total Transformers' Capacities (MVA)	130868	145840	11.4
	Number of Substations	670	689	2.8
	Number of Transformers	2612	2707	3.6

Voltage (KV)	2017/2018			2018/2019		
	Capacity (MVA)	Substations (S.S.)	Transformers (Tr.)	Capacity (MVA)	Substations (S.S.)	Transformers (Tr.)
33	1571	30	123	1521	28	117
66	54670	468	1916	58107	479	1973
132	3454	18	80	3454	18	80
220	52248	139	452	57333	144	483
400-500	18925	15	41	25425	20	54
TOTAL	130868	670	2612	145840	689	2707

Number of Substations



Transformers' Capcities



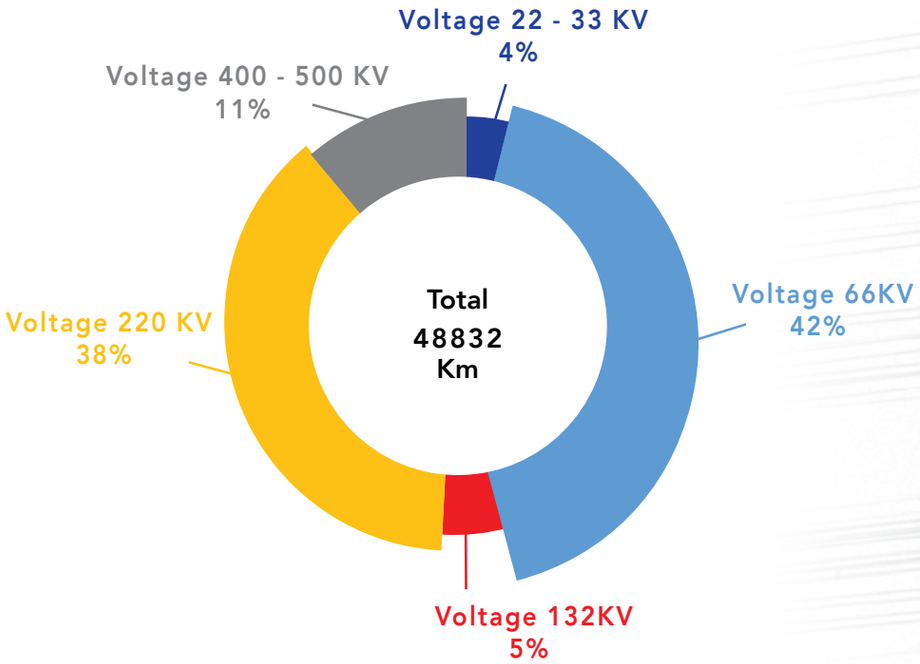
2018/2019

Total Lengths of Circuits (Overhead Lines & Ground Cables) Km.

Description	2017/2018	2018/2019	Growth Rate (%)
On Ultra-High & High voltages Total lengths of circuits (km)	46890	48832	4.1

Voltage (KV)	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
22	-	-	-	21	21
33	1990.4	1870.7	1790.5	1790.4	1692.1
66	19109.6	19594.3	19879.1	20018.4	20466
132	2485.1	2485.1	2485.1	2485	2485.1
220	17568.4	17812.4	18180.4	18465	18589
400-500	3055	3141	3982	4110.2	5578.8
Total (Km)	44208.5	44903.5	46317.1	46890	48832

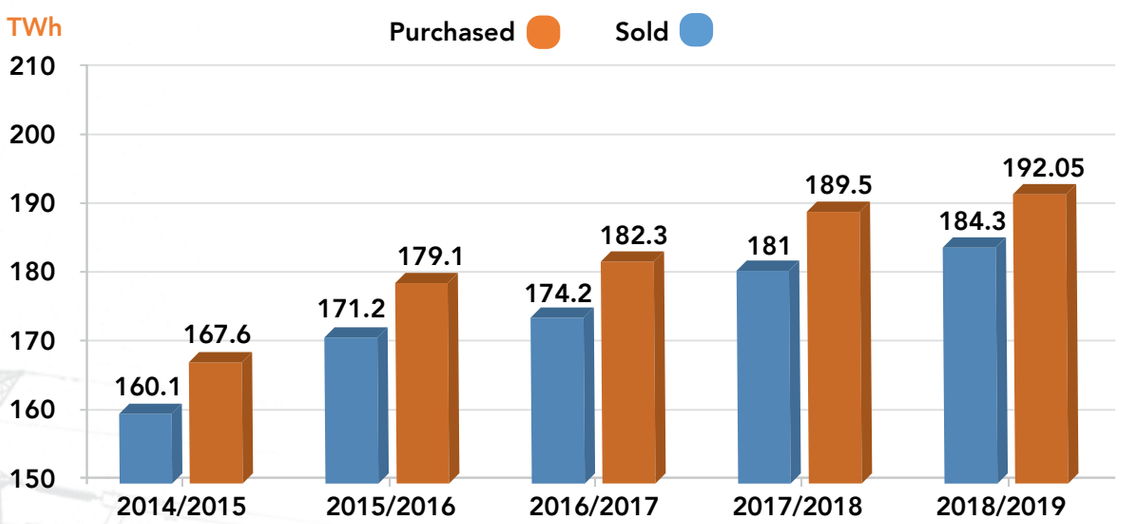
Total lengths of circuits %



Total Purchased and Sold Energy

Description		2017/2018	2018/2019	Growth Rate (%)
Purchased Energy	(TWh)	189.5	192.05	1.3
Sold Energy	(TWh)	181	184.30	1.8

Energy sold by EETC including about 156.8 TWh, energy sold to the distribution companies.



Electrical Interconnection

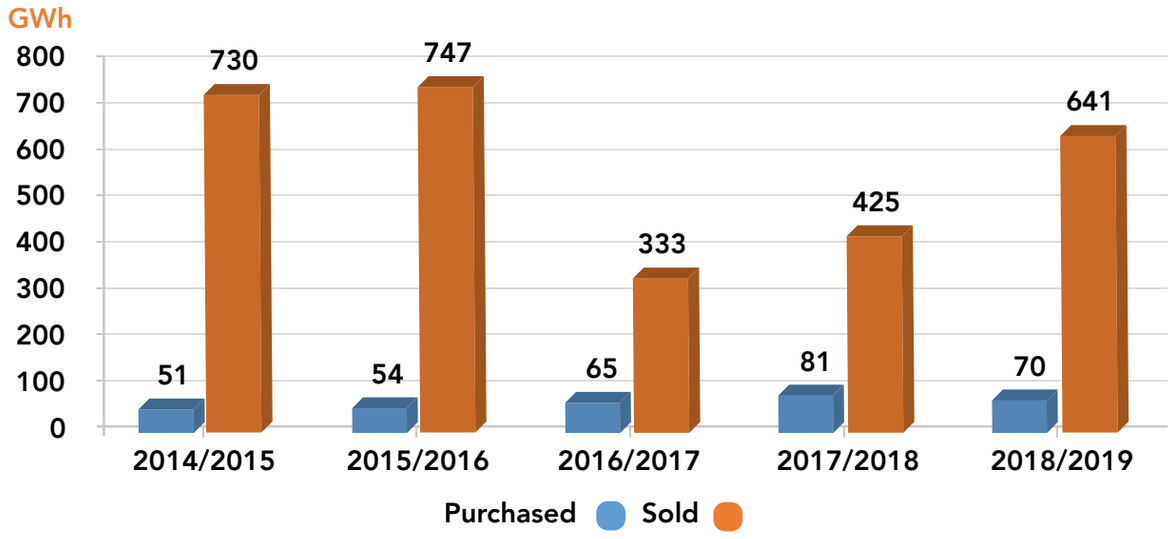
EEHC has embarked on new policies based on energy trade at regional and international levels through electrical interconnection with the neighboring countries and its membership in the various energy pools at continental level up to the international level through its relentless pursuit of membership in international electrical interconnection organizations.

Regional Interconnection with Neighboring Countries:

Egyptian/Jordanian & Egyptian/Libyan Interconnection:

Description	Egypt / Libya	Egypt / Jordan		
Interconnection date	May 1998	Oct. 1998		
Interconnection voltage (KV)	220	400		
Interconnected Countries	Libya	**Jordan**	**Syria**	**Lebanon**
Sold & Exported Energy (GWh)	327	314	-	-
Purchased & Imported Energy (GWh)	0.3	69.7	-	-

Traded Energy with the neighboring Countries



Egyptian / Sudanese Electrical Interconnection:

- Completing implementation of the Egyptian / Sudanese connecting line (220 kV with length of about 100 km), and the trial operation of a capacity of 50 MW is expected to start by the end of this year.
- Completion of the full synchronous interconnection is planned to transmit a capacity of 240 MW by the end of 2020 after installing the ineffective power compensator devices for the Sudanese side power stations.

Egyptian / Saudi Electrical Interconnection:

- The Egyptian / Saudi electrical interconnection project aims to exchange a capacity of 3000 MW between the two countries using HVDC bipolar transmission technology on 500 KV.
- Coordination is underway with the Kingdom of Saudi Arabia to conclude all contracts on the various packages of the Project for both sides by 30.5.2020.

Egyptian / Jordanian Electrical Interconnection:

- A study was prepared to raise the current capacity of the Egyptian / Jordanian connection line to 2000 MW instead of 450 MW, which allows a possibility for energy exportation to Lebanon, Syria and Iraq via Jordan; and coordination is underway between the two sides to agree on the optimal scenario to be executed.

Egyptian Electrical Interconnection with GCC Interconnection Authority:

- On 5.11.2019, a Memorandum of Understanding was signed by the Arab Republic of Egypt with the Kingdom of Jordan on the one part and with the GCC Interconnection Authority on the other part for interconnecting the national grid of Egypt with the GCC grid through Jordan.
- The capacity of that interconnection will be determined upon completion of preparing the technical studies that are being conducted at present by one of the worldwide reputed consultant firms.

Egyptian / Libyan Electrical Interconnection:

- The construction of the 500 kV Burj Al-Arab / Marsa Matrouh transmission line, double-circuit quad-conductor, under progress with a length of about 255 km. It will be operated temporarily with voltage of 220 kV, where it is used to support the Egyptian / Libyan interconnection and be later powered at its full capacity by expanding both of Burj Al-Arab and Marsa Matrouh substations up to 500 kV.

Egyptian / Cypriot electrical Interconnection:

- A Framework Agreement has been signed with EuroAfrica Interconnector Co. to transmit a capacity of 2000 MW from West Burrullus region on the Mediterranean Sea in Egypt to Cyprus and from there to Greece, thus providing a connection from the Egyptian grid to the Pan-European electricity grid.
- The electrical interconnection will be implemented using High-voltage direct current (HVDC) technology.
- A higher joint Steering Committee has been established between Egypt and Cyprus, as well as a technical committee to implement the recommendations made by the Steering Committee.
- The Project will be executed in two phases of 1000 MW each. The 1st phase is scheduled to be completed in July 2021 and the 2nd phase in July 2022.

Electricity Markets and Electrical Interconnection

Egypt: an Energy Hub

In accordance with the Sustainable Energy Strategy 2035 aiming to turn Egypt into a pivotal hub for energy, the Egyptian electricity sector endeavours to develop its performance in diversifying energy sources and achieve its economic goals. To that end, EEHC is keen to participate in all activities, events and gatherings for energy exchange and to acquire active membership in the electrical interconnection organizations worldwide. These efforts may be summarized as follows:

Establishing an Arab Common Market for Electricity:

- The Pan-Arab Electrical Interconnection is one of the most important Arab integration projects where it paves the way for the establishment of an electricity common market among the Arab countries that depends on a legislative framework and a robust institutional framework supported by a complete and full-fledged infrastructure.
- The legislative framework of the Arab common market is based on four basic documents for electricity market governance: Memorandum of Understanding, General Agreement, Market Agreement, and Rules for Operation of Arab Networks.
- On September 8, 2016, the Council of the League of Arab States passed a resolution approving the Memorandum of Understanding for the establishment of the Arab common market for electricity that was signed by the representatives of 16 Arab countries in April 2017.

- Egypt participates in the establishment of the Arab common market for electricity through its presidency of the Executive Office, chairmanship of the Committee of Electricity Experts in the Arab countries and the Steering Committee, in addition to its representation in the working group on the study of Pan-Arab electrical interconnection (with a specialized legal, technical and financial team from EEHC).
- The two conventions (General Agreement and Arab Common Market Agreement) are being finalized and reviewed in collaboration with the World Bank and are expected to be approved by the member states in preparation for signing by next year.
- Funded by the Arab Fund for Economic and Social Development, the Steering Committee and the Study Group are currently reviewing the rules for operation of Arab networks which is expected to be completed in May 2020.
- In addition, the institutional framework of the Arab common market for electricity is being worked out as well as a mechanism for the formation of committees with representation of all Arab member countries, namely the Arab Committee for Electricity Transmission System Operators, the Arab Advisory and Regulatory Committee, in addition to the Market Secretariat and the Regional Coordination Center (market mediator/facilitator).

I. Egyptian Electricity Market:

Legislative Environment of the Egyptian Electricity Sector:

- Reforms of the Egyptian electricity sector are proceeding based on several specific policies and integrated plans and programs such as the Sustainable Development Strategy 2030 and regulatory laws and legislations. The Electricity Law No. 87 of 2015 was promulgated by virtue of a Presidential decree, and the Executive Regulation of the Law was issued by the resolution of the Minister of Electricity and Renewable Energy No. 230 of 2016. This was meant to support the structural transformation system in the Egyptian electricity market by way of operating the Egyptian electricity system according to economic and environmental standards that guarantee equal opportunities while maintaining the interests of electricity producers and consumers.

Reforming Internal Environment of the Electricity Sector:

- EEHC participated in the study of restructuring the Egyptian Electricity Transmission Company to become an independent network operator and an independent market operator.
- EEHC is currently studying the reconciliation of its conditions in collaboration with Japanese consulting services aimed at helping to develop an action plan to reconcile the conditions of the Holding Company in line with the requirements of the gradual opening of the Egyptian electricity market. Reform steps are being implemented by launching a pilot project on two selected models, namely Cairo Electricity Production Company and North Cairo Electricity Distribution Company.

II. International Interconnection and Participation in Electricity Markets Worldwide:

Interconnection Axis and Electricity Market with Europe:

- Aiming to consolidate its role as a pivotal hub for electricity trade in the Mediterranean region, Egypt has joined many regional and international organizations such as the Association of Mediterranean Transmission System Operators (MED-TSO), the Union for the Mediterranean (UFM) and other international organizations.
- A memorandum of understanding has been signed between EEHC and Euro-Africa Interconnector of Cyprus to develop a techno-economic feasibility study for the electric interconnection project (Egypt-Cyprus-Greece), and a non-disclosure agreement has been concluded between the relevant parties.
- Consideration is underway for implementing the

first phase of the project, i.e. the Egyptian-Cypriot interconnection, and opening a hybrid market on the interconnection line (30% organized and 70% commercial).

Interconnection Axis and the Electricity Market with China and the East:

- Within the framework of the electricity sector's endeavor to turn Egypt into a pivotal energy hub and to exploit the great opportunities for generating clean electricity from solar energy and wind farms, and to take advantage of investment in energy projects, the Ministry of Electricity and Renewable Energy signed a cooperation protocol with Global Energy Interconnection Development & Cooperation Organization (GEIDCO), headquartered in China, in the fields of training, smart meters and technical support. EEHC also participates in the meetings, conferences and workshops organized by GEIDCO at African and global levels in the fields of international interconnection, electricity markets, renewable energy and energy efficiency. EEHC has been joined the membership of GEIDCO.

III. African Interconnection Axes and Electricity Market:

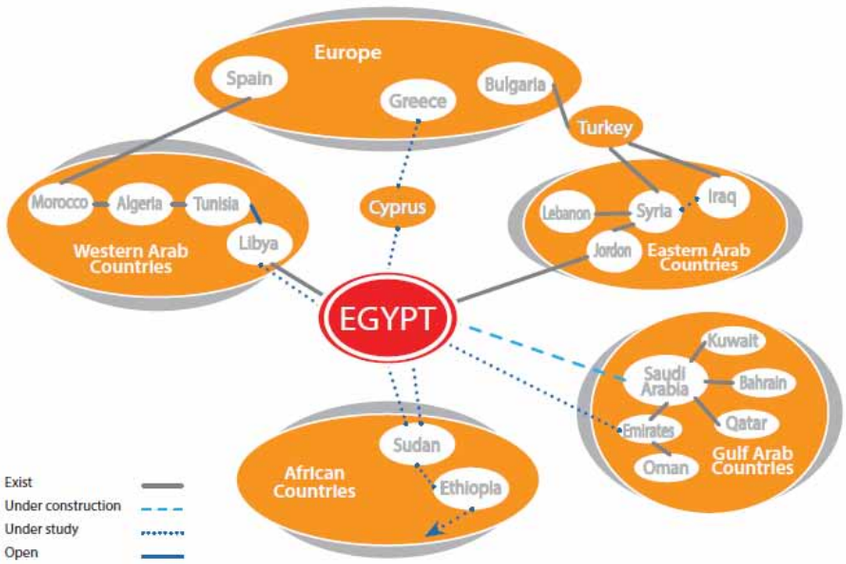
- Work is currently taking place through Egypt's active membership in the Eastern Africa Power Pool (EAPP) to establish a market for electricity trade among the member countries of the Pool aiming to secure energy supplies, reduce the cost of energy production and increase energy exchange and trade between EAPP countries, as well as to improve the use of available resources of electrical energy through the investment in production, transmission and distribution sectors. This would facilitate the development of an integrated competitive free market for electricity trade among East African countries and from them to South African countries (SAPP) through the development of electricity trade between the two Pools (SAPP and EAPP).
- **The operational readiness for EAPP is currently being considered, and the study is divided into four main tasks as follows:**

Task 1: IC Compliance Program;

Task 2: Updated Regional Power Balance Statement;

Task 3: Assess the Existing Training Programs; and

Task 4: Power System Analysis.



New & Renewable Energy

Guided by the strategy of the Ministry of Electricity and Renewable Energy that aims to increase the share of renewable energy to 20% of the load in Egypt by 2022 , and 42% by 2035 of the electrical energy, EETC has applied policies to encourage private investments in the construction of power generation projects from new and renewable energies (wind energy and solar energy).

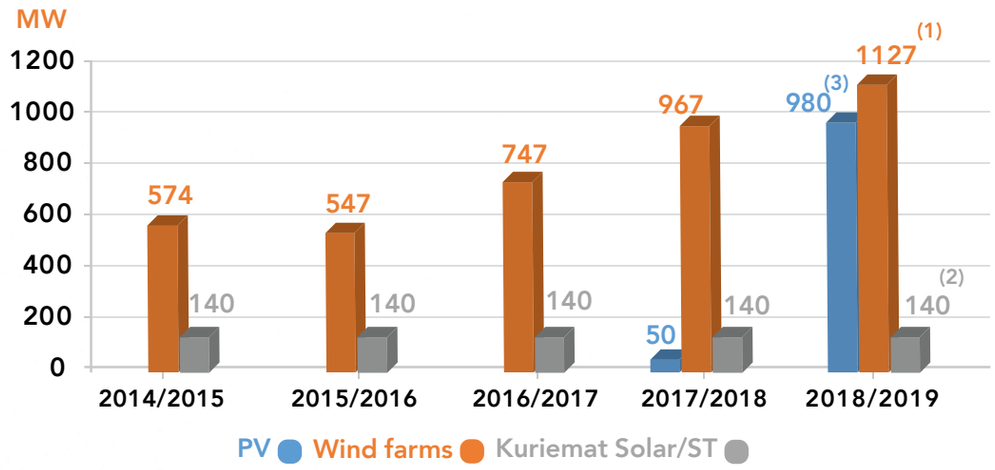
- **EEHC is in continuous cooperation with EETC and the New and Renewable Energy Authority (NREA) in the following areas:**
  - Planning for power generation considering the participation of renewable energies in government executed projects throurg NREA and private sector projects through EETC.
  - Planning for the electrical networks to ensure the evacuation of energy generated from renewables.
  - Publishing through EETC of competitive tenders for the construcion of renewable energy projects to supply energy to pre-defined locations under BOO scheme.
- In this context, EETC announced for international tenders and selected the best propsals submitted by investors in collaboration with international and local consultancy groups.
- EETC concluded a number of Power Purchase Agreements (PPAs) for energy generated from renewables (for 20-year term for wind and 25 years for solar) in a total capacity of 1965 MW, of which 500 MW wind energy under BOO scheme and 1465 MW solar energy on Feed-in-Tariff (FIT) basis.
- Also, a PPA was signed for energy generated from 200 MW solar plant at Koum Ombo through a competetive tender under BOO scheme.
- **Negotiation and contracting procedures are currently conducted for:**
  - 1820 MW of wind energy under BOO scheme with a number of alliances (Siemens/ Gamesa - Toyota/Orascom/Engie - AlNowais - Italgen).
  - 750 MW of solar energy under BOO scheme with a number of alliances (Eni of Italy, AlNowais of UAE, SkyPower of USA), in addition to implementing a part of the project through the first auction.

Feed-in-Tariff Program for Renewable Energies:

- On 3 November 2019, construction of the solar Component (PV) of the FIT program was completed with its first and second phases in Benban, where the number of completed solar plants reached (32) with a total capacity of 1465 MW.

Nominal Capacity and Generated Energy from Renewables

Nominal Capacity:

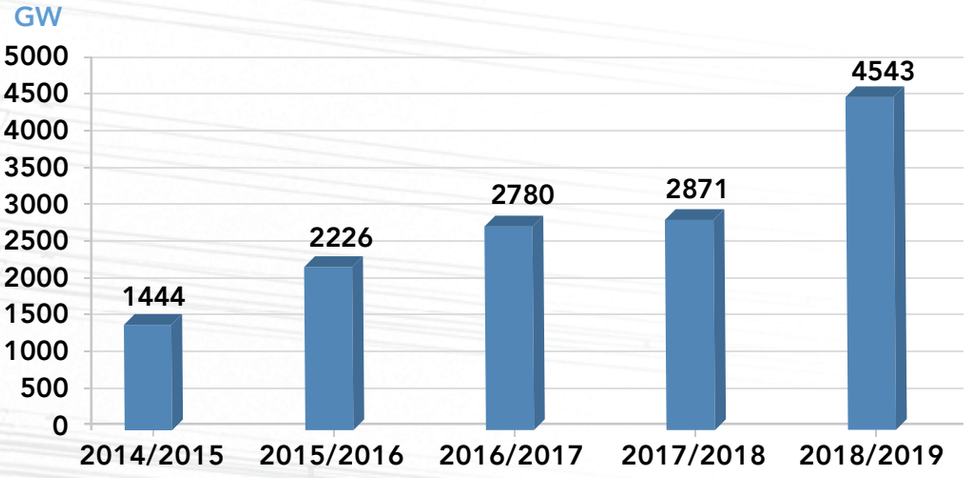


(1) Excluding Hurghada Wind form of 5 MW capacity.

(2) The 1st solar/thermal power station of 140 MW, of which 20 MW solar component, in Kuriemat region was put to commercial operation in 2011.

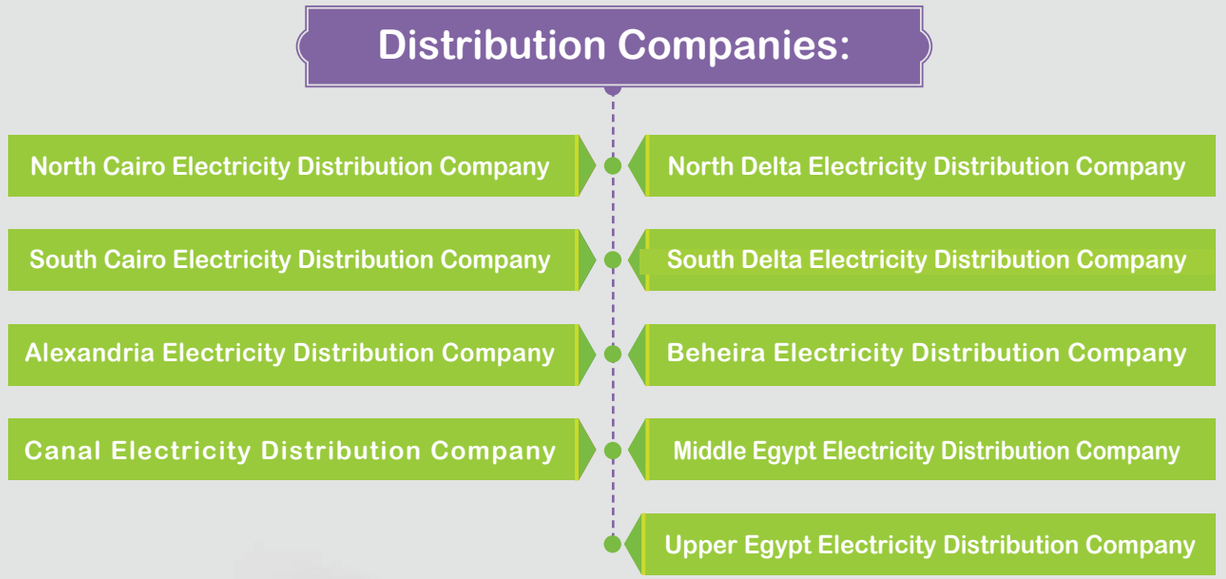
(3) Until 30.6.2019, the operation of 980 MW solar energy has been completed using (PV) units in Benban, Aswan governorate (Private sector).

Energy Generated*:



* The energy generated by renewable sources depends on the wind speed and the intensity of the sun radiation.

Distribution of Electrical Energy



Objectives of the Distribution Companies:

1. Distributing and selling the electric power to customers on medium and low voltages which is purchased from the Egyptian Electricity Transmission Company and from the Egyptian electricity production companies on medium voltage, and also the electric power purchased from the Industrial Sector and other IPPs in case of exceeding their needs, provided the approval of EEHC Board of Directors.
2. Managing, operating and maintaining the medium and low voltage grids according to the instructions of the dispatch centers and in consistency with the economical operation requirements.
3. Preparing forecast studies on loads and energy for the Company's customers and also economic and financial forecast for the Company itself.
4. Conducting studies, researches and designs, and implementing power projects for the supply of electric power for different purposes on the medium and low voltages and carrying out all associated works.
5. Managing, operating and maintaining isolated generation units which are not connected to the unified grid.
6. Carrying out any other works or activities related to or complementing the Company's objective in addition to any other work that may be entrusted to the Company by EEHC within its competence.
7. Carrying out other works entrusted to the Company by other parties within its scope of activity which achieve an economic benefit for the Company.

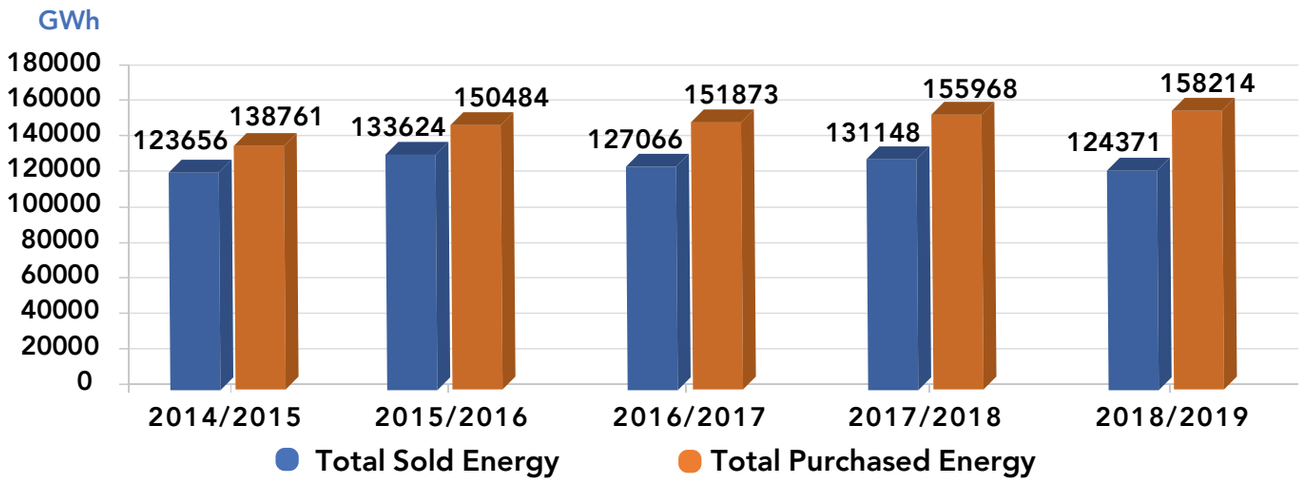
Electricity Distribution Network Statistics (30-6-2019)

Item comp.			North Cairo	South Cairo	Alex.	Canal	North Delta	South Delta	El Behera	Middle Egypt	Upper Egypt	Total
No. of Customers		(Million)	4625	5958	2777	4282	4377	4793	2454	3893	3267	36426
Sold Energy		GWh	16498	21116	8637	23056	10974	10694	10058	12915	10423	124371
Purchased Energy		GWh	21081	28949	10345	26122	14576	13385	12299	17862	13595	158214
Switch boards		No.	438	469	248	1317	237	226	295	182	146	3558
		(%)	12.3	13.2	7	37	6.7	6.3	8.3	5.1	4.10	100
Length of MV Network	Lines	(km)	180	3370	562	15533	9961	7708.4	15522	19381	11087	83304
	Cables	(km)	24583	27247	12159	22422	7416	6846	7573	8856	8678	125780
	Total	(km)	24763	30617	12721	37955	17377	14554	23095	28237	19765	209084
Length of LV Network	Lines	(km)	3481	4864	4171	32885	23198	18720	21024	37088	35172	180603
	Cables	(km)	38478	57971	6473	16540	3214	1021	3132	3242	2846	132919
	Total	(km)	41961	62835	10644	49425	26412	19741	24156	40330	38018	313522
Total Length of MV&LV Lines & Cables		(Km)	66724	93452	23365	87380	43789	34295	47251	68567	57783	522606
		(%)	12.8	17.9	4.47	16.72	8.38	6.56	9.04	13.12	11.06	100.00
No. of Customers(Th)/ Total Length (Km)			0.069	0.064	0.119	0.049	0.100	0.140	0.052	0.057	0.057	0.070
Sold Energy (GWh) / Total Length (Km)			0.25	0.23	0.37	0.26	0.25	0.31	0.21	0.19	0.18	0.24
No. of Distribution Transformers			18195	23394	8761	35084	18123	18010	26235	26095	22800	196697
Sold Energy (GWh)/ No. of Transformers			0.91	0.90	0.99	0.66	0.61	0.59	0.38	0.49	0.46	0.63
Capacity of Distribution Transformers		(MVA)	15699	18621	5966	14427	5778	6062	6563	6919	6189	86224
		(%)	18.2	21.6	7	16.7	6.7	7	7.6	8	7.2	100
Number of LV Pillars and Panels		No.	61561	71890	8761	49643	20519	18117	29032	14101	13057	286681
		(%)	21.5	25.1	3.1	17.3	7.2	6.3	10.1	4.9	4.6	100

Distribution Companies Statistics (On medium & low voltages)

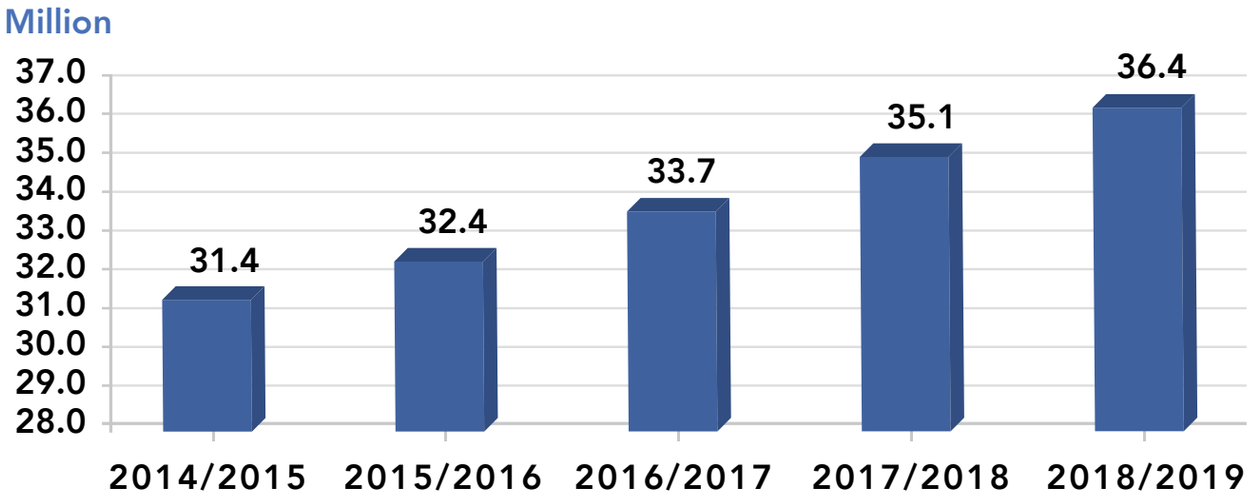
1 Purchased & Sold Energy:

Description	2017/2018	2018/2019	Growth Rate (%)
Total Purchased Energy (GWh)	155968	158214	1.4
Total Sold Energy (GWh)	131148	124371	(5.2)



2 Number of Subscribers:

Description	2017/2018	2018/2019	Growth Rate (%)
Total number of subscribers on medium and low voltages (in millions)	35.1	36.4	3.7

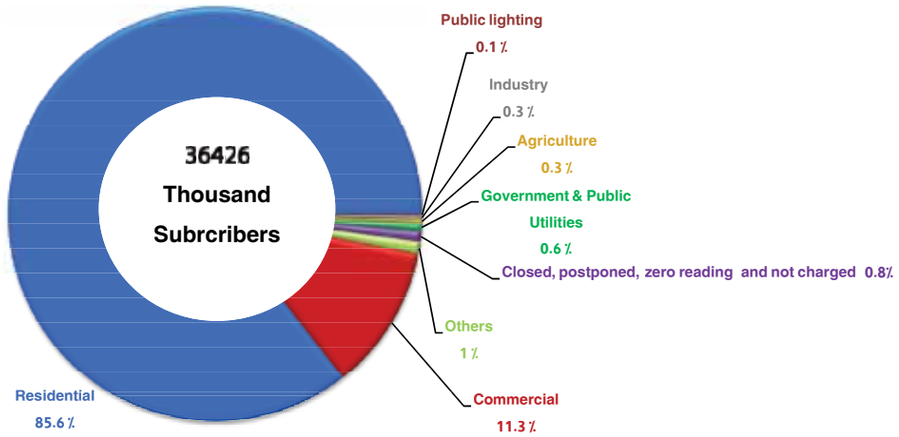


3 Number of subscribers (on medium & low Voltages)

(30-6-2019)

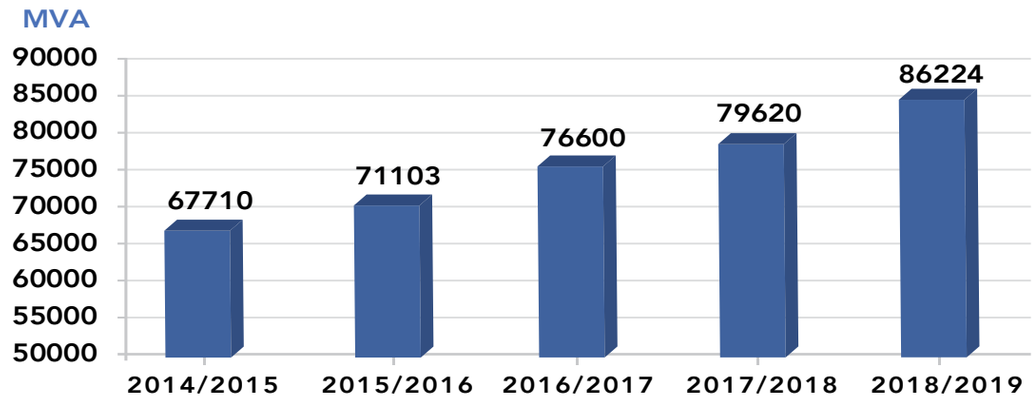
Purpose of Usage	Industry	Agriculture	Government & Public Utilities	Residential	Commercial	Closed, postponed zero reading & not charged	Public lighting	Others *	Total
No. of Subscribers (Thousand)	118	97	203	31173	4130	308	40	357	36426

* Others: Youth Centers, East Al Owaynat project …



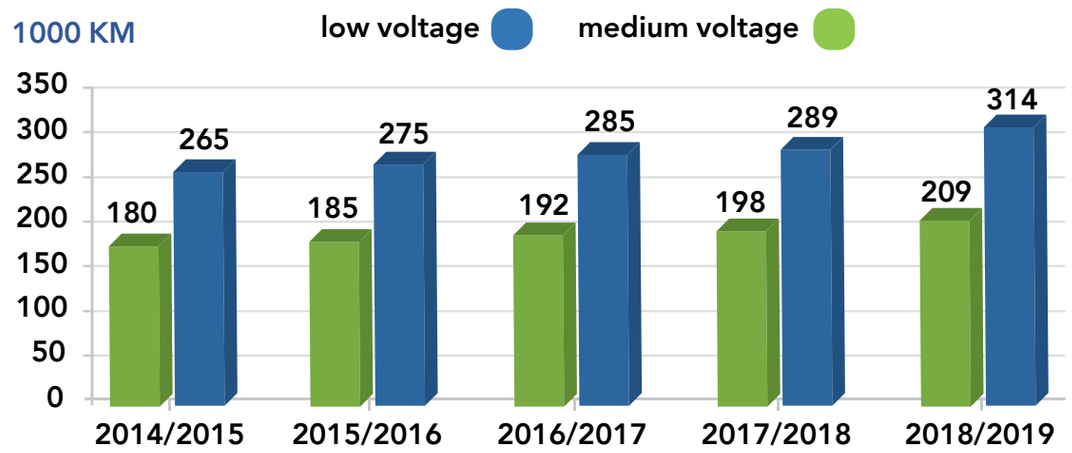
4 Total Distribution Transformers' Capacities:

Description	2017/2018	2018/2019	Variation (%)
Total distribution transformers' capacities on medium & low voltages (MVA)	79620	86224	8.3



5 Total Lengths of Medium & Low Voltage Lines and Cables:

Description	2017/2018	2018/2019	Variation (%)
Total lengths of medium voltage overhead lines & cables (1000 km)	198	209	5.6
Total lengths of low voltage lines & cables (1000 km)	289	314	8.7



Smart Services

EEHC has made significant efforts for developing the process of providing services to citizens in a way that ensures provision of high-quality services in accordance with global specifications and criteria through diversified channels, such as service centers, hot-line, mobile application and the website, as illustrated below:

One-Window System:

- Aiming to improve the services provided to subscribers, a program has been activated to provide up to (26) services through dealing with only one window in the distribution companies. All fees and charges for these services are now paid in the service centers, except the service of bills payment and charging of pre-paid meter cards where payment is made through the electronic payment outlets.

Customer Service Call Center at (121) for Complaints and Fault Reporting:

- As from 26-6-2016 a Call-Centre service has been provided under a contract with Xceed Co. to receive complaints and fault reporting by contacting the unified number (121), then the contractor calls back the customers to ensure that their complaints are responded to and the issue of their reporting is solved, at a rate of 20% for technical reporting and 100% for commercial reporting in each distribution company.
- Since the contracting date up to 30-6-2019, the system received 7 million calls and the average rate of responding to technical reporting amounted to 99.9% and 99.8% for commercial reporting.

Mobile Application for Smart Services :

- A mobile application was set up for providing smart services to all customers and publicized at Play Store and App Store in August 2019. This application is currently being piloted in Cairo North and Canal Distribution companies by way of providing (3) services (i.e. meter reading reporting, bill inquiry and bill payment); and based on the experiment, other services will be added successively once they are ready in preparation for spreading the system in all distribution companies.

Unified Reading Program:

- The distribution companies are currently in the process of developing the Unified Reading Program to ensure reading accuracy and unifying the commercial rules and codes for all distribution companies. The program is currently implemented in Cairo North, Cairo South, Alexandria and Beheira Distribution companies, and is characterized by the following:
  - The program is owned by the Electricity Sector, thus facilitating program modification as quickly as possible.
  - Exchange of experiences among electricity companies.
  - The program participated in unifying the commercial rules at the level of the electricity companies.
  - Automating the whole system for companies not having an automated system and updating the old ones.
  - Collecting the key data of subscribers at the level of the electricity companies and recording it to the unified program.
  - Locating each meter by coordinates and recording it in the unified program.

Digital Transformation in Port-Saeed City:

- The Electricity Sector, represented in EEHC and Canal Electricity Distribution comp. in collaboration with the Administrative Control Authority and the Ministry of Communications, implemented a pilot project for unifying subscribers' databases in Port- Saeed Governorate and linking them to the State's databases.

Smart Meters:

- In March 2016, a protocol of cooperation was signed between EEHC and the National Defense Council for supporting the security and development of information systems and the establishment of databases in the fields of smart meters and their applications in the interest of confidentiality of information and data at the distribution companies.

- In May 2017, a contract was signed for the supply, installation, operation and maintenance of the advanced infrastructure measuring systems on turn-key basis for supplying, installing and operating 250'000 smart meters as pilot project in the geographical range of six distribution companies, namely North Cairo, South Cairo, Alexandria, Canal, South Delta and Central Egypt Distribution companies.
- 150.000 Smart meters have been installed till 30-9-2019.
- The installation and operation of the data centers is underway, in addition to the linking networks between data centers and the relevant operation applications.

where the project is expected to be completed by 30-6-2020.

Prepaid Meters:

- The use of this type of meters has been expanded since 2011 and was generalized in 2014, with about 8.3 million meters installed up to 30/9/2019. Pre-paid meters aim at:
- Achieving financial liquidity for the electricity companies resulting from prepayment of charging value.
- Avoiding problems with some consumers such as estimating the amount of consumption and the high value of some bills, as well as providing more security to subscribers where no need for any person to enter their homes.
- By the end of the year 2018/2019, the installation of 1.8 million meters was completed.

and it is targeted to install 4 million meters during the year 2020.

The Unified Program for Pre-Paid Meters' Management:

- On 19.6.2016, a contract was signed with the National Service Projects Organization (NSPO) for the implementation of a project to develop a unified program for pre-paid meters' management. The objectives of the project are represented in the following:
  - Setting up a unified central system for charging pre-paid meters.
  - Handling all types of meters through a unified program.
  - Obtaining standard reports at the level of all companies, or at the level of EEHC, to help make decisions.
  - Facilitating the card-charging service to citizens through electronic collection channels or at any charging center within the range of a distribution company with the possibility of operating new branches and the addition of different charging channels.
  - Actual operation of the program has already been launched at North Cairo, Upper Egypt and Beheira Distribution companies.

Completion of the program operation in the other companies is expected during 2020.

Establishment and Development of Distribution Companies' Controls:

- MOERE represented in EEHC works on developing networks of the distribution companies to raise the level of performance and improve quality of electric supply through establishing and developing a number of control centres, the implementation of which has the following benefits:
  - Optimize the operation of equipment and devices.
  - Reduce cost of operation and maintenance of the distribution networks.
  - Reduce loss rates.
  - Increase reliability of networks and quality of power supply.

- As planned, the project will be executed in stages, the first of which is the establishment of 15 control centers in the distribution companies to be implemented within 30 months in (North and South Cairo, Alexandria, Canal, South delta and Middle Egypt D.COs) using The lastest Control, monitoring and communication systems for monitoring and control of distributors, transformers and medium voltage side of distribution stations in a secure manner.

- **It is intended to complete the contracting procedures in 2020 to start implementation immediately and get finished in the year 2022/2023**

Improvement of Energy Efficiency within Distribution Networks:

- On 29-2-2016 a loan agreement was signed with Japan International Cooperation Agency (JICA) in the amount of J¥ 24.8 billion for financing the project of establishing an integrated smart network in three distribution companies to reduce loss in electric energy, bring down thermal emissions and the rate of carbon dioxide in air and improve the electric network performance efficiency, with a project implementation period of about 60 months.
- In June 2016 the consultancy contract was signed with TEPSCO, and the loan agreement came into effect as of 10-1-2017.
- In October 2018 the tender of LOT-2 was announced in favour of North Cairo D.CO; and thereafter, proposals were submitted, the technical evaluation of submitted bids was completed, and negotiating the bidders is ongoing under supervision of TEPSCO, it is intended to complete the contracting procedures in 2020.
- Tenders of LOT-1 for Alexandria D.CO and Lot-3 for North Delta D.CO have already been finalized and will be announced after review and approval by JICA, expected in 2020.

Rationalization and Improvement of Energy Efficiency and Use of Renewable Energy:

Outdoor lighting (street lighting):

- In the outset of 2015, a contract was signed between Arab Organization for Industrialization (Electronics Factory) "Responsible for Supply", Ministry of Local Development "Executing Agency", Ministry of Finance "Responsible for Funding" and Ministry of Electricity and Renewable Energy being "Responsible for Technical Aspects", for replacement of about 2.6 million worn-out streetlights (with LED and high-pressure sodium luminaires) as well as break and connect units; and the supply and replacement of the entire quantity has been completed.
- On 11-9-2019, the contract was increased by 25% of the value of the original contract at the same supply prices for phase 4, to bring the total quantity of the contract up to 3.1 million streetlight luminaires in addition to a total of 76'5 thousand break and connect control units, starting implementation in 2019/2020 and completion in 2020/2021.
- Coordination is underway with the Ministry of local Development and Arab Organization for Industrialization for implementing a pilot project in Port-Saeed Governorate in a number of 30 control units.

Governmental, Industrial and Commercial Sectors:

- There were 1600 studies carried out on the conservation of energy in government buildings and public utilities and 245 studies implemented in the commercial and industrial sector, with awareness being disseminated in all governorates of Egypt.

Solar Power Stations (Photovoltaic):

- EEHC and its affiliated companies have adopted a project for the erection of solar power facilities (photovoltaic) on top of the Sector's administrative buildings and connecting them to the national grid. The appropriate and available locations were selected for installation of the required solar cells, where a number of 570 stations were set up with a total capacity of 36.1 MW as follows:
  - A number of 122 stations with a total capacity of 2.3 MW on top of buildings of EEHC and affiliated companies.
  - A number of 69 stations with a total capacity of 11 MW installed by subscribers to the Feed-in-Tariff system.
  - A number of 379 stations with a total capacity of 22.8 MW installed by subscribers to the Net-Metring system.
- Another 8 stations with a total capacity of 30 MW were also implemented as remote isolated plants funded by an Emirati grant (executed by MASDAR Co.)

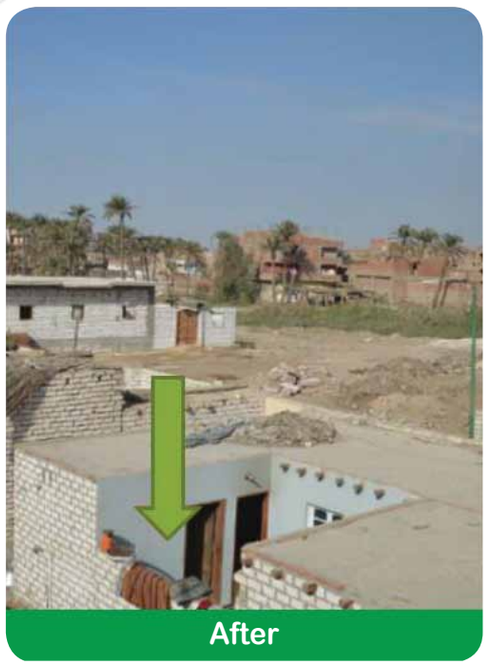
Citizen Awareness with Rationalization:

- The distribution companies prepared awareness bulletins to educate citizens about the importance of rationalizing electrical energy and these were distributed to the commercial departments of the companies. A page on energy conservation has been set up on the official site of the Ministry of Electricity and Renewable Energy on the internet, and a guide booklet has been issued for rationalizing electricity consumption with the use of LED technology.
- Since July 2016, the Ministry of Electricity and Renewable Energy has launched a massive media campaign in all media targeting all electricity-consuming sectors to raise awareness and increase the culture of energy conservation for end-users, and such campaign has been markedly praised by a wide sector of citizens ever since it was first launched.

Squatter Areas' Development Project:

- In accordance with the directives of the President of the Republic to eliminate squatter settlements, a cooperation protocol was signed on 23.11.2016 between the Informal Settlements Development Fund (ISDF) and the Ministry of Electricity and Renewable Energy on the development of unsafe areas located within the precinct of electricity lines. Accordingly, the total cost of the Project was calculated in about EGP 1.7 billion funded by the public treasury of the State, with total lengths of cables of about 2481 km. in addition to the connection equipment.
- In October 2017, the implementation of the 1st phase of the Project started, and by the end of FY 2017/2018 about 671.91 km of cables were executed at a total cost of about EGP 668.29 million.
- On 1/7/2018, the 2nd phase of the Project was launched under the Ministry of Electricity and Renewabel Energy's plan funded from the public treasury, and until the end of the financial year on 30/6/2019 a total of about 580.8 km of cables were executed at a total cost of EGP 610.5 million.
- On 1/10/2019, the distribution companies initiated implementing operations targeted in the 3rd phase of the Project for FY 2019/2020 in coordination with governorates and municipals at aggregate estimated investments of EGP 400 million for total lengths of 342 km.

Before



After

Information about Distribution Companies

Distribution Company	Geographical Zone	Headquarter	Equity Capital (million EGP)	Investments percentage with EEHC	Address	Tel.
North Cairo	North & East Cairo Sectors, New Cairo, and El-Salam City in Cairo Governorate; El-Obour City, Khanka, Shoubra El-kheima. El-Qanater & Bahteem in Qalyoubeya Governorate; Heliopolis, Helmeya, Matareya, El-Marg & Shoubra	Cairo Governorate	796.835	3.5%	2 El-Nasr Road, Next to Nasr City I Police Station, Cairo	02/22725095 02/22724409 www.ncedc.gov.eg
South Cairo	West, Middle & South Cairo Sectors in Cairo Governorate; and all districts of Giza Governorate	Cairo Governorate	470.257	2.0%	53, 26th July St., Cairo	02/25766612 02/25766400 www.scedc.com.eg
Alexandria	From Abu-Qir westwards to K, 66 west of Alex/Matrouh Road	Alexandria Governorate	377.008	1.6%	9, Sedi El-Metwally St., Attareen, Alex.	03/3933223 03/4948107 www.aedc.gov.eg
Canal	Ismailia, Port Said, Suez, Sharqeya, North Sinai, South Sinai & Red Sea Governorates & new cities within the Company's geo. zone	Ismailia Governorate	1455.419	6.3%	Osman Ahmed Osman Square, El-Sheikh Zaid, Ismailia	064/3209600 064/32082240 www.cced.gov.eg
North Delta	Daqahleya, Damietta & Kafr El-Sheikh Governorates	Daqahleya Governorate	486.694	2.1%	Gomhorya St., Opposite Governorate building, Dakahleya	050/2304186 050/2304187 www.ndedco.org
South Delta	Qalyoubeya (Except Greater Cairo extension); Menoufeya (Except Sadat City and its affiliated villages & El- Khatatba Center) & Gharbeya Governorates	Gharbeya Governorate	457.214	2.0%	Tanta- Kafr El Sheikh Road	040/3455516 040/3455519 www.sdedc.net
Beheira	Beheira & Matrouh Governorates and beyond K. 66 Alex/Matrouh Road; Sadat City and its affiliated villages & Khatatba Center in Menoufeya Governorate	Beheira Governorate	397.759	1.7%	Gomhoreya St. Damanhur, Beheira	045/3318030 045/3221426 www.bedc.gov.eg
Middle Egypt	Beni Suif, Fayoum, Minia, Assiut & New Valley Governorates	Minia Governorate	1018.217	4.4%	78, Horreya St. Minia	086/2346733 086/2353527 www.meedco.gov.eg
Upper Egypt	Suhag, Qena, Aswan and Luxor Governorates	Aswan Governorate	484.547	2.1%	High Dam, West Aswan	097/3480416 097/3480317 www.ueedc.com


HR

Human Resources and Training

EEHC has made further effort to develop the skills and capabilities of its human wealth in light of the keenness to keep up with the latest global changes and trends to achieve the utmost care of human resources as the real pillar and cornerstone and the most influential factor in attaining its strategic objectives.

Manpower

The aggregate number of employees in EEHC and affiliated companies reached 156'846 employees as at 30.6.2019 compared to 161'599 on the corresponding date last year, with a decrease of 4753 employees at a rate of (2.9) %, distributed as follows:

EEHC:
Aggregate 2621 employees

- Head Office: 1964
- Hospital: 657

Production Companies:
Aggregate 31405 employees

- Cairo: 5100
- East Delta: 6625
- Middle Delta: 6251
- West Delta: 7395
- Upper Egypt: 3065
- Hydro Power: 2969

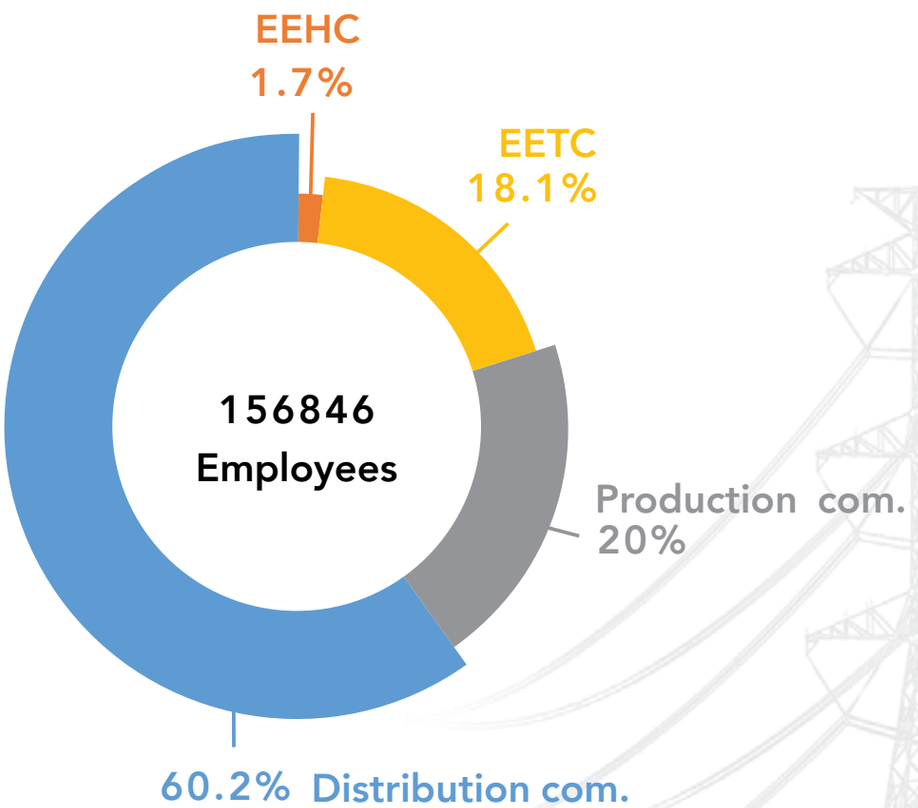
Egyptian Electricity Transmission Co.
Aggregate: 28346 employees

Distribution Companies:
Aggregate 94474 employees

- North Cairo: 11985
- South Cairo: 16355
- Alexandria: 11218
- Canal: 14574
- North Delta: 7849
- South Delta: 8969
- Beheira: 7643
- Middle Egypt: 8730
- Upper Egypt: 7151

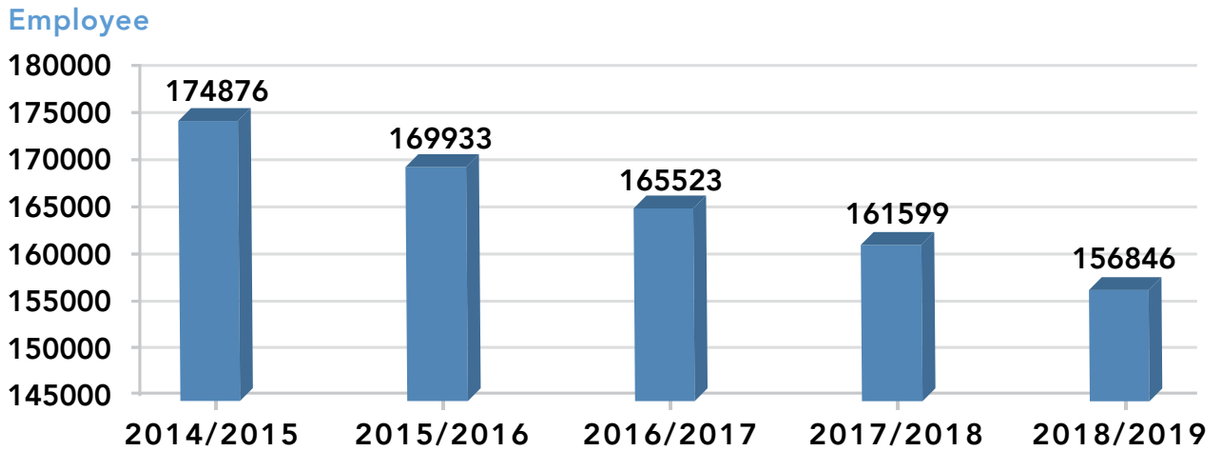
Total number

156846 employees



Total No. of Employees on 30/6/2019

Total no.of Employees



Development of Human Resources and Performance Improvement

- Completing and implementing the key themes of the Company's HRD strategy that are centered on building a culture of good performance and accountability, creating a more diverse workforce, promoting team spirit and improving production.
- Managing the file of African Foreign Relations in the field of human resources through the Company's membership in the Association of Power Utilities of Africa (APUA).
- Expanding the use of computers along with manual operation and activating the attendance and leave electronic system.
- Developing an analytical study of the organizational structure and restructuring HR Sector at EEHC and affiliated companies.
- Working on optimizing the utilization of human resources and available capabilities in the interests of the Company and its employees.
- Updating the strategic plan for emergency and works of civil defence and fire at the complex building and having such plan approved by the General Directorate of Electricity Police.

Health Care

- The medical service provided for the Electricity Sector's employees has been promoted through the renovation of the Electricity Hospital where the following improvements have been implemented: -

- Completing the infrastructure development.
- Upgrading the working system at outpatient clinics, inpatient sections, auxiliary departments and the intensive care; and the operation of outpatient clinics were extended for an evening period.
- Developing the treatment service through the introduction of the Hospital into the Egyptian Intensive Care Fellowship Program, providing the Hospital with state-of-the-art medical equipment, and introducing the "bone marrow aspiration" service at the Hospital's medical lab.
- Activating work at the chemotherapy clinic for seven days a week and introducing an early detection clinic for tumors.
- Introducing the clinical pharmacy to apply treatment protocols to reduce expenses, control patient doses and detect drug interventions; and developing a plan for the use of antibiotics inside the Hospital in cooperation with the Infection Control Department.
- Conducting continuous evaluation of staff to improve performance.
- Unifying standards regarding the provision of medical service in all companies and affording additional benefits for staff to their own benefit and the interest of the companies.

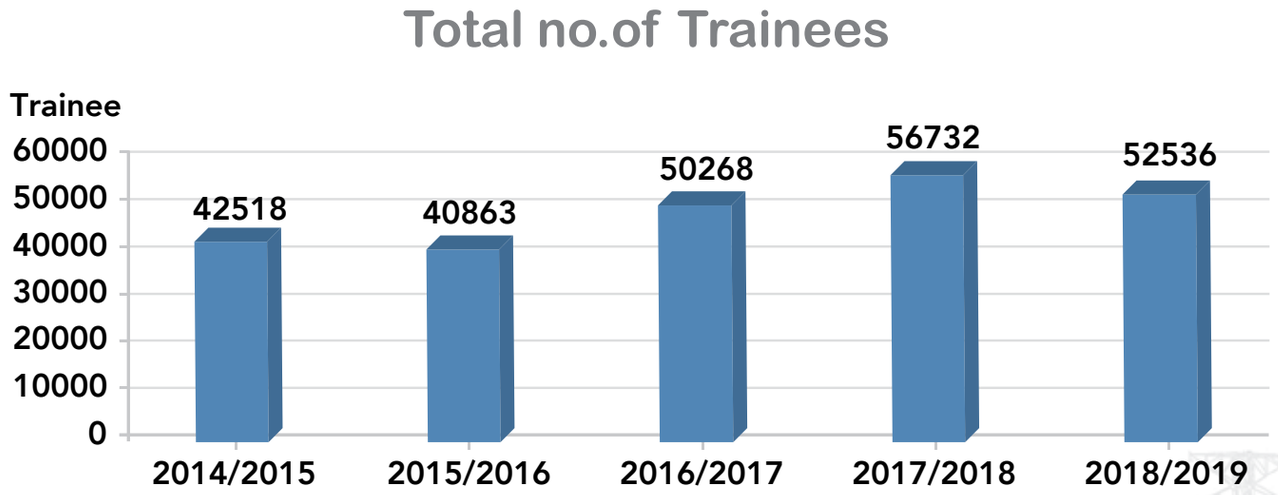
All these efforts have had their impact on the business results that achieved a surplus of about EGP 89.51 million in FY 2018/2019 compared to about EGP 44.65 million in the previous year with an increase of EGP 44.86 million at a growth rate of 100.5%.

Training and Capacity Building

- EEHC has developed training programs aiming to promote competences through the following:

A Staff Training :

- Technical, administrative and leadership training programs were carried out for the employees of EEHC, its affiliated companies and the head office of the Ministry of Electricity through the Leadership Development Center (LDC) of EEHC, affiliated companies' training centers and outside centers where the total number of trainees reached 52471 and post graduate students reached 65 persons during the year 2018/2019.
- **The following is the development in number of trainees during the period from 2014/2015 until 2018/2019:**



B Training of Others in Enhancement of EEHC's Social Responsibility:

- A summer training program was conducted in the premises of EEHC and affiliated companies for 5'632 students (of the faculty of Engineering higher institutes, faculty of commerce and higher industrial education).
- For common classes of industrial education by virtue of the convention with the Ministry of Education for the year 2018/2019, the number of graduates reached 229 and 180 enrolled.
- In the framework of expatriates' training from within Egypt (outside the Electricity Sector):
  * A number of 19 persons were trained in EEHC.
  * Another 106 received training in the affiliated companies.

- **This has had its tangible impact on the optimal utilization of all human capabilities and material capacities of the training centers of the Holding Company and its affiliated companies.**

C Training of Employees from African and Arab States:

- As a result of signing a Cooperation Protocol between EEHC and APUA, several training courses were conducted for 41 trainees from African countries.
- Within the framework of cooperation in the field of training with countries of the Nile Basin and the Horn of Africa, training programs were conducted for 169 African nationals.

- **Total revenues from cooperation with the Arab and African countries during the year amounted to EGP 2.920 million.**

Leadership Development Center of the Electricity Sector

- To ensure early detection of elements qualified for leadership and preparation of a second generation, the Leadership Development Center (LDC) was established in 1995 to achieve the following mission: "Prepare a new generation of leaders who are capable through their knowledge, behaviors and experience to achieve the Sector's goals". Achievements of the LDC during FY 2018/2019 are summarized as follows:

- Promoting effective communication and marketing of the Center's training courses by creating an official web page for the LDC.
- Introducing a brochure and making promotional films in French and English to address foreign visitors.
- The Center's activity extended to include (10) ministries and entities from outside the Electricity Sector with a total number of (103) trainees.
- Completing the Leadership Development Program for batches (26) and (27) with a total number of (60) trainees in an intensive program for 18 weeks, thus doubling the number of graduates per year while maintaining the quality and substance of the program content. The number of LDC graduates since the beginning of the Program reached (736) graduates until now.
- In implementation of the recommendations of the National Anti-Corruption Commission, the Center held sessions for "Disseminating Procedures of the Values of Integrity, Transparency, Awareness of the Risks of Corruption and Ways of its Prevention" for (128) courses with a total number of (3'510) trainees.
- Several courses that are held at LDC have been developed and added in all areas, where a total number of (321) courses were implemented at the Center for (6'208) trainees.
- The Center's achievements were not limited to training and qualifying leading cadres but also extended to meet and apply the latest quality systems, as the process of qualifying the training center of Upper Egypt Electricity Distribution Company is now completed and the ISO 9001/2015 certification is underway. Also, the Center is about to schedule a date with the Certification Body for accreditation of both Fayed Training Center of East Delta Electricity Production Co. and Kuriemat Training Center of Upper Egypt Electricity Production Co.; while qualification is ongoing for Talkha Training Center of Middle Delta Electricity Production Co. for ISO 9001/2015 certification.

- These achievements have had a positive impact on the LCD financial results for the current year as shown below:

Description	FY 2017/2018	FY 2018/2019	Growth Rate
Total Revenues	EGP 4.02 m.	EGP 5.8 m.	44%

Development of Regulations & Organization Structures of EEHC and Affiliated Companies

- Within the framework of the electricity companies' keenness to keep abreast of all working system developments, some regulations and procedures were issued, and others were amended and issuad in order to create a stimulating work environment, and these are represented in the following:

- The amendment of all financial regulations of EEHC has been completed to cope with the current business requirements for unification at the level of affiliated companies, and arrangements are being made for approval and implementation.
- Some provisions of the employees' regulation of EEHC and its affiliated companies have been modified to keep up with developments in human resources' policies.
- The amendment of some provisions of the medical regulation for the employees of EEHC and affiliated companies is underway to keep abreast of modern medical developments.
- Using information technology in managing internal activities and services, adopting e-management, and preparing a working team from the HR Sector in cooperation with the Information Systems Sector to activate the electronic system of human resources; and this comes in the context of the Company's vision and strategy to ensure promotion of competitive standards.
- Structuring the Medical Sector in EEHC and its affiliates for a better medical system to serve employees and achieve the optimum use of the available capabilities. The General Assembly of EEHC approved on 5-2-2019 the establishment of an independent health care company that provides services to all employees of the Electricity Sector, and the services of such company are extended to include companies and unions on contractual basis in addition to the public, and the activity of providing medical services has been added to the Company's Articles of Association.
- Modifying the terms of taking up technical jobs in legal departments in accordance with the requisites described in the regulation of technical staff in legal departments in EEHC and affiliated companies aiming to promote technical and administrative performance.
- On 28-5-2019 the General Assembly of EEHC approved the establishment of an Egyptian joint-stock company for training services to Consolidate all training centers of affiliated companies into a single powerful entity under a single umbrella based on foundations of modern management to make the optimum utilization of the capabilities of the training system, and the inclusion of the training services' activity into the Company's Articles of Association is underway.

Governance

- One of the strategic pillars for enhancing competitiveness and qualifying electricity companies for the competitive market is the adherence to governance standards, and therefore concerted efforts are deployed by the Company's Board of Directors and the executive management to implement the recommendations of the project "Improving Financial Management and Governance" through the following:

- Modifying the legislative infrastructure in the Electricity Sector where the new Electricity Law no. 87 of 2015 and its Executive Regulation have been issued to ensure regulation of the electricity utility and create a competitive market.
- Implementing a program for restructuring electricity selling prices to reduce the gap between prices of conventional energy and renewable energy so that investment opportunities in the field of renewable energy would be improved, with due consideration to the social dimension and linking it to fuel prices.
- The articles of association of EEHC and affiliated companies are being modified to be referred to the Board of Directors of the Holding Company for approval.
- An organizing regulation has been developed and approved to regulate the work of the Board of Directors of EEHC and affiliated companies so that to activate the supervisory role of the Board, and a text has been included regarding the assessment of the Board's performance.
- The Board of Directors of EEHC and affiliated companies were re-formed, taking into consideration the criteria of skills and experience that must be possessed when selecting members of the Board.
- A series of workshops and training programs were held to train all members of the Boards of EEHC and affiliated companies with the aim to enhance their governance skills and acquaint them with the responsibilities of their audit committees.
- Work is underway on the adoption of the Governance Charter prepared by the project consultant to establish best practice guidelines for improving corporate governance and achieving sustainable corporate development.
- The new prices for selling electricity are announced at a press conference after restructuring the electricity selling prices and are published in the Official Gazette and on the websites of MOERE, EEHC and EgyptERA.
- All vacant posts are announced on EEHC and MOERE websites and published in the daily newspapers for the appointment of outstanding technical and administrative efficacies with the aim of developing the Sector, and the recruitment process is managed in conjunction with a specialized employment company to ensure equal opportunities for applicants.
- A performance appraisal system has been developed for incumbents of leading positions based on the principle of "management by objectives" to be taken as reference in deciding whether or not senior personnel should continue to perform the duties of their jobs in accordance with the regulation of personnel system, a matter that requires evaluating incumbents of leading positions at the end of every two years according to certain criteria.
- A series of distinguished training courses are being implemented in internal audit at the level of audit departments of EEHC and its affiliated Companies.

- **A Governance Report has been prepared in clarification to what extent the various rules of governance practices are complied with and a regulatory environment is available. The Report included the applied practices in EEHC and affiliated companies which are represented in the following:**

1. **Board of Directors:** composition of the Board, the committees emanating therefrom, the role of the Secretary of the Board and how works of the Board and its committees are conducted.
2. **Regulatory Environment:** how the Company defines the internal control system, Audit Department, Compliance Department, governance as well as the role of the Accountability state Authority (ASA).
3. **Disclosure and Transparency:** how the Company discloses material and non-material information.
4. **Charters and Policies:** the charters applied in the Holding Company and affiliated companies.

Compliance

Within the framework of activating the regulatory environment, the Company's adoption of a proactive approach to consistently comply with the legislations in force and reduce the risks of non-compliance, and in completion of approving the compliance and reporting policy, the following has been done:

- In cooperation with the consultant PricewaterhouseCoopers (PWC), an inherent risk register for the various sectors and departments of EEHC is being finalized to ensure setting up a strategy to deal with these risks in order to reduce their impacts.
- Disseminating a culture of transparency and reporting on illicit practices that paid off by receiving many complaints from the employees of the Holding Company and affiliated companies, where complaints are verified and resolved urgently.
- A program with action plan is being developed for assessment of the extent the laws and internal regulations are complied with.

Audit Committee

- Several topics were discussed by the Audit Committee as follows:

- Studying the development of systems to properly manage the risks confronted by EEHC and affiliated companies and suggest means to handle these risks.
- Assessing the extent of implementing the compliance plan and following up the reports of the Compliance Department.
- Reviewing both the Company's budget for FY 2019/2020 and initial financial statements and final accounts for FY 2018/2019, as well as recommending referral thereof to the Company's Board of Directors.
- Discussing the Financial Sector's Report on the final financial statements for FY 2018/2019 and their complementary notes.

- The Committee is keen to issue its directives to the General Department of Information and Internal Audit Department to assist it in studying the reports and recommendations of the audit committees of affiliated companies and preparing a summary statement of the results of these committees' work, for example:

- Ensuring there is an effective control system to protect the assets.
- Monitoring procurement operations to ensure compliance with the applied policies, procedures and regulations, and that purchases are duly approved by the competent authority.
- Considering the notes expressed by ASA on the budget, financial statements and final accounts of each company, and to what extent the respective company acted to handle such notes, especially the repeated ones.
- Studying the causes of problems related to inventory and remnants of installations, developing the root solutions for them, and continuously following up inspections, inventory control and the economic disposal of stagnant stock.
- Studying the unemployed potential and seeking to make the best use of it.
- Monitoring the executive position and examining the reasons for the delay off target.
- Following up the achievement of the commercial performance indicators targeted for each distribution company and the reasons for deviation.


12.00
0.011
-14.00
-26.00
1194.38
Vol : 635.25 M
56.45
43.38
21.55.
6.57

Commercial and Financial Activity

EEHC undertakes the management of its securities portfolio and the investment of its funds in a way that enhances the management of available cash liquidity to secure the payment of the inevitable obligations, including petroleum sector dues, loan and wage burdens, and to arrange the necessary financing to implement investment projects in the Holding Company and its subsidiaries. EEHC is also in continuous coordination with the Ministry of Finance and the Ministry of Petroleum and Mineral Resources to settle the financial entanglements among them which will have great positive impacts on the financial statements of the electricity companies.

Electricity Re-pricing

- Globally accepted electricity pricing policies are intended to ensure that prices:
  - achieve economic and financial efficiency of the electricity utility;
  - cover the cost according to the voltage of feeding; and
  - give the correct indicator of electricity use, with due consideration to the social dimension (that is, consumers can afford the value of their electricity bills), transparency, ease and justice.
- In accordance with the mandate given to it under the Electricity Law, Egypt ERA (the Regulator) has been assigned with reviewing the electricity selling prices approved by the Council of Ministers for the 5th year of the Electricity Tariff Restructuring Plan (ETRP) (FY 2018/2019) and developing a proposal for adjusting prices that achieves balance between the interest of the electricity companies and maintaining their continuity in providing the service entrusted to them, taking into account low-income population and gradation in electricity selling prices to different segments of consumers according to amount of consumption.
- On May 21, 2019 the Minister of Electricity and Renewable Energy issued the Decision no. 111 of 2019 regarding the adjustment of the electricity selling tariff for 2019/2020 (6th year of ETRP) as from 1 July 2019 until 30 June 2020.

The following table shows the tariff for selling electricity and the customer service charge set for the different uses during the year2019/2020:

Purpose of Use	Demand Charge(1) EGP/KW month	Average price of energy(2) Pt./KWh	Off-peak(3) Pt./KWh	On-peak(3) Pt./KWh	Customer Service Charge EGP/Customer-month
Ultra-High Voltage (220-132 KV)					
Kima	-	72.0	-	-	35
Subway	-	100.0	-	-	
Other Subscribers	40	105.0	96.9	145.4	
High Voltage (66-33 KV)					
Subway	-	105.0	-	-	35
Other Subscribers	50	110.0	101.5	152.3	
Medium Voltage (22-11 KV)					
Irrigation	60	99.9	92.2	138.3	35
Water and Sanitation Companies	-	120.0	0.0	0.00	
Other Subscribers	60	115.0	106.2	159.2	
Low Voltage (380V)					
Irrigation	-	75.0	-	-	4
Water and Sanitation Companies	-	125.0	-	-	15
Other Subscribers	-	125.0	-	-	
Public lighting	-	125.0	-	-	

Household Uses

Consumption brackets KWh/ month	Pt./KWh	Customer service EGP/customer-month
0-50	30.0	1
51-100	40.0	2
From 101 to 1000 KWh		
0-200	50.0	6
201-350	82.0	11
351-650	100.0	15
651-1000	140.0	25
More than 1000 KWh		
0-1000 and more	145.0	40
Zero Reading and closed	-	9

Commercial Uses

Consumption brackets KWh/ month	Pt./KWh	customer service EGP/customer-month
0-100	65	5
From 101 to 250 KWh		
0-250	115.0	15
From 251 to 1000 KWh		
0-600	140.0	20
601-1000	155.0	25
More than 1000 KWh		
0-1000 and more	160.0	40
Zero Reading and closed	-	9

(*) Prices are applied based on a 0.92 power factor.

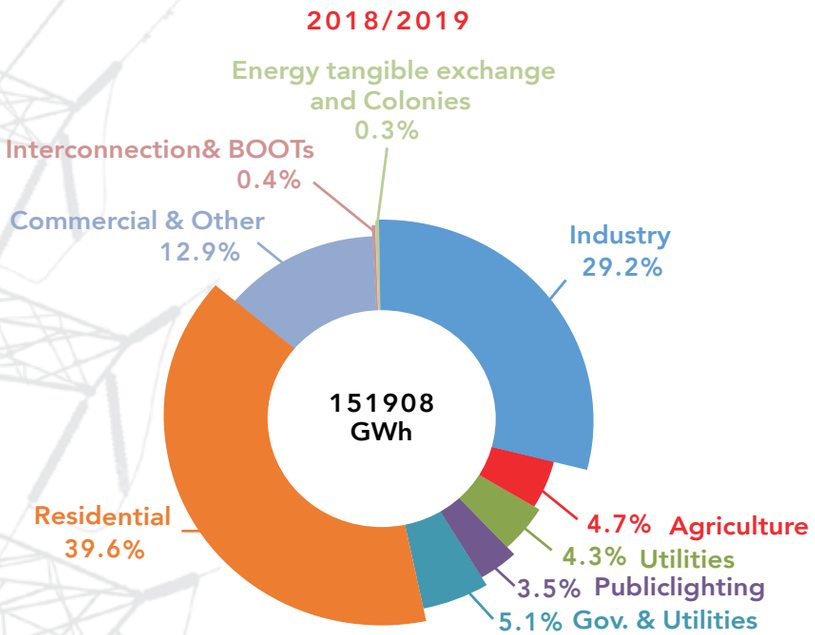
(1) Demand Charge is applied based on the maximum demand of a customer recorded over 3-month period.

(2) In case no meters are available, the average energy price is applied.

(3) The time-of-use tariff is applied according to the smart meter application program, and the peak period is four hours starting a time defined by the Ministry of Electricity and Renewable Energy.

Total Sold Energy on All Voltages Classified to Uses

Type of Usage	Distribution of Electricity Energy		Egyptian Electricity Transmission Company (EETC)		Grand Total	
	sold energy (GWh)	Variation %	sold energy (GWh)	Variation %	sold energy (GWh)	Variation %
Industries	20692	16.6	23724	86.1	44416	29.2
Agriculture	6095	4.9	1116	4.1	7211	4.7
Utilities	5967	4.8	611	2.1	6578	4.3
Public lighting	5282	4.3	0	0.0	5282	3.5
Governmental Entities	7659	6.2	46	0.2	7705	5.1
Residential	60115	48.3	0	0.0	60115	39.6
Commercial and others	18562	14.9	1089	4.0	19651	12.9
Interconnection &BOOTs	0	0.0	568	2.1	568	0.4
Energy tangible exchange and colonies	0	0.0	382	1.4	382	0.3
Grand total	124372	100	27536	100.0	151908	100.0



Development of Total Sold Energy According on All Voltages (GWh)

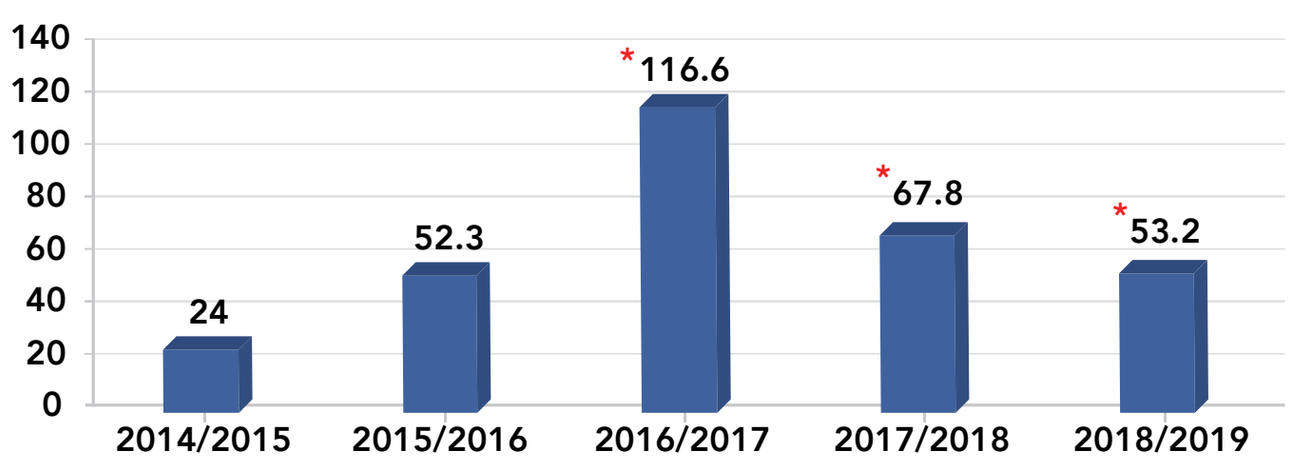
Type of Usage	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Industries	38242	38310	41479	43623	44416
Agriculture	6555	6755	6743	7057	7211
Utilities	6338	6519	6395	6733	6578
Public lighting	5353	5293	5115	4927	5282
Government Entities	6062	6292	8630	8562	7705
Residential	64546	73361	64125	66809	60115
Commercial and Others	18851	18788	18585	19179	19651
Interconnection& BOOTs	699	510	268	228	568
Energy tangible exchange and Colonies	260	472	266	491	382
Grand total	146906	156300	151606	157610	151908

Financial Position of EEHC and its Affiliated Companies

Billion EGP

Description	2017/2018	2018/2019	Variation %
Net Fixed Assets	289.8	368.2	27.1
Inventory	30.8	35.3	14.6
Cash and Banks	16.0	14.6	(8.7)
Net Working Capital	(76.3)	(108.6)	(42.3)
Equity	25.2	29.4	16.7
Total Revenues (excluding revenues from exchanged energy)	153.9	165.5	7.5
Total Costs & Expenses (excluding expenses of exchanged energy)	153.6	162	5.5
Net Profit (Loss)	0.351	3.5	-
Total Investments *	67.8	53.2	(21.5)
Financing burdens (installments & Interests)	36.6	45.4	24
Balances of Loans	333.1	312.2	(6.3)

Executed Investments at EEHC & Affiliated Companies



* That includes part of the fast-track plan for summer 2015 and EEHC projects, and the increase in investments is due to the surge in material prices resulting from the economic decisions, foremost among which is the liberalization of foreign exchange rates.

Companies Having Capital Shares by EEHC

- EEHC has capital contributions in the following companies:

Company	Authorized capital	Percentage of capital participation
The Egyptian Company for Manufacturing Electricity Insulators	100 Million EGP	4.97 %
Electric power System Engineering Company	5 Million EGP	20 %
Egyptian German Electric Manufacturing Company (EGEMAC)	500 Million EGP	62.48 %
Power Generation Engineering and Services Company (PGESCO)	10 Million EGP	20 %
Arabian Consulting & Engineering Services Company (ACESCO)	3 Million USD	49 %
Egyptian Syrian Company for Studies and Engineering Consultations *	20 Million SYP	50 %
African Company of Electrical and Mechanical Projects (Libya)*	5 Million LYD	10 %
El-Nasr Transformers and Electrical Products (ELMACO)	150 Million EGP	9.67 %

* Companies stopped due to current events.

Consolidated Balance Sheet of EEHC and Affiliated Companies as at 30-6-2019

(Amounts in 1000 LE)

comparative 2018	ITEM	Cost	Cumulative Depreciation	Net Value
	ASSETS			
	Non-Current Assets			
289753313	FIXED ASSETS	461943509	93716211	368227298
118388594	projects in progress	74083334		74083334
45594	Long-term investments	169441		169441
33731140	loans & debit balances	18027598		18027598
12063	Other Assets	8493		8493
441930704	**Total Non-Current Assets**	**554232375**	**93716211**	**460516164**
	CURRENT ASSETS			
109213	Retained assets for sale	1830	1670	160
30821418	Inventory	35302937		35302937
138130960	Clients, notes receivable & debit accounts	153600358		153600358
16043583	Cash In Hand &Cash At Banks	14636598		14636598
185105174	**Total Current Assets**	**203541723**	**1670**	**203540053**
627035878	**Total Assets**	**757774098**	**93717881**	**664056217**
	Equity			
26302293	Capital	29300670		29300670
	Reserves			
2351641	Legal Reserve	2497085		2497085
674589	Capital Reserve	723590		723590
1821341	Other Reserves	183714		183714
46035	Revaluation Surplus	46035		46035
-6044756	Carried Profit (Loss)	-3309861		-3309861
25151143	**Total Equity**	**29441233**	**0**	**29441233**
	NON-CURRENT LIABILITIES			
291644708	Long-Term Loans From Banks	279131658		279131658
41417708	Long-Term Loans From Other Entities	33024901		33024901
7449832	Other Long Term Liabilities	10310787		10310787
340512248	**Total Non-Current Liabilities**	**322467346**	**0**	**322467346**
	Current Liabilities			
6354059	provisions	5819347		5819347
1347712	Credit Banks	156981		156981
253670716	Suppliers , Notes Payable & Credit Accounts	306171310		306171310
261372487	**TOTAL CURRENT LIABILITIES**	**312147638**	**0**	**312147638**
627035878	**TOTAL EQUITY & LIABILITIES**	**664056217**	**0**	**664056217**

Chairman

Eng. Gaber Dessouki Moustafa

Board Mermber
Financial , Commercial & Financing Affairs

ACC. Nadia Abdel-Aziz Katry

Consolidated Income Statement of EEHC and Affiliated Companies for the period from1-7-2018 to 30-6-2019

(Amounts in 1000 LE)

Comparative Year 1.7.2017 to 30.6.2018	Item	1.7.2018 to 30.6.2019	
	Revenues of Current Activity:		
132295	Net Sales of Finished Products (Other than Electricity Sales)	112981	
31424	Net Sales of Finished Products (Energy)	55113	
97957550	Net Sales of purchased goods (Energy)	126449111	
25978	Net Sales of purchased goods (Lamps)	22613	
3344045	Rendered Services(customer service)	2540136	
3899360	Rendered Services(Other)	5876270	
1548413	Revenues of Operation for Others	3732082	
333355	Electricity Hospital Revenues	443814	
1325842	Other Revenues of Current Activity	40143	
108598262	**Total Revenues of Current Activity**		139272263
	Less:		
-138549278	Cost of Production and Purchasing Sold Units	-144082854	
	Plus:		
40175629	Grants and Subsidies	17312905	
5020	Grants and Subsidies(Assets gift)		
10229633	**Gross Profit (Loss)**		12502314
	Plus:		
	Investment Revenues:		
17598	Revenues of Other Financial Investments	18286	
	Other Revenues & Profits:		
166023	Provisions No Longer Required	1086393	
3316190	Miscellaneous Revenues & Profits	5642195	
	Less:		
	Adminstrative Expenses:		
-16088	Salaries, Attendance & Transport Allowances for Board Members	-27176	
-5396515	Other Administrative Expenses	-6908308	
-3770963	**Costs of marketing**	-4729810	
	Burdens and Losses:		
-1750939	Provisions (other than Depreciation and Fall of Inventory Prices)	-2160954	
-47	Bad Debts	-122	
-1559559	Miscellaneous Burdens and Losses	-2383084	
	Plus:		
1116815	Credit Interests	1797858	
2352148	**Net Profit (Loss)**		4837592
	Plus (or Less) :		
-2062694	Profits (Losses) of Foreign Exchange Differences	-1477959	
0	Revenues (Expenses) of Previous years		
-127344	Capital Profits (Losses)	72304	
203493	Extraordinary Revenues and Profits (Losses)	205864	
-1986545			-1199791
365603	**Net Profit (Loss) Before Income Taxes**		3637801
14117	Income Taxes	70029	70029
351486	**Net Profit (Loss)**		3567772

Chairman

Eng. Gaber Dessouki Moustafa

Board Member
Financial , Commercial & Financing Affairs

ACC. Nadia Abdel-Aziz Katry