ARAB REPUBLIC OF EGYPT

MINISTRY OF ELECTRICITY & RENEWABLE ENERGY

EGYPTIAN ELECTRICITY HOLDING COMPANY

ANNUAL REPORT 2016/2017

Designed and Printed by
PCC Advertising (0122) 2111 737
www.pccadvertising.com

CONTENTS

Vision and Mission

Vision

World Class Leadership and Excellence of a 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

Recognizing the importance of its mission towards the society, which is to continue to improve the level of services provided by the Electricity Sector and develop them to accommodate the increasing demand for electrical energy to meet the needs of the economic and social development plans of our country in accordance with the international performance standards in view of the requirements of the Electricity Utility and Consumer Protection Regulatory Agency (EGYPTERA),

the Egyptian Electricity Holding Company (EEHC) oversees, monitors and follows up the activities of its affiliated companies as an integrated economic unit in the fields of production, transmission and distribution of electrical energy to assist them in developing performance, improving technical, financial and operational efficiency and rationalizing expenditures with optimum utilization of all available resources to maximize profitability and endure the burdens of self-financing for future plans.

The Company pays special attention to the requirement that its subsidiaries achieve the performance indicators, whether technical, operational, financial or commercial, that have been developed in accordance with international standards. In order for the subsidiaries to meet these indicators, EEHC does not hesitate to develop the mechanisms and provide the technical and human capabilities necessary for continuous development in the production, transmission and distribution techniques to cope up with global advancement in this field.

EEHC continues to plan for the expansion and development of the electrical network, which requires the construction of new power plants, substations, transmission and distribution networks, and rehabilitation of the existing ones, taking care to use state-of-the-art global technologies.

The future vision of the Company is to transform the single-buyer scheme gradually into a competitive market within the Ministry's endeavor to involve the private sector in the production of electricity and to allow the use of the national electricity grid in selling electricity to consumers.

EEHC is also keen to cooperate and coordinate with the relevant Egyptian companies and bodies to ensure continuity of the electrical supply and maximize the local contribution to the various projects of its plans. In view of the Company's desire for a larger market for its services, EEHC is interested in cooperating with Arab and African companies and bodies in marketing the Egyptian expertise in this field. In the forefront of cooperation are the electrical interconnection projects, training and participation in world events related to energy studies, seminars and conferences.

Out of its belief of the importance of documenting information, EEHC is issuing this statistical report on its activities and achievements in the year 2016/2017, hoping to be an adequate reference for specialists in electrical energy field.

In conclusion, I would like to extend my thanks and appreciation to all the employees of EEHC and its subsidiaries who contributed to all achievements mentioned in this report.

Chairman

Eng. Gaber Dessouky Mustafa

Egyptian Electricity Holding Company (EEHC)

Egyptian Electricity Holding Company (EEHC)

The Egyptian Electricity Holding Company (EEHC) is an Egyptian Joint-stock company established pursuant to law no. 164 of 2000 and articles no. 2, 7 &11 (excluding part 11) of law no. 12 of 1976 stipulating the establishment of the Egyptian Electricity Authority (EEA) and law no. 159 of 1981.

Headquarter	Issued Capital (Billion EGP)	Authorized Capital (Billion EGP)	Address	Phone Numbers
Cairo	17.995	25.000	Ramses St. Extension, Abbasia, Cairo	02/22616487 02/22616306 Fax: 02/22612239 Fax: 02/22616512

Objectives:

- Producing, transmitting and distributing electrical energy for all uses on the various voltages with high efficiency at affordable prices.
- Carrying out planning, studies and designs in the field of competence of the Company, its subsidiaries and other companies working in the field of electrical energy.
- Implementing thermal power plant projects for electrical energy production.
- Implementing electrical energy transmission and distribution projects.
- Managing the National Control Center for optimum operation of electric energy production, transmission and distribution.
- Purchasing the electrical energy produced at power plants constructed by authorized local and foreign investors and selling it on the various voltage networks.
- Managing, operating and maintaining electricity transmission and distribution networks at the various voltage levels, selling electrical energy on the various voltages throughout the country and making the optimal utilization of these networks.
- Implementing electricity interconnection projects, exchanging electrical energy with other countries, and selling and buying it according to the needs of electrical grids interconnected with the Unified National Grid in Egypt.
- Conducting researches and tests of electric equipment at the various voltage levels.
- Carrying out consultancy and service works in the field of electrical energy production, transmission and distribution locally and internationally.
- Producing electrical energy from all sources except nuclear energy.
- Producing and selling desalinated water.

Organization Structure of EEHC

Board of Directors of EEHC
30/6/2017

Eng. Gaber Dessouki Mustafa Ibrahim
Chairman

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

Eng. Mohamed Abdel-Moneim El-Tablawy
Executive Director for Planning, Researches & Service Companies' Affairs

Eng. Mahmoud Mohamed El-Naquib
Executive Director for Production Companies' Affairs

Eng. El-Husseiny El-Husseiny El-Far
Executive Director for Distribution Companies' Affairs

Eng. Moustafa Abdel-Khaleq Abu-Zeid
CEO of Mechanical & Electrical Directorate

Acc. Abdel-Mohsen Khalaf Ahmed
Executive Director for Human Resources, Training & Administrative Affairs

Mr. Hamed Abul-Magd Mahran
Sub-Governor for Foreign Relations, Representing the Central Bank of Egypt

Dr. Eng. Mohamed Moussa Omran
1st Under-Secretary of State for Researches & Planning, Representing the Ministry of Electricity & Renewable Energy

Mr. Mohamed Farid Abdel-Fattah
Head of Infrastructure, Activities & Production Services, Representing the Ministry of Planning

Mr. Abdel-Nabi Abdel-Aziz Mansour
Chief of Final Accounts' Sector, Representing the Ministry of Finance

Eng. Ossama Ahmed Wafeek El-Baqly
Chairman of the Holding Company for Natural Gases (EGAS), Representing the Ministry of Petroleum

Mr. Waleed Eid Mahmoud El-Haddad
Head of Central Dept. for Cooperation with East-Asia Countries, Representing the Ministry of Investment & International Cooperation

Mr. Adel Nazmy Ali Hassan
Board Member, Representing the Employees

A Glance on Technical Achievements in 2016/2017

- Starting the commercial operation of the steam unit of Suez 650 MW power plant in March 2017.
- Three combined-cycle power plants are under construction in Burullus, Beni-Suif and the New Capital with a total capacity of 14,400 MW, of which (14) units have already been connected to the national grid by the end of June 2017 with a total capacity of 5600 MW, and the project is expected to be fully completed in June 2018.
- Contracting for the conversion of the gas units in El-Shabab, 6 October, West Damietta, the extension of West Assiut and the extension of West Damietta power plants to combined cycle operation.
- Putting (5) Caterpillar diesel units into operation with a total capacity of 25 MW in Siwa, Kharja and Luxer.
- In view of the Cabinet's approval on 14/4/2014 adopting clean coal as a source of energy, the year 2016/2017 witnessed:
  - Cooperation with one of the investment companies to construct a clean coal power plant in Oyoun Moussa in two phases, each has a capacity of 1320 MW, through BOO scheme and the commercial operation of the project is scheduled in the five-year plan (2022-2027).
  - On 30/04/2017, three consortia submitted their technical and financial offers for implementation of a coal fire power plant in Hamrawain with total capacity of 6000 MW.
  - Contracting on 30/05/2017 with the consultant TRACTEBEL-Belgium for the evaluation of three proposals from international consortiums to construct a power plant operated by clean coal technology with a capacity of 6000 MW through the EPC + Finance scheme in Hamrawein.

- On 15/06/2017, in collaboration with the Hydro Power Plants Executive Authority (HPPEA), the global consultant ARTELIA was hired to evaluate the technical and financial proposals presented by the Chinese Sino Hydro Co. for construction of the largest pumped storage power plant in Africa and Middle East with a capacity of 2400 MW through the (EPC + Finance) scheme in Mountain Ataqa.
- Continuing coordination with the Petroleum Sector to secure sufficient fuel supplies to the existing thermal power plants and for future plans.
- Completing development of the performance of the warehouse system and codifying the stock items of the production companies and having them linked to a unified network to reduce the value of idle stock and maximize the utilization of the current stock.

- Initiating the implementation of a plan aimed at strengthening the electrical network to be able to evacuate the generation capacities to meet the expected loads either by developing the existing components or expanding the network and its facilities to assimilate the added capacities of the fast-track plan and Siemens projects as well as the planned generation projects.
- The aggregate executed investments in the production, transmission and distribution projects (new, replacement and rehabilitation) amounted to about EGP 116.6 billion during FY 2016/2017.
- Pushing ahead the energy efficiency improvement and conservation programs through the following:
  - Installing 1.72 million high-pressure sodium luminaires (100-150 watt) and LED luminaires, by the end of October 2017, out of a targeted number of 3.9 million luminaires for public illumination in a total value of EGP 2.1 billion to be paid by the Ministry of Finance, and the project is expected to be completed during Financial Year 2017/2018.
  - Completing the distribution and installation of about 10.8 million LED lamps out of a total targeted number of 13 million lamps through the affiliated distribution companies for household lighting, and the project is expected to be completed during FY 2017/2018.
  - Cooperating with Wadi El-Nile Company for implementation of a pilot project of 250'000 smart meters within the geographical area of six distribution companies to be upscaled at the level of all distribution companies.
  - Completing the Procurement of one million pre-paid meters in May 2017 to the affiliated distribution companies to be installed at customers' premises.
  - Installing 1.3 million prepaid coded meters during the period from July 2016 until October 2017.
  - Launching a massive campaign in all media to raise awareness of the end consumer and develop the culture of rationalizing energy consumption.
- Initiating the implementation of the Energy Efficiency Improvement Project funded by the Japanese International Cooperation Agency (JICA) in an amount of about J. Yen 25 billion for North Cairo, Alexandria and North Delta Electricity Distribution Companies' networks within an execution period of 72 months.
- Open several effective communication channels to receive and respond to consumers' complaints through:
  - Hot Line (121).
  - Text messages service and "Electricity Bill Complaints" mobile applications.
  - Introduction of the "General Department of Political Communication" to receive complaints.
- Improving and developing the service rendered to customers and facilitating it through:
  - The development of Customer Service Centers.
  - Contracting with "FAWRY DAHAB-DELTA" Co. to facilitate payment of bills and charging the pre-paid meter cards.
- During FY 2016/2017, works proceeded in the field of electrical interconnection with neighboring countries, and the 1500 MW electrical interconnection project between Egypt and Saudi Arabia is expected to be commissioned in the fourth quarter of 2020 and be fully completed to exchange 3000 MW during the fourth quarter of 2021.
- In the field of new and renewable energy, the second phase of the feed-in tariff program for new & renewable energy projects was announced in September 2016 for a total capacity of 4300 MW (2000 MW wind and 2300 MW solar PV).

All these accomplishments led to a remarkable improvement of most performance indicators, notably the following:

- Increase of the total installed capacity connected to the unified national grid from 38'857 MW on 30/6/2016 up to 45'008 MW on 30/6/2017 at a variation rate of 15.8%.
- Meeting the peak load in 2016/2017 that reached 29'400 MW against 29'200 MW in 2015/2016 without load shedding.
- Improvement in fuel consumption rate at thermal power plants, including private sector power plants, where it reached 210 gm/KWh (Gen.) in 2016/2017 against 212.4 gm/KWh (Gen.) in 2015/2016 at a variation rate of 1.1% (improvement).
- Number of customers at all voltage levels in the affiliated transmission and distribution companies has increased to 33.7 million customers in 2016/2017 compared to 32.4 million customers in the preceding year at a variation rate of 4%.
- Adding the following equipment to transmission and distribution networks during the year 2016/2017:
  - about 15'000 MVA total capacities of substations and transformers on the various voltages.
  - about 17'400 km total lengths of overhead lines and ground cables on the various voltages.
- Reducing the time for connecting the electrical current to customers on the medium voltage to eighteen days only, not including digging permits.

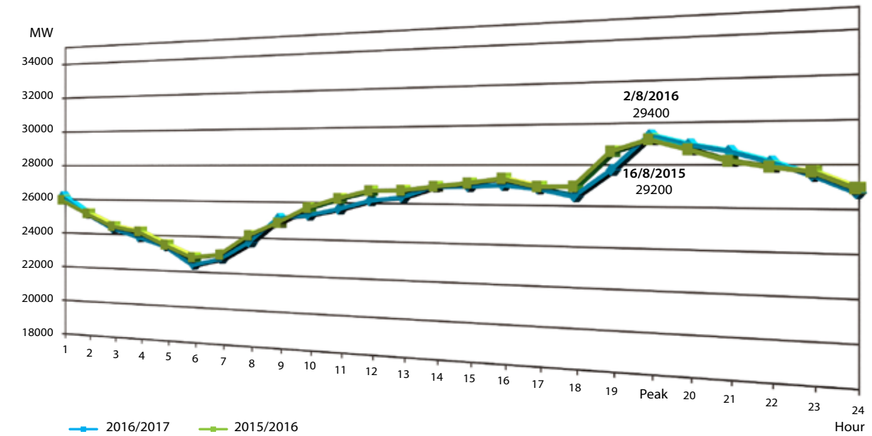
Electricity in 2016/2017

Description		2015/2016	2016/2017	Variation %
Total installed Capacity [1]	MW	38857	45008	15.8
- Hydro	MW	2800	2800	0
- Thermal Affiliated Companies	MW	29486	30037	1.9
- Fast Track Plan	MW	3636	3636	0
- New and Renewable Energy (Wind & Solar) [2]	MW	887	887	0
- Private sector BOOT's (Thermal)	MW	2048	2048	0
- Siemens Plants	MW	-	5600	-
Peak load	MWh	29200	29400	0.7
Total power generated *	GWh	186320	189550	1.7
- Hydro	GWh	13545	12850	(5.1)
- Thermal (including fast track and siemens plants)	GWh	157056	161617	2.9
- New and Renewable Energy [3]	GWh	2225.5	2780	25
- Energy Purchased from (IPPs)	GWh	42.4	35	(17.5)
- Power generated from private sector (BOOT)	GWh	13307	12145	(8.7)
- Power generated from Isolated Plants	GWh	144.1	123	(14.6)
Energy dispatched from production companies (without Boot, Purchased from IPPs)	GWh	167714	172053	2.6
Total fuel consumption [4]	K toe	36189	36487	0.8
Production companies (including FT Plan and Siemens)	K toe	33436	33978	1.6
- H.F.O	K toe	8842	7148	(19.2)
- N.G	K toe	23349	26249	12.4
- L.F.O	K toe	1245	581	(53.3)
Private sector (BOOT)	K toe	2753	2509	(8.8)
Fuel consumption rate of Production companies	gm/kwh gen	212.8	210.2	(1.2)
Fuel consumption rate Including BOOT	gm/kwh gen	212. 4	210	(1.1)
Thermal efficiency (including private sector BOOT)	%	41.3	41.8	1.2
N.G ratio to total fuel Including BOOT	%	72.1	78.8	9.3
N. G ratio for power plants connected to gas grid Including BOOT	%	74.1	80.2	8.2
Total transmission Lines and Cables for HV and extra HV	Km	44904	46317	3.1
Total transmission transformers capacities for HV and extra HV	MVA	110656	120160	8.6
Total length of distribution MV&LV Lines and Cables	Km	460898	476885	3.5
Total capacity for distribution transformers MV&LV	MVA	71103	76600	7.7
No. of customers at Distribution Companies	M	32.4	33.7	4
No. of customers at EETC	C	120	125	4.2
No. of Employees at EEHC and its subsidiaries [5]	Th	169.9	165.4	2.7

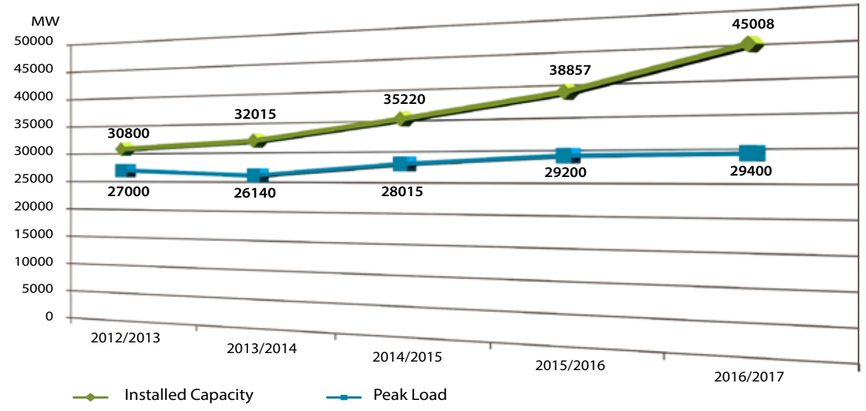
(1) there are isolated plants with a total installed capacity of 215 MW.
(2) the solar component of kuriemat Solar/Thermal Plant is 20 MW.
(3) connected to the national unified grid (wind & solar).
(4) in addition to the total consumed fuel at the isolated plants amounting to 24.9 K toe.
(5) in addition to 1490 workers at Siemens projects and fast-track plan.

Peak load and installed capacity

The Peak Load reached 29'400 MW in 2016/2017 compared to 29'200 in 2015/2016 at a variation rate of about 0.7%.



On 30/6/2017, the installed capacity reached 45'008 MW compared to 38'857 MW on 30/6/2016 at a variation rate of 15.8 %.



The average growth rate of the peak load is 2.2 % & installed capacity is 10% per year during the period from 2012/2013 till 2016/2017.

It is worth mentioning that the installed capacity cannot be utilized in full due to the ageing of some generating units, type & quality of fuel used, adverse impact of high temperatures in Summer on some gaseous units and the combined cycle units, dependence of hydro power plants on the amount of irrigation discharged water defined by the Ministry of Water Resources & Irrigation, as well as the impact of non-uniformity of wind speed and solar irradiance on the renewable energy.

Electrical Power Production

Electrical Power Production

The Electricity Production Companies are:

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

Objectives of the Production Companies:

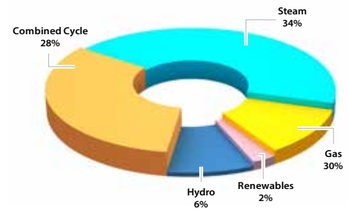
- Production of electrical energy at the affiliated power plants.
- Management, operation and maintenance of the affiliated power plants, and execution of rehabilitation and replacement operations as necessary, all in full compliance with the directions of the National Dispatch Center of the unified 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.
- Sale of the electrical energy produced at the affiliated power plants to the Egyptian Electricity Transmission Company (EETC), and to the Distribution Companies where power is dispatched on medium voltages.
- Implementation of power plant projects upon the approval of EEHC's Board of Directors and according to their planned time schedules.
- Conducting researches and studies within the scope of the Company's activities.
- Carrying out any activities or works related to, or complementing, the Company's objectives
- Carrying out any works entrusted by other parties where such works fall within the scope of work of the Company and realizes economic benefit to it.

Installed Generation Capacities 30/6/2017*

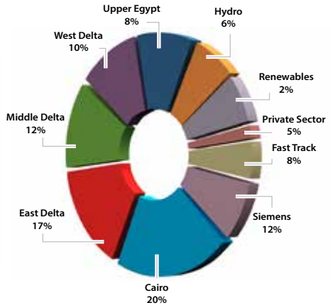
The total installed capacity in 30/6/2017 reached 45008 MW compared to 38857 MW in 30/6/2016 at a variation rate of about 15.8%, distributed as follows:

Company / list	Cairo	East Delta	Middle Delta	West Delta	Upper Egypt	Hydro	Fast Track	Siemens	Private Sector	Renewables	Total
Gas	1665	2364	0	80	0	0	3636	5600	0	0	13345
Steam	3320	4156	420	3651	1854	0	0	0	2048	0	15449
Combined Cycle	3915	1200	5004	908	1500	0	0	0	0	0	12527
Hydro	0	0	0	0	0	2800	0	0	0	0	2800
Renewables	0	0	0	0	0	0	0	0	0	887	887
Total	8900	7720	5424	4639	3354	2800	3636	5600	2048	887	45008

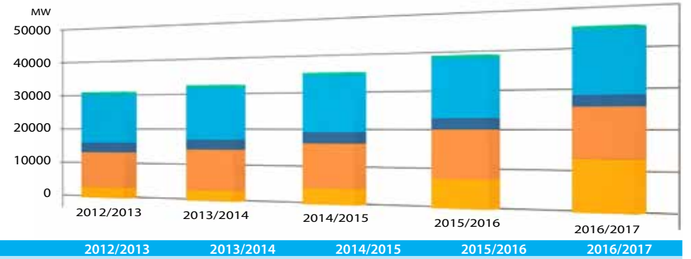
Installed Capacity by Type %



Installed Capacity by Campanies %



Installed Capacity Development by Type of Generation



	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Renwable	687	687	687	887	887
Steam	13808	13783	15082	14798	15449
Hydro	2800	2800	2800	2800	2800
C Cycle	10080	11330	11777	12527	12527
Gas	3425	3415	4874	7845	13345
Total	30800	32015	35220	38857	45008

The average growth rate of the installed capacity is 10% per year during the period from 2012/2013 till 2016/2017.

* Renewables include wind farms' capacity of 747 MW, Solar / Thermal Kuriemat P.P. capacity of 140 MW of which the solar component amounts to 20 MW.

* In addition to isolated and reserve units with a total capacity of 215 MW.

Installed Capacities of Power Plants (30/6/2017) [1]

Comp.	Station		No. of Units	Installed Capacity. (MW)	Actual capacity	Fuel	Commissioning Date
Cairo	Shoubra El-Kheima	(St)	4 x 315	1260	1260	N.G-H.F.O	84-85-1988
	Shoubra El-Kheima	(G)	1 x 35	35	35	N.G-L.F.O	1986
	Cairo West Ext	(St)	2 x 330 + 2 x 350	1360	1360	N.G-H.F.O	1994-2011
	Cairo South I	(G)	3 x 110	330	300	N.G-L.F.O	1989
	Cairo South II	(CC)	1 x 110 + 1 x 55	165	150	N.G-L.F.O	1995
	Cairo North	(CC)	4x 250 +2 x 250	1500	1500	N.G-L.F.O	2004-2006-2007-2008
	Wadi Hof	(G)	3 x 33.3	100	75	N.G-L.F.O	1985
	El-Tebeen	(St)	2 x 350	700	700	N.G-H.F.O	2010
	6 October	(G)	8 x 150	1200	1200	N.G-L.F.O	2012-2015-2016
	North Giza	(CC)	6x 250 +3 x 250	2250	2250	N.G-L.F.O	2014-2015-2016
	Total			**8900**	**8830**		
East Delta	Ataka	(St)	2 x 150 + 2 x 300	900	900	N.G-H.F.O-	85-86-1987
	Abu Sultan	(St)	4 x 150	600	600	N.G-H.F.O	83-84-1986
	Shabab	(G)	3 x 33.5	100.50	91.5	N.G-L.F.O	1982
	New Gas Shabab	(G)	8 x 125	1000	1000	N.G-L.F.O	2011
	Arish	(St)	2 x 33	66	66	N.G-H.F.O	1995-1996
	Oyoun Mousa	(St)	2 x 320	640	640	N.G-H.F.O	2001
	New Gas Damietta	(G)	4 x 125	500	500	N.G-L.F.O	2011
	Damietta West	(G)	4 x 125	500	500	N.G-L.F.O	2012-2013
	Damietta	(CC)	6 x 132 + 3 x 136	1200	1164	N.G-L.F.O	89 -1993
	Sharm El-Sheikh	(G)	1 x 23.7 + 4 x 24.27	120.5	109	L.F.O	1975-1979-1997
	Hurghada	(G)	3 x 23.45 + 24.273×	143	131	N.G-L.F.O	1977-1979
	Ain Sokhna	(St)	2 x 650	1300	1300	N.G-H.F.O	2015
	Thermal Suez [2]	-	1 x 650	650	650	H.F.O-L.F.O	2017
	Total			**7720**	**7652**		
Middle Delta	Talkha	(CC)	8 x 19.5 + 2 x 40	236	236	N.G	79-80-1989
	Talkha 210	(St)	2 x 210	420	420	N.G-H.F.O	1993-1995
	Talkha 750	(CC)	2 x 250 +1 x 250	750	750	N.G	2006-2010
	Nubaria 1,2	(CC)	4 x 250 + 2 x 250	1500	1500	N.G-L.F.O	2005-2006
	Nubaria 3	(CC)	2 x 250 +1 x 250	750	750	N.G-L.F.O	2009-2010
	Mahmoudia	(CC)	8 x 21+ 2 x 50	268	268	N.G-L.F.O	1983-1995
	El-Atf	(CC)	2 x 250 + 1 x 250	750	750	N.G-L.F.O	2009-2010
	Banha	(CC)	2 x 250+ 1 x 250	750	750	N.G-L.F.O	2014-2015
	Total			**5424**	**5424**		
West Delta	Kafr El-Dawar	(St)	4 x 110	440	440	N.G-H.F.O	1980-1984-1986
	Damanhour Ext 300	(St)	1 x 300	300	300	N.G-H.F.O-L.F.O	1991
	Damanhour	(CC)	4 x 25 + 1 x 58	158	154	N.G-L.F.O	1985-1995
	Abu Kir New	(St)	2 x 650	1300	1300	N.G-H.F.O	2012-2013
	Abu Kir	(St)	4 x 150 + 1 x 311	911	900	N.G-H.F.O	1983-1984-1991
	Abu Kir	(G)	1 x 24	24	23	L.F.O	1983
	El-Seiuf [3]	(G)	1 x 33.3	33	22	N.G-L.F.O	1984
	Karmouz	(G)	1 x 11.37 + 1 x 11.68	23	18	L.F.O	1980
	Sidi Krir	(St)	2 x 320	640	640	N.G-H.F.O-L.F.O	1999-2000
	Sidi Krir	(CC)	2 x 250 + 1 x 250	750	750	N.G-L.F.O	2009-2010
	Matrouh	(St)	2 x 30	60	60	N.G-H.F.O-L.F.O	1990
	Total			**4639**	**4607**		

Installed Capacities of Power Plants (30/6/2017) [1]

Comp.	Station		No. of Units	Installed Capacity. (MW)	Actual capacity	Fuel	Commissioning Date
Upper Egypt	Walidia	(St)	2 x 300	600	600	H.F.O - L.F.O	1997
	Kuriemat	(St)	2 x 627	1254	1254	N.G - H.F.O	1997-1998
	Kuriemat 1	(CC)	2x250+1x250	750	750	N.G	2007-2009
	Kuriemat 2	(CC)	2x250+1x250	750	750	N.G	2009-2011
	Total			**3354**	**3354**		
Fast Track Plan	Cairo Mobile	(G)	6 x 25	150	150	L.F.O	2016
	Ataka	(G)	2x156+2x164	640	640	N.G-L.F.O	2016
	Port Said Ext	(G)	2 x 43	84	84	L.F.O	2017
	El-Huraghda Ext	(G)	6 x 48	288	288	N.G	2017
	Sharm El-Sheikh Ext	(G)	6 x 48	288	288	L.F.O	2016
	West Damietta Ext	(G)	4 x 125	500	500	N.G	2016
	New Mahmoudia	(G)	2 x 168	336	336	N.G-L.F.O	2016
	West Assiut	(G)	8 x 125	1000	1000	H.F.O-L.F.O	2016
	Upper Mobile	(G)	14 x 25	350	350	L.F.O	2016
	Total			**3636**	**3636**		
Siemens	Burulls [4]	(CC)	6×400	2400	2400	N.G-L.F.O	2017
	Beni Suef [5]	(CC)	6×400	2400	2400	N.G-L.F.O	2017
	New Capital [6]	(CC)	2×400	800	800	N.G-L.F.O	2017
	Total			**5600**	**5600**		
New & Renwable	Zafarana(Wind)	(W)	105x0.6+117x0.66 +478x0.85	547	120	Wind	2007-2008-2009-2010
	Gabal El-Zeit	(W)	2X100	200	120	Wind	2016
	Kuriemat Solar / Thermal	(S/G)	1 x 70 + 1 x 50 + 1 x 20	140	140	Solar/ N.G	2011
	Total			**887**	**380**		
Private Sector (BOOT)	Sidi Krir 3.4	(St)	2 x 341.25	682.5	682.5	N.G-H.F.O	2001-2002
	Suez Gulf	(St)	2 x 341.25	682.5	682.5	N.G-H.F.O	2002-2003
	PortSaid East	(St)	2 x 341.25	682.5	682.5	N.G-H.F.O	2002-2003
	Total			**2048**	**2048**		
Hydro Plants	High Dam		12 x 175	2100	2100	Hydro	1967-1970
	Aswan Dam I		7 x 40	280	280	Hydro	1960
	Aswan Dam II		4 x 67.5	270	270	Hydro	1985-1986
	Esna		6 x 14.28	86	86	Hydro	1993
	Naga Hamadi		4 x16	64	64	Hydro	2008
	Total			**2800**	**2800**		
Total				**45008**	**44331**		

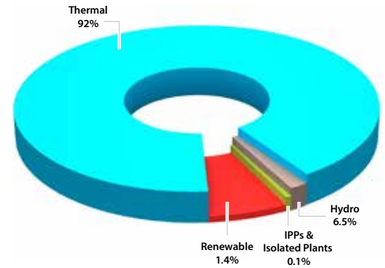
[1] In addition to 215 MW units isolated plants and EL Salam P.P (Diesel) 22.4 MW.
[2] Commercial operation for Suez thermal, capacity 650 MW in Jan 2017.
[3] Demolition three steam units in El-Seiuf, capacity 100MW in April 2017.
[4] Commercial operation of four Gas units in Burulls, capacity (4 x 400 MW) in May 2017, start to connect to the grid for two gas unit in May 2017.
[5] Commercial operation of six Gas units in Beni Suef, capacity (6 x 400 MW) in March, April, May 2017.
[6] Commercial operation of two Gas units in New capital, capacity (2 x 400 MW) in May 2017.

Generated and Purchased Energy *

By Type of Generation (GWh):

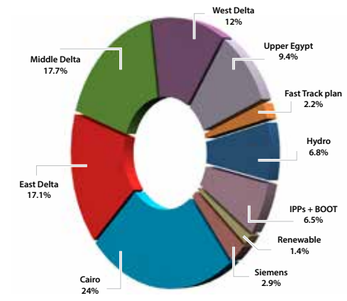
Type		2015/2016	2016/2017	Variation%
Steam	Affiliated Companies	67802	64933	(4.2)
	BOOT	13307	12145	(8.7)
Gas	Affiliated companies	12456	12730	2.2
	Fast Track plan	6544	4198	(35.8)
	Siemens	-	5516	-
Combined. Cycle		70254	74240	5.7
Total Thermal*		170363	173762	2.0
Hydro		13545	12850	(5.1)
New & Renewable	Wind	2058	2200	6.9
	Solar/Thermal	167.5	580	246.3
Total Grid		186133.5	189392	1.8
Isolated Power Plants		144.1	123	(14.6)
Purchased from (IPP's)		42.4	35	(17.4)
Grand Total		**186320**	**189550**	**1.7**

* Includes commissioning tests

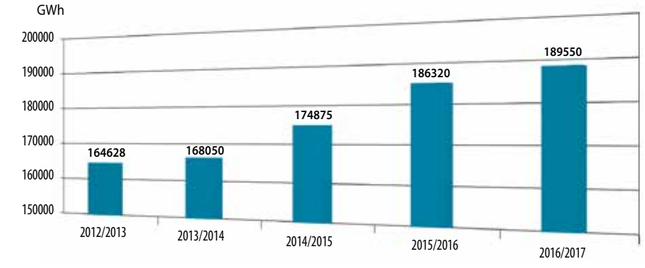


By Production Company (GWh) *:

Company	2015/2016	2016/2017	Variation%
Cairo	40723	44865	10.2
East Delta	29608	32596	10.1
Middle Delta	34497	33636	(2.5)
West Delta	25662	22803	(11.1)
Upper Egypt	20022	18003	(10.1)
Hydro plants	13545	12850	(5.1)
Fast Track plan	6544	4198	(35.8)
Siemens	-	5516	-
Total Production Companies	170601	174467	2.3
Renewables	2225	2780	24.9
BOOT, Isolated Plants and Purchased from IPPs	13494	12303	(8.8)
Grand Total	**186320**	**189550**	**1.7**



Development of Gross Energy Generated * (GWh)



The average growth rate of the generated energy is 3.6% per year during the period from 2012/2013 till 2016/2017.

* Includes commissioning tests

Development of Gross Energy Generation (GWh)

Comp.	Station		12/13	13/14	14/15	15/16	16/17
Cairo	Shoubra El-Kheima	(St)	6041	5841	6973	7306	6909
	Cairo West	(St)	431	-	-	-	-
	Cairo West Ext.	(St)	7428	7957	7494	6793	6390
	Cairo South 1	(G)	1668	1658	1472	2141	2217
	Cairo South II	(CC)	795	538	222	1087	959
	Cairo North	(CC)	9046	7567	6861	7765	7466
	Wadi Hof	(G)	155	126	181	105	74
	Tebbin	(St)	3014	2947	2734	5195	5230
	6 October	(G)	2630	1534	2969	2617	2611
	Giza North	(CC)	-	133	1728	7714	13009
	Total		**31208**	**28301**	**30634**	**40723**	**44865**
East Delta	Ataka	(St)	3028	1852	1093	1148	1842
	Abu Sultan	(St)	3678	3090	3367	3197	3639
	Shabab	(G)	224	251	346	314	290
	New Gas Shabab	(G)	4913	1932	4306	3273	3819
	Arish	(St)	506	545	524	548	538
	Oyoun Mousa	(St)	4578	4943	3886	4110	3363
	New Damietta	(G)	2940	3159	3149	1916	1764
	West Damietta	(G)	2602	3042	3275	1755	1629
	Damietta	(CC)	8281	8238	7334	6591	7369
	Sharm El-Sheikh	(G)	58	48	59	16	12
	Port Said	(G)	100	111	84	-	-
	Huraghda	(G)	104	129	386	224	307
	Ein-Sokhna	(St)	-	-	3962	6516	6137
	Suez-Thermal		-	-	-	-	1887
	Total		**31012**	**27340**	**31772**	**29608**	**32596**
Middle Delta	Talkha	(CC)	1761	2034	1748	1611	1765
	Talkha steam 210	(St)	1862	2339	2004	2134	2162
	Talkha 750	(CC)	5163	5012	5688	5185	4558
	Nubaria	(CC)	10555	15127	14695	13285	13226
	Mahmoudia	(CC)	2234	2190	2276	1950	1905
	El-Atf	(CC)	5648	5938	4740	5224	5171
	Banha	(CC)	-	485	4513	5108	4849
	Total		**27223**	**33125**	**35664**	**34497**	**33636**
West Delta	Kafr El-Dawar	(St)	2928	3061	2755	2568	1978
	Damanhour Ext.300	(St)	40	686	1765	1078	1614
	Damanhour	(St)	1007	995	751	154	-
	Damanhour	(CC)	1045	1089	1082	928	907.7
	New Abu Kir	(St)	5106	7423	7064	8168	6006
	Abu Kir	(St)	5185	4852	5481	4131	4625
	El-Seiuf	(G)	275	302	409	93	6
	Karmouz	(G)	10	7	8	1	0.35
	Sidi Krir	(St)	4101	3713	3386	3366	3471
	Sidi Krir	(CC)	4782	5296	4612	4760	3826
	Matroh	(St)	378	349	344	415	369
	Total		**24857**	**27773**	**27656**	**25662**	**22803**

Comp.	Station		12/13	13/14	14/15	15/16	16/17
Upper Egypt	Walidia	(St)	3540	3510	2226	4011	2480
	Kuriemat	(St)	8784	8542	7921	6954	6293
	Kuriemat 1	(CC)	3991	4727	5082	5274	4183
	Kuriemat 2	(CC)	4396	5112	3574	3771	5047
	Assiut	(St)	462	364	198	12	-
	Total		**21173**	**22255**	**19001**	**20022**	**18003**
Hydro Plants	High Dam		9113	9304	9805	9484	8859
	Aswan Dam I		1502	1559	1543	1578	1489
	Aswan Dam II		1596	1503	1567	1523	1547
	Esna		473	535	459	507	501
	Naga Hamadi		437	451	448	453	454
	Total		**13121**	**13352**	**13822**	**13545**	**12850**
Fast Track Plan	Cairo Mobile	(G)	-	-	-	156	43
	Ataka	(G)	-	-	146	1954	1326.5
	Port Said Ext	(G)	-	-	-	18	6.3
	El-Huraghda Ext, Sharm El-Sheikh Ext	(G)	-	-	-	455	437
	West Damietta Ext	(G)	-	-	-	112	5.5
	New Mahmoudia	(G)	-	-	-	1142	1033
	West Assiut	(G)	-	-	-	475	39
	Upper Mobile	(G)	-	-	101	1928	1103.7
	Total		-	-	21	304	204
Siemens	Burulls		-	-	-	-	1423
	Beni Suef		-	-	-	-	3346
	New Capital		-	-	-	-	747
	Total		-	-	-	-	**5516**
Total	Total-Thermal *		135474	138795	144995	157056	161617
	Total-Hydro		13121	13352	13822	13545	12850
	Total-Wind		1260	1332	1444	2058	2200
	Kuriemat Solar / Thermal		237	114	-	168	580
	Total		**1500092**	**153593**	**160261**	**172827**	**177247**
Private Sector (BOOT)	Sidi Krir 3&4	(St)	4705	4387	4318.5	4556	4311
	Suez Gulf	(St)	4576	4678	4311	4461	3797
	Port Said East	(St)	4983	5089	5708.5	4290	4037
	Total BOOT	**(St)**	**14264**	**14154**	**14338**	**13307**	**12145**
Purchased from IPP's		(St)	33	62	32	42	35
Isolated plant units			240	241	244	144	123
Grand Total*			**164628**	**168050**	**174875**	**186320**	**189550**

* (CC): Combined Cycle
(St): Steam
(G): Gas

Performance Statistics of Power Plants (2016/2017)

Comp.	Station	Gross Gen. GWh	Net Gen. GWh	Net/ Gross %	Fuel Consump. gm/ kWh gen.	Peak Load MW	Load Factor %	Cap. Factor %	Thermal Eff. %	Av. Factor %
Cairo	Shoubra El-Kheima	6909	6570	95	241.4	1230	64.12	60.90	36.35	83.27
	Cairo West Ext.	6390	6046.8	94.6	228.7	1208.9	60.34	53.64	38.37	89.75
	Cairo South 1	2217	2199.4	99.2	293	322	78.58	76.68	29.94	94.6
	Cairo South II	959	940	98	223.3	151	72.64	66.32	39.28	81.93
	Cairo North	7466	7265.3	97.3	173.3	1274	66.90	56.82	50.66	89.30
	Wadi Hof	74	73.5	98.9	413.5	73	11.61	8.48	21.23	98.52
	Tebbin	5230	4922.7	94.1	203.2	700	85.29	85.29	43.20	91
	6 October	2611	2583.5	98.9	282.9	1130	26.4	28.4	31	92.6
	Giza North	13009	12857.4	98.8	168.6	2333	63.65	66.00	52.06	92.70
	Total	**44865**	**43458.9**	**96.9**	**207.6**	**7411**	**69.1**	**57.5**	**42.3**	**90.1**
East Delta	Ataka	1842	1645	89.2	276.2	535	39.3	23.4	31.8	46.4
	Abu Sultan	3639	3370	92.6	259	565	73.5	69.2	33.9	87.24
	Shabab	290	287.8	99.3	417	78	42.4	32.9	21.0	93.3
	New Gas Shabab	3819	3791	99.2	270.1	1003	43.5	43.6	32.5	95.87
	Arish	538	504.3	93.8	253	66	93.0	93.0	34.7	97.2
	Oyoun Mousa	3363	3226.6	95.9	221.9	620	61.9	60.0	39.5	82.43
	New Gas Damietta	1764	1741.3	98.7	274.4	513	39.2	40.3	32.0	98.72
	West Damietta	1629	1614.3	99	269.7	494	37.6	37.2	32.5	92.7
	Damietta	7369	7204.8	99.1	192.4	1049	76.9	70.1	45.6	91.3
	Sharm El-Shikh	12	11.3	93	408.3	75	1.9	1.0	21.6	78.51
	El-Huraghda	307	305.5	99.6	405.5	80	43.8	24.5	21.7	99.94
	Ein-Sokhna	6137	5963.5	97.2	212.5	1119	62.6	53.9	41.3	85.6
	Suez Thermal	1887	1816.5	96.2	220.4	683	38.0	76.7	39.8	62.1
	Total	**32596**	**31481.8**	**96.9**	**235.5**	**5447**	**68.3**	**48**	**37.3**	**81.6**
Middle Delta	Talkha	1765	1736.5	98.3	248.8	262	76.91	85.4	35.28	95.9
	Talkha (210)	2162	2000.7	92.5	258.5	380	64.95	58.8	33.95	83.5
	Talkha (750)	4558	4467.5	98	155.3	770	67.57	69.4	56.49	83.8
	Nubaria (C.C)	13226	13006.5	98.3	169.1	2293	71.9	67.1	51.9	93.2
	Mahmoudia	1905	1882.6	98.8	229.6	294	73.9	81.1	38.23	96.4
	El-Atf	5171	5070.3	98.1	161.5	814	72.52	78.7	54.33	94.4
	Banha	4849	4780.7	98.5	165.5	801	69.11	73.8	53.1	90.6
	Total	**33636**	**32944.9**	**97.9**	**178.9**	**5417**	**70.9**	**70.9**	**49.1**	**91.2**
West Delta	Kafr El-Dawar	1978	1816.4	91.8	284.1	400	56.5	51.3	30.9	73.6
	Damanhour Ext 300.	1614	1551.3	96.1	235.4	300	61.4	61.4	37.3	91.6
	Damanhour	907.7	894	98.5	218.4	146	71.2	67.3	40.2	93.5
	Abu Kir	4625	4341.5	67.5	247.8	770	68.6	57.2	35.4	86.2
	New Abu Kir	6006	5779.9	96.2	214.5	1220	56.2	52.7	40.9	80.2
	El-Seiuf	6	5.5	78.8	500	85	1	0.9	20.5	98.8
	Karmouz	0.35	0.3	97.4	285.7	18	0.2	0.2	20.9	97.6
	Sidi Krir 1,2	3471	3296.1	94.9	211	640	61.9	61.9	41.6	85.8
	Sidi Krir (C.C)	3826	3713.8	97	178.3	750	58.2	58.2	49.2	85.2
	Matrouh	369	342.4	92.7	276.4	56	75.3	70.2	31.7	93.9
	Total	**22803**	**21741.2**	**95.3**	**223.4**	**3877**	**67.1**	**55.6**	**39.3**	**84.3**

Comp.	Station	Gross Gen. GWh	Net Gen. GWh	Net/ Gross %	Fuel Consump. gm/ kWh gen.	Peak Load MW	Load Factor %	Cap. Factor %	Thermal Eff. %	Av. Factor %
Upper Egypt	Walidia	2480	2317.3	93.4	245.6	555	51	47.2	35.70	61
	Kuriemat steam	6293	6088	97	215.8	1177	61	57.3	40.7	93.1
	Kuriemat 1	4183	4108	98.2	163.8	723	66	63.7	53.6	80.9
	Kuriemat 2	5047	4946	97.9	155.1	794	72.6	76.8	56.6	90.5
	Total	18003	17459.3	96.9	190.8	3069	67	61.3	46	84.1
Fast Track Plan	Cairo Mobile	43	43	99.9	267.4	127	3.8	3.3	32.8	89.6
	Ataka	1326.5	1308.1	99.3	264.5	628	24.1	23.7	33.2	97.2
	Port Said Ext	6.3	5.5	97.9	254	72	1	0.7	34.6	45.9
	El-Huraghda Ext Sharm El-Sheikh Ext	437	435.2	99.7	247.1	237	21	17.3	35.5	26.7
		5.5	4	97.1	281.6	126	0.5	0.2	31.3	0.37
	West Damietta Ext	1033	1022.3	99.1	274.7	519	22	23.6	32	92.9
	New Mahmoudia	39	38.9	99.3	294.9	190	2.35	1.33	29.8	99.8
	West Assiut	1103.7	1093.4	99	287.1	805	15.6	12.6	30.6	89
	Upper Mobile	204	198	98.2	270	350	7	7	32.5	95.8
	Total	4198	4148.4	98.8	271.7	-	-	-	32.3	-
Siemens	Burullus	1423	1387.4	97.5	237.7	1180	39	39.7	36.9	99.8
	Beni Suef	3346	3225	96.3	237.9	2040	18.7	15.9	36.9	99.6
	New Capital	747	727.2	97.3	223.6	387	73.8	36	40.4	99.7
	Total	5516	5339.6	96.8	235.9	-	-	-	37.2	-
Hydro Plants	High Dam	8859	8791	99.2	-	2160	46.8	48.2	-	88.2
	Aswan Dam I	1489	1456.9	97.8	-	274	62	60.7	-	95
	Aswan Dam II	1547	1537	99.3	-	270	65.4	65.4	-	95.2
	Esna	501	493.6	98.4	-	84	68.2	66.8	-	89.1
	Naga Hamadi	454	447.1	98.5	-	68	76.4	80.9	-	96.4
	Total-Hydro	**12850**	**12725.6**	**99**	**-**	**2747**	**53.4**	**52.4**	**-**	**89.8**
Total	**Total-Thermal****	**161617**	**156574.1**	**96.4**	**210.2**	**27120**	**68**	**43**	**41.7**	**-**
	Total-Wind	**2200**	**2173**	**99**	**-**	**684**	**37**	**34**	**-**	**-**
	Kuriemat Solar / Thermal	**580**	**580**	**100**	**-**	**-**	**-**	**-**	**-**	**-**
	Private Sector BOOT	**12145**	**11383**	**93.7**	**206.6**	**-**	**-**	**-**	**42.5**	**-**
	Total	**189392**	**182695.7**	**96.8**	**210**	**-**	**-**	**-**	**41.8**	**-**
	Purchased from IPPs	**35**	**35**	**100**	**-**	**-**	**-**	**-**	**-**	**-**
	Isolated Plants	**123**	**119.3**	**97.7**	**-**	**-**	**-**	**-**	**-**	**-**
	Grand Total *	**189550**	**183590**	**96.4**	**-**	**29400**	**-**	**-**	**-**	**-**

* Includes commissioning tests.

* Av. Fuel Consumption rate (gm/kWh gen.) = $\frac{\text{consumption fuel quantity (toe)} \times 1000}{\text{energy generation (MWh).}}$

* Average Load = energy generation during the period / period hours' number (MWh)

* Load Factor % = (average load / maximum load during the period) X 100

* Capacity (Cap.) factor % = (average load / installed capacity) X 100

* Thermal Eff. % = $\left(\frac{860 \times 1000}{9800 \times \text{Av. Fuel Consumption}}\right) \times 100$

* Availability (Av.) Factor % = $\left[\frac{(\text{operation hours' number} + \text{reserve hours' number})}{\text{period hours' number}}\right] \times 100$

Hydro Power

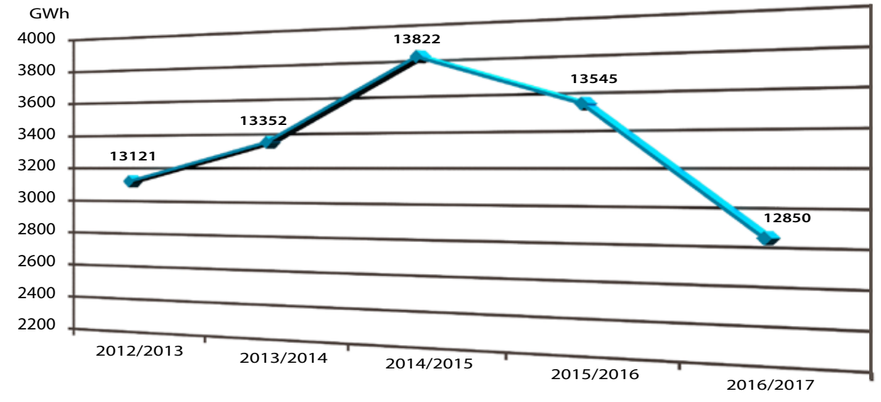
Energy Generated from Hydro Power Plants (GWh)

Plant	2015/2016	2016/2017	Variation %
High Dam	9484	8859	(6.6)
Aswan Dam 1	1578	1489	(5.6)
Aswan Dam 2	1523	1547	1.6
Esna	507	501	(1.2)
Naga Hamady	453	454	0.2
Total	**13545**	**12850**	**(5.1)**

Indicators of Hydro generation

Description	High Dam	Aswan1	Aswan2	Esna	Naga Hammady
Peak Load	2160	274	270	83.9	68.7
Max. daily generated energy	41.15	6.3	6.5	2	1.6
Min. daily generated energy	6.7	1.3	2.3	0.02	0.6
Efficiency	85.4	84.9	91	89	91.4

Development the Energy Generated from Hydro (GWh)



The average growth rate of Energy Generated from Hydro Power Plants is (0.5) % per year during the period from 2012/2013 to 2016/2017.

The Hydro Power Plants Execution Authority and the Egyptian Electricity Holding Company are coordinating for the execution of New Assiut Barrage Hydro Power Plant with total installed capacity of 32 MW which is expected to be commissioned by first quarter 2018.

Fuel

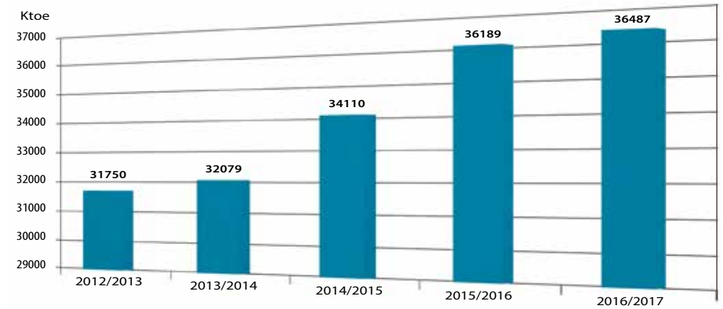
- The operation policy of the existing thermal power plants depends on the maximum utilization of natural gas, as the principal fuel, due to its economic and environmental benefits.
- Usage of natural gas at power plants (Including BOOT P. Ps) connected to the gas grid reached 80.1% in 2016/2017 representing 78.8% of total fuel consumption in power generation.

Fuel Consumption by Type *

Item		2015/2016	2016/2017	Variance %
H.F. O	Ktons	8958	7281	(19)
N. G	Million m^3	30387	33640	11
L.F.O& Special L.F. O	Ktons	1195.7	558.7	(53.3)
Total	**Ktoe**	**36189**	**36487**	**1**

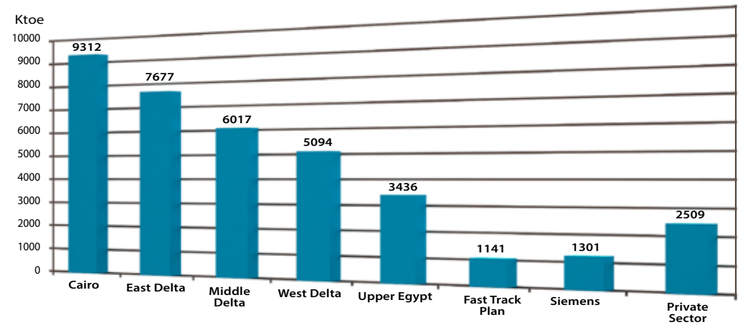
* Fuel Consumption Includes fuel for commissioning tests, BOOT, fast-track plan and Siemens power plants.
* Not including consumed fuel in isolated plants amounting to 24.9 Ktoe.
* The consumed fuel in BOOT power plants amounts to 2949 Million m^3 of N.G. which is equivalent to 2511 Ktoe.
* The consumed fuel in the fast-track power plants amounts to 873 Million m^3 of N.G. and 371 kton of L.F.O. which is equivalent to 1141 Ktoe.
* Fuel consumed in Siemens power plants amounts to 1539 Million m^3 of N.G.,which is equivalent to 1301 Ktoe.

Fuel Consumption Development * :

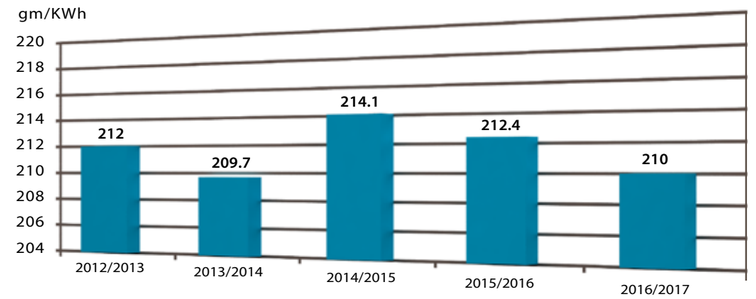


The average growth rate of Fuel Consumption is about 3.5% per year during the period from 2012/2013 till 2016/2017

Fuel Consumption by Companies 2016/2017:



Fuel Consumption Development Rate (gen) *:



The average growth rate of fuel consumption (generated) is (0.24)% per year during the period from 2011/2012 till 2015/2016.

* include Private Sector, Fast track and siemens.

Development of Fuel Consumption by Power Plants (ktoe) *

Comp.	Station		2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Cairo	Shoubra El-Kheima	(St)	1445	1406	1689	1761.9	1667.6
	Cairo West	(St)	157	-	-	-	-
	Cairo West Ext.	(St)	1624	1776	1697	1533	1462
	Cairo South I	(G)	409	402	364	613.3	649.6
	Cairo South II	(CC)	166	108	59	214.74	214.1
	Cairo North	(CC)	1482	1257	1231	1368.5	1293.5
	Wadi Hof	(G)	61	49	72	43.42	30.7
	Tebbin	(St)	614	603	576	1058	1063
	6 October	(G)	699	423	804	749.66	738.6
	Giza North	(CC)	-	37	510	1583.79	2192.9
	Total	-	**6655**	**6060**	**7003**	**8926**	**9312**
East Delta	Ataka	(St)	819	478	282	331.5	508.7
	Abu Sultan	(St)	954	806	879	831.9	942.4
	Shabab	(G)	76	85	117	117.1	120.9
	New Gas Shabab	(G)	1373	540	1185	891.7	1031.7
	Arish	(St)	124	134	130	137.1	136.1
	Oyoun Mousa	(St)	991	1072	849	890.2	746.4
	New Gas Damietta	(G)	773	860	857	516.2	484
	Damietta West	(G)	688	813	872	464.7	439.4
	Damietta	(CC)	1575	1594	1449	1292.2	1418
	Sharm El-Sheikh	(G)	23	19	22	6.4	4.9
	Port Said	(G)	37	41	32	-	-
	El-Huraghda	(G)	44	52	155	89.4	124.5
	Suez		-	-	-	-	415.9
	Ein-Sokhna	(St)	-	-	851	1389.6	1304.1
	Total		**7478**	**6495**	**7679**	**6958**	**7677**
Middle Delta	Talkha	(CC)	413	476	478	448.78	439.1
	Talkha steam 210	(St)	468	581	522	557.8	558.9
	Talkha 750	(CC)	790	842	870	808.57	708
	Nubaria 1,2	(CC)	1723	2522	2393	2220.6	2236
	Nubaria 3	(CC)	-	-	-	-	-
	Mahmoudia	(CC)	490	484	506	468.44	437.3
	El-Atf	(CC)	921	955	797	845.99	835.3
	Bnha	(CC)	-	130	769	811.1	802.4
	Total		**4805**	**5990**	**6335**	**6161**	**6017**
West Delta	Kafr El-Dawar	(St)	831	860	792	723.6	562
	Damanhour Ext. 300	(St)	16	169	425	257.34	380
	Damanhour	(St)	303	299	238	52.2	-
	Damanhour	(CC)	220	230	235	202.9	198.2
	New Abu Kir	(St)	1095	1586	1534	1762.36	1288.4
	Abu Kir	(St)	1296	1245	1416	1084.5	1146
	El-Seiuf	(G)	106	115	159	36.6	3
	Karmouz	(G)	4	3	3	0.37	0.1
	Sidi Krir	(St)	869	827	728	715.8	732.3
	Sidi Krir	(CC)	764	845	758	793.58	682
	Matroh	(St)	102	98	99	113.97	102
	Total		**5606**	**6283**	**6385**	**5744**	**5094**

Development of Fuel Consumption by Power Plants (ktoe) *

Comp.	Station		2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Upper Egypt	Walidia	(St)	845	850	569	956.2	609.4
	Kuriemat	(St)	1888	1830	1678	1500.2	1358
	Kuriemat 1	(CC)	641	726	776	829.39	685.4
	Kuriemat 2	(CC)	751	811	578	607.26	783
	Assiut	(St)	142	113	63	4.1	-
	Total		**4267**	**4330**	**3664**	**3897**	**3435**
Fast Track Plan	Cairo Mobile	(G)	-	-	-	41.5	11.5
	Ataka	(G)	-	-	40	491.9	351
	Port Said Ext	(G)	-	-	-	4.3	1.6
	El-Huraghda Ext	(G)	-	-	-	110.7	108
	Sharm El-Sheikh Ext	(G)	-	-	-	28	1.5
	West Damietta Ext	(G)	-	-	-	303.5	284
	New Mahmoudia	(G)	-	-	-	143.46	11.4
	West Assiut	(G)	-	-	30	543.7	317
	Upper Egypt Mobile	(G)	-	-	6	82.7	55
	Total		-	-	**76**	**1750**	**1141**
Siemens	Burullus	(CC)	-	-	-	-	338
	Beni Suef	(CC)	-	-	-	-	796
	New Capital	(CC)	-	-	-	-	167
	Total		-	-	-	-	**1301**
Private Sector (BOOT)	Sidi krir 3, 4	(St)	938	908	870	914.19	868
	Suez Gulf	(St)	972	1001	920	941.9	810
	Port Said East	(St)	1029	1012	1178	896.46	831
	Total BOOT		**2939**	**2921**	**2968**	**2753**	**2509**
Grand Total			**31750**	**32079**	**34110**	**36189**	**36487**

(CC): Combined Cycle
(St): Steam
(G): Gas
* Including commercial test.
** In addition to fuel of Isolated Power Plants about 24.9 Ktoe.

Isolated Power Plants and Reserve Units 2016/2017

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 215 MW in addition to 5 MW Wind farm in Hurghada.

Installed Capacity and Energy Generated from Isolated Power Plants

Company	type	Installed Capacity (MW)		Energy Generated(GWh)		Energy sent (GWh)	
		2016/2017	2015/2016	2016/2017	2015/2016	2016/2017	2015/2016
Canal D.C. *	Diesel	108	157.5	43.20	71.37	42.40	70.27
	Solar	14	14	7.10		7.10	
El-Behera D.C.	Diesel	30.2	30.20	32.20	41.30	30.70	39.20
	Solar	10	10	8.5		8.5	
Middle Egypt D.C.	Diesel	33.80	40.60	25.60	31.43	24.61	29.92
	Solar	6	6	6.35		6.10	
Upper Egypt D.C.	Diesel	2.95	2.70	-	-	-	-
EETC	Diesel	10.20	-	-	-	-	-
Total **	**Diesel**	**185.15**	**231**	**101**	**144.1**	**97.71**	**139.39**
	Solar	**30**	**30**	**21.95**		**21.7**	
	Diesel & Solar	**215.15**	**261**	**122.95**	**144.1**	**119.41**	**139.39**

* including Solar power plants with total installed capacity of 14 MW received on 20/04/2016, and not including energy produced at plants owned by others totaling 21.8 GWh.

** including the 10 MW solar power plant in Siwa received on 29/4/2015 and the two caterpillar gas units (2×5 MW) operated on 29/06/2016.

***including the solar power plants of 5 MW in Farafra, 0.5 MW in Arba'een village and 0.5 MW in Abou- Monqar village, totaling 6 MW, received on 08/12/2015.

The total consumed fuel amounted to 24.9 ktoe.

The Five-Year Plans for Constructing

Thermal Power Plants

In its endeavor to meet the fast growing rates of energy demand and peak load, EEHC is developing flexible five-year plans based on the expected annual growth rate of energy demand and peak load evolution, this is to be achieved through the construction of new power plants to provide electrical energy for all purposes with an adequate reserve to cope with the programmed maintenance, forced outages and ageing of the existing generating units, taking into account the diversification of patterns of the generation plants (combined-steam) and sources of fuel used to achieve balanced generation mix.

The 7th Five-Year Plan (2012-2017):

To achieve the goals mentioned above, the Electricity Sector adopted on 20/03/2013 the 7th five-year plan (2012-2017) for the construction of thermal power plants projects aiming to add generation capacities of 13200 MW. However, during projects implementation, the Sector confronted multiple challenges such as the rise in peak load at a high rate of 7% in 2014/2015 compared to 2013/2014, as well as the delay in interconnecting some power plants beyond their scheduled timeline such as Dairout and Helwan South Combined Cycle Power Plants, in addition to the lack of natural gas supplies which necessitated introducing some modifications to the plan to overcome these challenges, as follows:

- **Fast-Track Plan for Summer 2015:**

  To meet the load demands of Summer 2015, a fast-track plan has been implemented to add (52) gas units with a total capacity of 3636 MW at an investment cost totaling US$ 2.7 billion, of which (20) units have been installed and interconnected to the 66/11 KV and 66/22 KV substations to reduce network losses. The fast-track plan projects have been completely implemented and interconnected to the unified grid in a record time that helped stopping load-shedding to customers and improving voltages during Summer 2015 and till now.

- **Siemens Projects:**

  Contracts have been signed with Siemens AG and its local partners for the execution of (3) combined-cycle power plant projects at Burullus, Beni Suef and the New Capital sites with a total installed capacity of 14400 MW and an investment cost of US$ 6.9 billion, using the exchange rates prevailing at time of contracting (EUR 6 billion for the plants construction in addition to the cost of the 3 sites preparation of about EUR 65.3 million plus EGP 2 billion), through the (EPC + Finance) scheme.

- Contracting for the conversion of some gas units to combined cycle operation without use of additional fuel, aiming at decreasing the rate of fuel consumption and improving the operation efficiency of power plants.

- Postponing the implementation of Dairut Combined Cycle Power Plant project with a total capacity of 2250 MW under BOO scheme to be executed under the 9th five-year plan (2022-2027).

Considering the foregoing, the total added capacities under the 7th five-year plan (2012-2017) as modified, the fast-track plan and Siemens projects as well as the projects contracted for the conversion of gas units to combined cycle operation (El-Shabab, West Damietta, Extension of West Assiut, Extension of West Damietta, and 6th October) reached 27'400 MW (including Caterpillar diesel units belonging to distribution companies) with a capital investment cost of US$ 17 Billion implemented by the Electricity Sector and funded by soft loans from Arab and International financing institutions in addition to the implementation of a part of the plan under (EPC+ Finance) scheme.

A part of the plan projects amounting to 13'511 MW has been operated by the end of 2016/2017, and it is scheduled to operate another 11350 MW during the year 2017/2018, while the last units of the 7th Five-year plan by January 2020.

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

- EEHC has conducted a study to identify the generation capacities required to be added in the 8th five-year plan (2017/2022) to accommodate the forecast loads, in order to satisfy the needs of the various sectors and ensure sufficient reserve margin for programmed maintenance works and forced outage of any of generation units, and also to address any unit problems due to ageing or poor fuel characteristics.
- The study revealed that no additional thermal capacities are needed under the (2017-2022) plan.

Information about Production Companies

Company	Geographical zone	Headquarter	Capital (Million EGP)	Ratio of Company's Capital to EEHC's Investments	Address	Tel.
Cairo	Greater Cairo	Cairo	671.835	4.01%	22 Shanan St. Sabteia	02-25757894 02-25740550
East Delta	Damietta, Ismailia, Port Said, Suez, South Sinai, North Sinai & Red Sea Governorates	Ismailia	931.429	5.56%	Sheben Elkom St.	064-3204590 064-3201492
Middle Delta	Qalyoubeya Governorate (Except for Greater Cairo Extension), Mhmodeya City, Kom Hamada of Beheira Governorate & Dakahleya Governorate	Dakahlya	791.375	4.73%	Compost road Talkha,	050-2524149 050-2524369
West Delta	Alexandria, Matrouh & Beheira Governorates (Except for Mahmoudeya City & kom Hamada)	Alexandria	742.945	4.44%	7 Riad St, Gleem	03-5761375 03-5756722
Upper Egypt	Giza (Except for extension of Greater Cairo), Fayoum, Beni-Suef, El-Minia, Assiut, New Valley, Sohag, Qena, Aswan, & Luxor Governorates	Giza	925.875	5.53%	Mohamed Dora St,	02-33357086 02-38781400
Hydro Power Plants	Affiliated Hydro Plants All over the Country (Aswan – Luxor – Qena – Assuit)	Aswan	391.660	2.34%	High Dam – West Aswan	097-3480412 097-3480463

Egyptian Electricity Transmission Company (EETC)

Egyptian Electricity Transmission Company (EETC)

Company Name	Geographical zone	Head Office	Capital (B. EGP)	Ratio of Company's Capital to EEHC's Investments	Address	Phone No.
Egyptian Electricity Transmission Company	Electricity transmission grids on ultra-high & high voltages across the country	Cairo	8.612	51.42 %	Ramses St. Extension, Opposite Police Academy, Abbasseya, Cairo	02/22618579 02/26843824

Objectives:

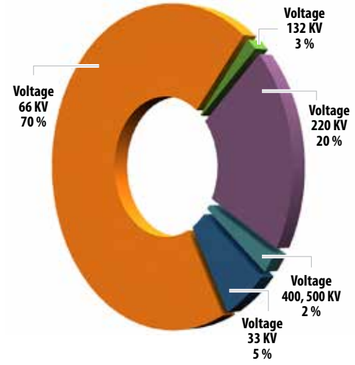
- Management, operation and maintenance of electrical power transmission grids on ultra-high & high voltages all over the country, with optimum economical utilization of those grids.
- Organizing load movement on ultra-high & high voltage grids all over the country through the National Dispatch Center and regional dispatch centers.
- Purchasing the electrical power produced at the power plants according to needs, and selling it to customers on ultra-high & high voltages and to the electricity distribution companies.
- Co-ordination with the production and distribution companies for providing the electrical energy on the various voltages for all uses with high efficiency.
- Participation with EEHC in conducting technical and economic studies for future transmission plans and projects to meet the demand on electricity and its stability.
- Implementation of the electrical power transmission projects on ultra-high & high voltages as approved by EEHC's Board of Directors according to the scheduled programs.
- Implementation of the electrical interconnection projects approved by EEHC's Board of Directors, and exchanging electrical power with other countries and selling or purchasing it according to needs from the electrical networks interconnected to the Egyptian grid.
- Conducting studies on load and demand forecast plans for its customers as well as financial and economic forecasts for the Company.
- Carrying out any other works or activities related to, or complementing, the Company's objectives, as well as any tasks entrusted to it by EEHC within the Company's scope of work.
- Carrying out any tasks entrusted to the Company by others where such tasks fall within its scope of work and generate economic return to the Company.

Transmission Network Statistics (30/06/2017)

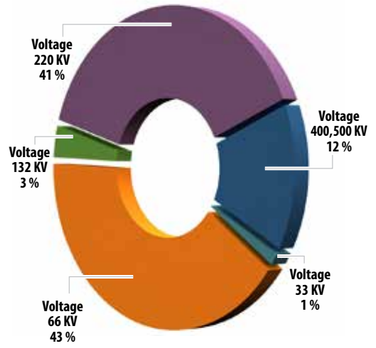
As of 30/06/2017:

- The total capacities of transformers on ultra-high & high voltages reached 120'160 MVA, compared to 110'655 MVA on 30/06/2016 at a variation rate of 8.6%.
- The total number of substations on ultra-high & high voltages amounted to 652 substations, compared to 650 on 30/06/2016 at a variation rate of 0.3%.
- The total number of transformers on ultra-high & high voltages reached 2534 transformers, compared to about 2489 on 30/06/2016 at a variation rate of 1.8%.

Number of substations (on different voltages)



Transformers Capacities (on different voltages)



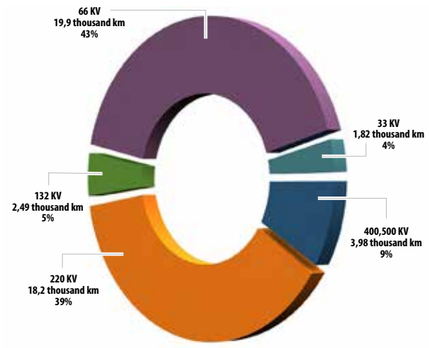
Voltage (KV)	2015/2016			2016/2017		
	capacity MVA	substations No.	transformers No.	capacity MVA	substation No.	transformers No.
33	1736	34	135	1606	31	126
66	49125	457	1841	51315	461	1871
132	3516	21	82	3491	18	80
220	44728	128	404	48823	130	424
400-500	11550	10	27	14925	12	33
total	110655	650	2489	120160	652	2534

Total lengths of circuits (overhead lines and ground cables):

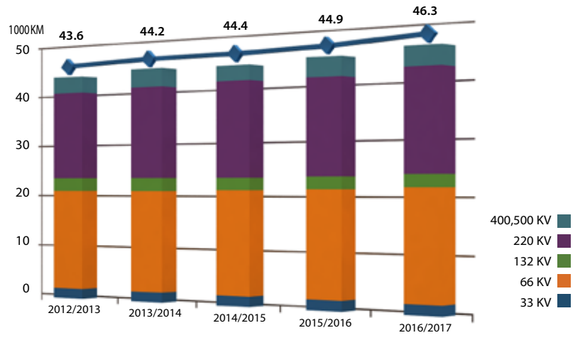
On 30/06/2017, the total lengths of transmission overhead lines and ground cables reached 46.3 thousand Km compared to 44.9 thousand Km on 30/06/2016 at a variation rate of 3.1%.

voltage	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
33	2063.4	1990.4	1990.4	1870.7	1790.5
66	19156.7	19299.8	19109.6	19594.3	19879.1
132	2485	2485	2485.1	2485.1	2485.1
220	17000.9	17360.5	17568.4	17812.4	18180.4
400-500	2895	3078	3055	3141	3982
Total (Km)	43601	44213.7	44208.5	44903.5	46317.1

Total lengths of circuits
(on different voltages)



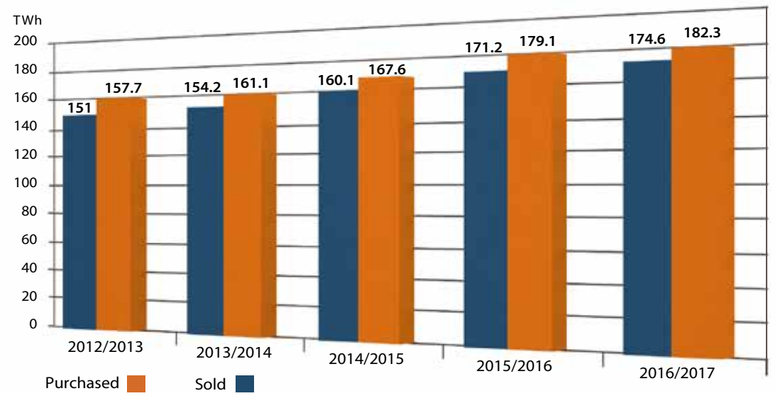
Total lengths of circuits
(on different voltages)



The average growth rate of total circuit lenghts is 1.5% per year during the period from 2012/2013 till 2016/2017.

Total Purchased and Sold Energy

- On 30/06/2017, the total purchased energy at the Egyptian Electricity Transmission Co. reached 182.3 TWh, compared to 179.1 TWh on 30/06/2016 at a variation rate of 1.8%.
- On the same date, the total sold energy reached 174.6 TWh, compared to 171.2 TWh on 30/06/2016 at a variation rate of 2%.

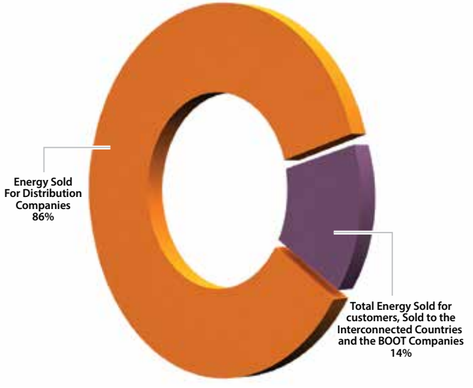


The average growth rate of purchased energy is 3.7% per year, while the average growth rate of sold energy is 3.7% per year. during the period from 2012/2013 till 2016/2017.

Sold Energy from the Egyptian Electricity Transmission (Company) EETC during the year 2016/2017

TWh

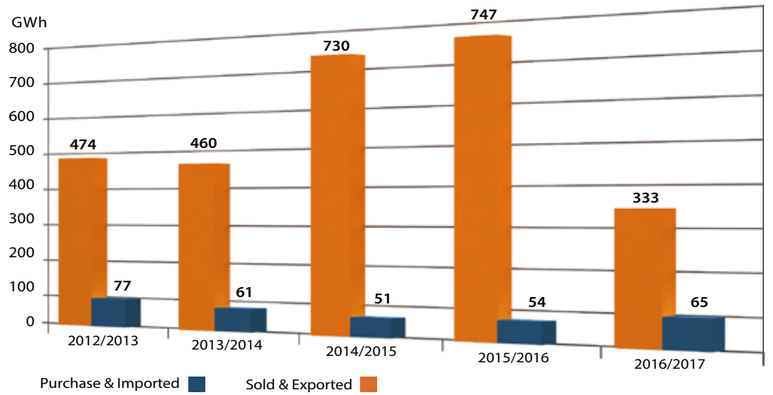
Description	2016/2017
Industrial	21.82
Agriculture	0.71
Utilities	0.49
Governmental	0.20
Other	0.78
Energy Sold to the Interconnected Countries	0.26
Energy Sold to the BOOT Companies	0.01
Total Energy Sold for customers, Sold to the Interconnected Countries and the BOOT Companies	24.27
Energy Sold for Distribution Companies	150.35
Total Energy Sold	174.62



International Electrical 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)	104.6	228.8	-	-
Purchased & Imported Energy * (GWh)	0.096	65.3	-	-

* Including in-kind exchange.



The annual average rate of the total exported and sold energy has decreased by about 8.5%, and the average rate of the total imported and purchased energy has decreased by about 4.2% per year during the period from 2012/2013 to 2016/2017.

he Egyptian Electricity Sector diligently sought to develop its performance in diversifying the sources of electrical energy by adopting new policies based on energy trading at regional and international levels through the electrical interconnection with the neighboring countries as follows:

A. The Egyptian / Saudi Electrical Interconnection Project:

The project aims to exchange a capacity of 3000 MW between the two countries through HVDC bipolar transmission technology on 500 kV Badr Substation in the Arab Republic of Egypt and Medina & Tabuk Substations in the Kingdom of Saudi Arabia with overhead lines totaling 1450 Km on both sides and a submarine cable of 16 Km crossing the Aqaba Gulf and to that end, the following arrangements have been taken:

- On 01/06/2013, a memorandum of understanding was signed between the two countries in the field of electrical interconnection.
- On 12/12/2013, the Electrical Interconnection Agreement, the Commercial Agreement and the Interconnection Operation Agreement were signed to implement the project through the Egyptian Electricity Holding Company and the Saudi Electricity Company.

The trial operation of the Project (Phase One - 1500 MW) is expected in the 4th quarter of 2020 and the Project will be fully completed in the 4th quarter of 2021.

B. Pan-Arab Interconnection Axis:

The Arab electrical interconnection aims at establishing an infrastructure for electricity trading between the Arab countries in preparation for the establishment of a common Arab Electricity Market where the Pan-Arab interconnection and the Arab Electricity Market are priority for the Arab countries, and to that end:

- On 6/2/2017, a Memorandum of Understanding was signed between 16 countries to establish an integrated and competitive common Arab electricity market.
- Both the General Agreement and the Market Agreement are still under revision by Technical, Financial and Legal teams of Steering Committee for the Pan-Arab Interconnection under the chairmanship of Egypt, with full support from League of Arab States (LAS).

C. The African Interconnection Axis:

Egypt has close relations with the Nile Basin countries in many areas based on the natural link that binds these countries through the Nile Basin. In this context, Egypt has become a member of the Eastern Africa Power Pool (EAPP) since 2005 where:

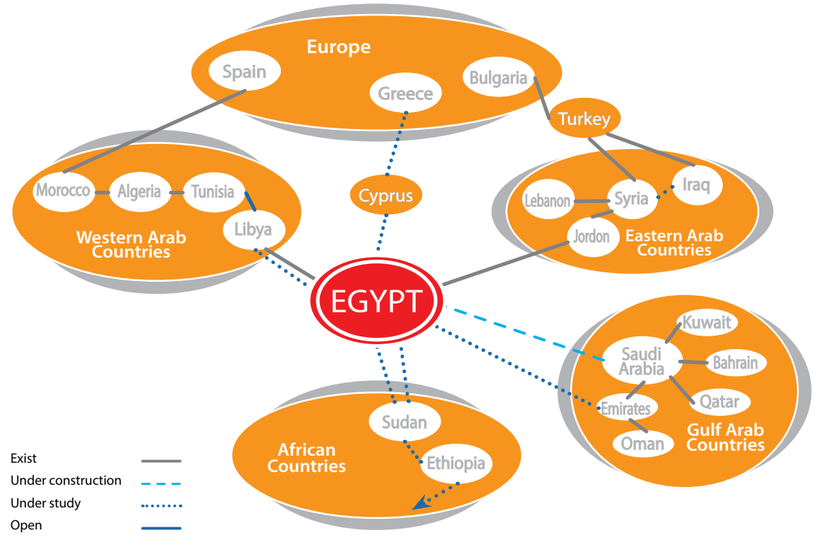
- A study is currently underway to link EAPP and Southern Africa Power Pool (SAPP) in preparation for creating clean energy corridor stretching from Egypt to South Africa, thus electricity markets are connected in both eastern and southern Africa.
- Egypt participates in all activities of EAPP like studying the grid code compliance of the national grids codes for the Pool countries and the code of the EAPP, preparation of bilateral trading agreement as well as participation in relative committees such as Operations and Marketing.
- Within the framework of the bilateral cooperation between Egypt and Sudan, a study has been finished for an Egyptian-Sudanese electrical interconnection project on 220 kV with 200 MW since 2012, and the necessary procedures are being taken to update the study according to the changes that have been occurred in the Egyptian and Sudanese grids recently.

D. The European Interconnection Axis:

Within the framework of consolidating Egypt's role as an energy hub in the Mediterranean region, the following actions have been taken:

- On 6/2/2017, a Memorandum of Understanding was signed between EEHC and the Cyprus Company Euro Africa-Interconnector to prepare a technical and economical feasibility study for the electrical interconnection project between Egypt, Cyprus and Greece and Non-Disclosure Agreement has been concluded between the concerned entities.
- Egypt is also a member of several international associations around the Mediterranean basin like the Association of the Mediterranean Transmission System Operators (Med-TSO) and Union for the Mediterranean (UFM) as well as other international organizations.

Egypt is a Hub for Election Interconnection



New & Renewable Energy

In the framework of the strategic planning of power in Egypt, the Electricity Sector's strategy depends on diversification of energy sources, expansion of utilizing renewable energies, and rationalization of the use of conventional energy sources

Egypt is endowed with abundant wind energy sources especially in the Suez Gulf area which is considered one of the best sites in the world due to its high and stable wind speeds. The west of Suez Gulf area is considered one of the most promising sites for construction of large wind farm projects due to the high wind speeds ranging between 8-10 meters/second and also due to the availability of large uninhabited desert areas which are perfectly qualified to assimilate the future wind projects.. In addition, there are other promising sites with average wind speeds ranging between 7-8 meters/second in the east and west of River Nile near Beni Suef and Menya Governorates.

Moreover, Egypt is one of the countries lying in the solar belt region the most convenient for the solar energy applications. Solar Atlas reveals that the average of vertical solar radiation is between 2000-3200 KWh/m^2/year and the rate of solar rise ranges between 9-11 hours/day offering opportunities of investment in the various solar energy fields.

The New & Renewable Energy strategy aims to increase the share of generated energy from renewable energy to 20% out of the total generated energy in Egypt by 2022, out of which 6% from hydro power, 12 % from wind energy and 2% from other renewable energy sources (especially the solar energy). The strategy also includes the construction of wind projects with the participation of the private sector to bring the total installed capacity to 7200 MW by 2022.

EEHC is coordinating with the New and Renewable Energy Authority (NREA) in the following fields:

- Planning for power generation considering the participation of renewable energies.
- 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 pre-defined locations under the BOO scheme.

Coordination is underway between EETC and NREA under supervision of EEHC for signing the Power Purchase Agreements (PPAs) of renewable energy generated by the private sector under BOO scheme with a total capacity of 1570 MW, as follows:

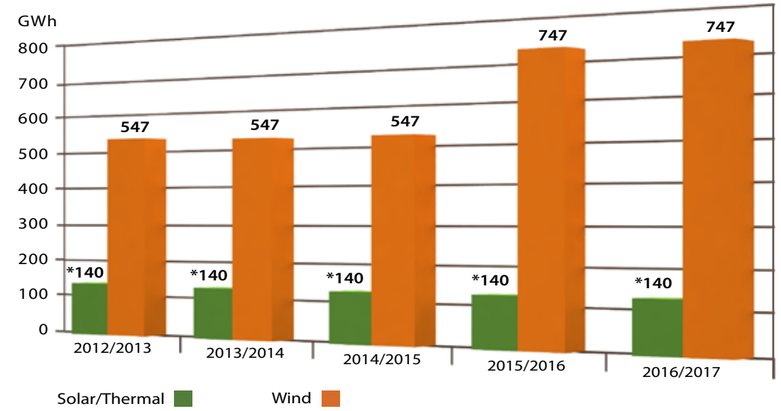
- 250 MW wind farm at the Gulf of Suez (through Angy – Toyota – Orascom consortium).
- 200 MW solar power plant at Kom Ombo.
- 320 MW wind farm project by ItalGen Egypt, an Italian Compnay.
- 250 MW wind farm project in Suez Gulf (through Lacties – Liqule consortium)
- Renewable energy projects with a total capacity of 550 MW at the west of Nile River region under BOO scheme, as follows:
  - A 250 MW wind farm.
  - A 200 MW photo voltaic (PV) solar plant.
  - A 100 MW from solar power plants (CSP).

EEHC and its subsidiaries have taken the initiative to install solar photo voltaic (PV) systems on the roof of buildings after selecting the appropriate places available for the installation of solar cells, where the following has been achieved:

- Top roof of EEHC and subsidiaries' buildings:
  - 104 stations were implemented with a total capacity of 2230 KW.
  - Another 20 stations are being executed with a total capacity of 1045 KW.
- Feed-in Tariff system:
  - 81 stations were implemented with a total capacity of 5865 KW connected to the unified grid.
  - Another 42 stations are being executed with a total capacity of 8530 KW.
- Net Metering system:
  - 104 stations were implemented by customers with a total capacity of about 5250 KW.
- It is targeted to implement 300 MW under the feed-in tariff system for capacities of less than 500 KW through the affiliated distribution companies according to the second phase of the feed-in tariff for renewable energies issued in September 2016.

Installed Capacity and Generated Energy from Renewable Sources (Wind, Solar / thermal)

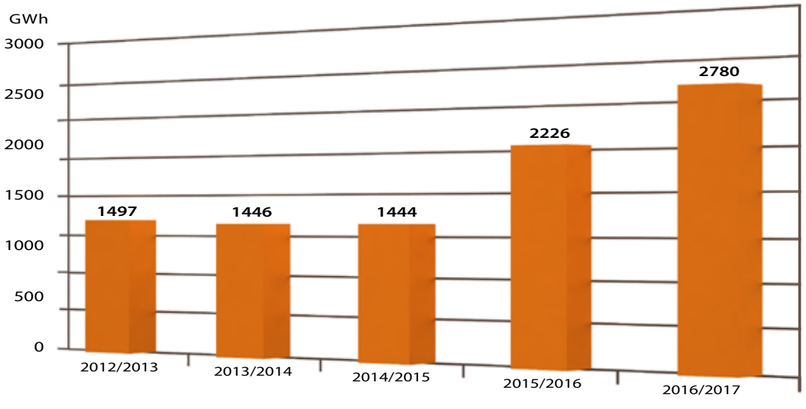
Installed Capacity (30/6/2017)*



* Not including a 5 MW wind plant at Hurghada.

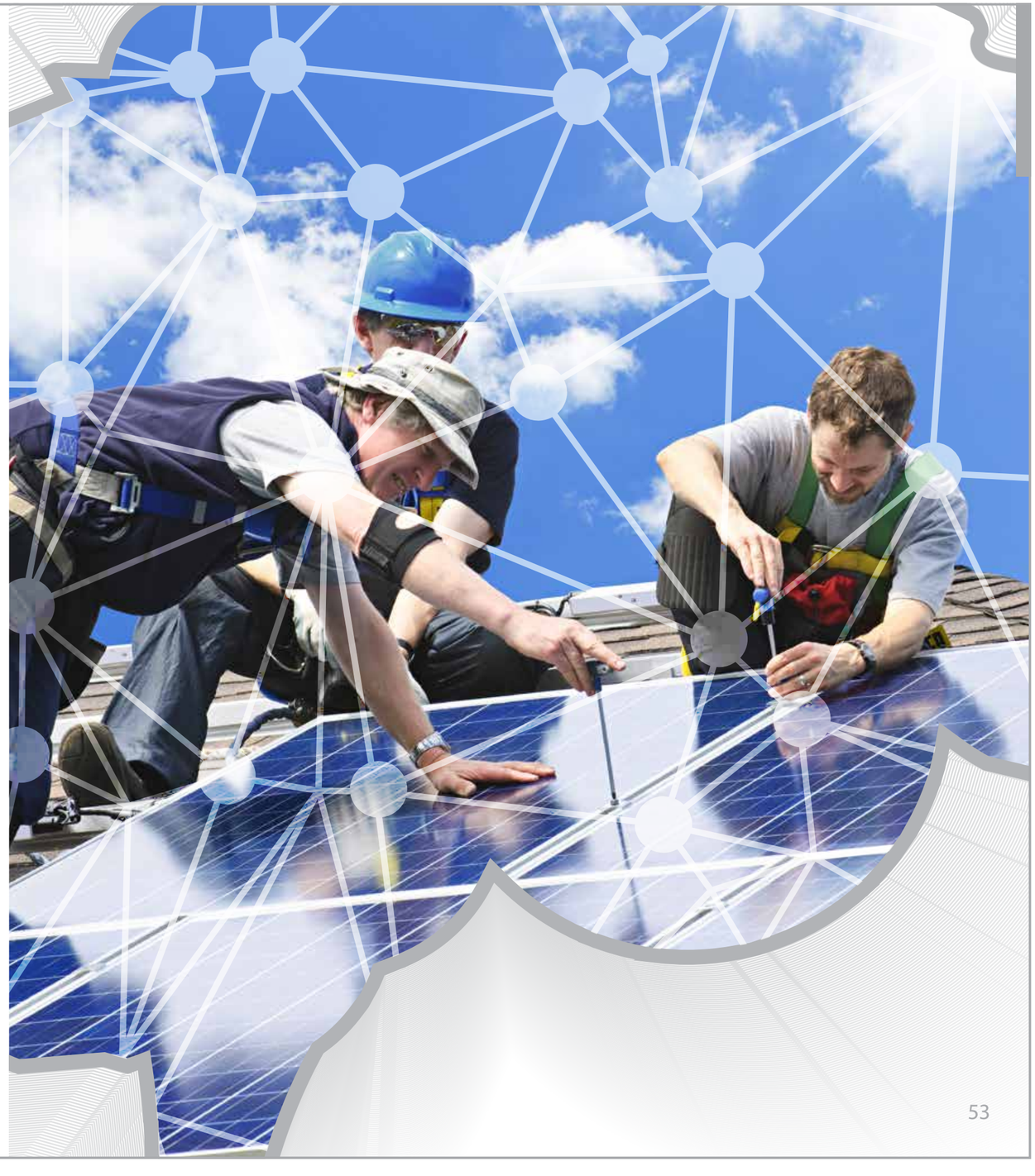
- The first solar/thermal power plant for electricity generation was commercially operated on 30/06/2011 in Kuriemat with 140 MW capacity, of which 20 MW is the solar component, based on concentrated solar power through parabolic troughs integrated with combined cycle power plant using natural gas as fuel.

Generated Energy from Renewable Sources (wind, solar/thermal)



The average variation rate of generated energy is 16.7% per year during the period from 2012/2013 till 2016/2017.

* The generated energy from Renewable energies mainly depends on wind speed & solar irradiance



Feed in Tariff for Renewable Energy Projects (Wind - Solar)

- In the context of the country's interest in all matters related to the production, transmission, distribution and consumption of the electrical power and in order to ensure availability and sustainability of power supply to meet the requirements of all consuming sectors at affordable prices while preserving the environment, the Egyptian Council of Ministers on 20/09/2014 approved the distinctive feed-in-tariff (FIT), being a mechanism to encourage the production of electricity from renewable sources, under which the electricity companies (the transmission company or the distribution companies) buy the energy produced at a pre-announced price that generates an attractive return on investments through long-term Power Purchase Agreements up to the end of lifespan of the project (20 years for wind projects and 25 years for solar projects).
- One of the main objectives of encouraging power production from renewable sources is to boost its share in the generation mix due to the positive impact on environment, and to maximize the utilization of petroleum and natural gas resources. It also encourages local and international investors to invest in the construction of power projects from renewable sources, in addition to stimulating the industrial sector to enter the field of manufacturing and localizing the renewable energy technology by way of creating demand for such equipment and services through increased investments in the field of renewable energy projects.
- The total installed capacity of the FIT projects to be contracted through the first & second phases is expected to reach 4300 MW (2300 MW from solar and 2000 MW from wind energy).

Considering the foregoing, the FIT projects (wind and solar) were tendered in two phases:

A. First Phase:

- On 17/09/2014, a Cabinet decree was issued for the First Phase of the FIT projects.
- In October 2016, Power Purchase Agreements, for solar cells (PV) with a total capacity of 12 MW, were signed with 6 qualified investors for capacities of more than 500 KW up to 5 MW, and it is expected to be connected to the distribution networks by end of 2017.
- In March 2017, the financial closure documents were accepted for 3 investors in the field of solar energy (Elef, Infinity, Fas) with a total capacity of 150 MW, of which 50 KW is expected to be connected in December 2017.

B. Second Phase:

On 6/09/2016, the Second Phase of the (FIT) program was announced as follows:

- Modification of the terms and prices of purchasing power from wind and solar energy projects.
- The modified terms and prices of the 2nd Phase are applied as from 28.10.2016 with financial closure for solar projects in one year and for wind projects in one and a half year of that date.
- The 2nd Phase of the program applies only for the qualified investors of the 1st phase (2000 MW wind and 2300 MW solar), and in case of failure to achieve this target, the door will be opened for qualifying new investors or increasing the capacities for the already qualified investors.
- A number of (38) applications were received from investors of the 1st Phase who are desirous to continue in the 2nd Phase with solar energy projects of total capacities of 1545 MW, and another (17) applications for wind energy projects of total capacities of 690 MW.
- Cost Sharing Agreements have been signed for the 2nd Phase of the FIT program with (34) investors.
- On 29/10/2017, the international financing institutions submitted letters confirming the achievement of financial closure of (30) projects for electricity production from the solar energy in Benban region with total capacities of 1365 MW.

For more information please visit the websites:
www.egyptera.org,
www.nrea.gov.eg

7 Electrical Power Distribution

Electrical Power Distribution

Distribution Companies:

- North Cairo Electricity Distribution Company
- South Cairo Electricity Distribution Company
- Alexandria Electricity Distribution Company
- Canal Electricity Distribution Company
- North Delta Electricity Distribution Company
- South Delta Electricity Distribution Company
- Beheira Electricity Distribution Company
- Middle Egypt Electricity Distribution Company
- Upper Egypt Electricity Distribution Company

Objectives:

- Distributing and selling the electrical 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 electrical power purchased from the Industrial Sector and other IPPs in case of exceeding their needs, provided the approval of EEHC Board of Directors.

- Managing, operating and maintaining the medium and low voltage grids according to the dispatch centers instructions and inconsistency with the requirement of economic operation.
- Preparing forecast studies on load and energy for Company's customers and economic and financial forecast for the Company itself.
- Conducting studies, researches, designs and implementing power projects for supplying electrical power to different purposes on the medium and low voltages and carrying out all associated works.
- Managing, operating and maintaining isolated generation units which is not connected to the unified grid.
- Carrying out any other works or activities related to or fulfilling the Company's objective in addition to any other work that may be entrusted to the Company by EEHC within its scope of work.
- Carrying out other works entrusted to the Company by other parties, within its scope of work, which achieve an economic benefit for the Company.

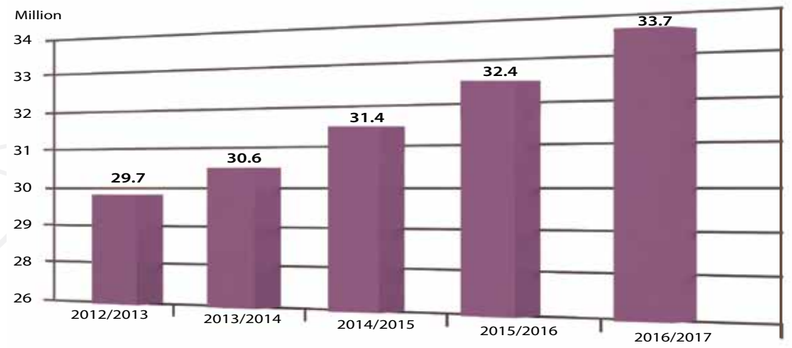
Electricity Distribution Network Statistics (30/06/2017)

Comp. / Item		North Cairo	South Cairo	Alex.	Canal	North Delta	South Delta	El Beheira	Middle Egypt	Upper Egypt	Total
No. of Customers (Million)		4.3	5.5	2.6	3.9	4	4.5	2.3	3.6	3	33.7
Sold Energy (GWh)		16748	22828	8345	21547	12131	10840	9691	14209	10731	127070
Purchased Energy (GWh)		20724	28038	10315	24274	14467	12876	11535	16825	12857	151913
No. of Switchboards		403	374	240	1253	211	213	273	143	107	3217
Percentage (%)		12.5	11.6	7.5	38.9	6.6	6.6	8.5	4.5	3.3	100
Length of MV Network (km)	Lines	198	3340	577	15380	9964	7781	14688	18076	10995	80999
	Cables	22803	23587	11658	20815	6677	4941	5805	6932	7474	110692
	Total	23001	26927	12235	36195	16641	12722	20493	25008	18469	191691
Length of LV Network (km)	Lines	3338	4839	3901	31996	22982	18335	20604	35391	32029	173415
	Cables	36856	40790	6304	16019	3050	947	2791	2844	2178	111779
	Total	40194	45629	10205	48015	26032	19282	23395	38235	34207	285194
Total Length of MV&LV Lines & Cables (Km)		63195	72556	22440	84210	42673	32004	43888	63243	52676	476885
Percentage (%)		13.25	15.21	4.71	17.66	8.95	6.71	9.2	13.26	11.05	100
No. of Customers (Th)/ Total Length (Km)		0.068	0.075	0.117	0.046	0.095	0.140	0.052	0.057	0.057	0.070
Sold Energy (GWh) / Total Length (Km)		0.27	0.31	0.37	0.26	0.28	0.34	0.22	0.23	0.20	0.27
No. of Distribution Transformers		17087	21767	8400	33355	17363	16968	21921	24222	21748	182831
Sold Energy (GWh)/ No. of Transformers		0.99	1.05	1.00	0.65	0.70	0.64	0.45	0.59	0.49	0.70
Capacity of Distribution Transformers MV		14732	15623	5656	13485	5297	5316	4983	6099	5409	76600
Percentage (%)		9.35	11.91	4.59	18.24	9.50	9.28	11.99	13.25	11.90	100
Number of LV Pillars and Panels		57868	59494	8400	47989	19393	17071	27330	13779	23012	274336
Percentage (%)		21.1	21.7	3.1	17.5	7.1	6.2	10.0	5.0	8.4	100

Distribution Companies Statistics (on medium and low voltages)

1 - Number of Customers:

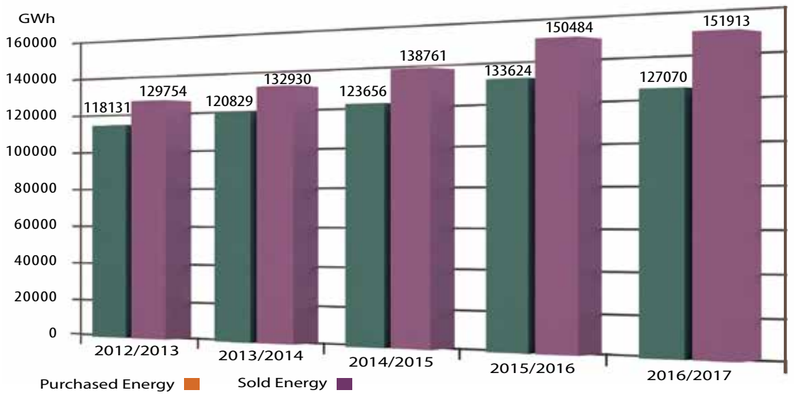
- On 30/06/2017 the total number of customers on medium and low voltages reached about 33.7 million customers compared to 32.4 million customers on 30/6/2016 at a variation rate of about 4%.



The yearly average growth rate of customers is 3.2% during the period from 2012/2013 till 2016/2017.

2 - Purchased & Sold Energy at Distribution Companies:

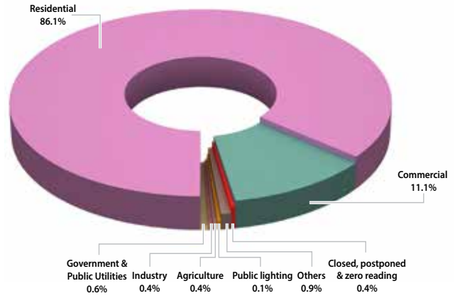
- On 30/06/2017, the total purchased energy on medium and low voltages reached 151'913 GWh compared to 150'484 GWh on 30/06/2016, while the total sold energy on medium and low voltages reached 127'070 GWh against 133'624 GWh on 30/6/2016.



The average growth rate of sold energy is 1.8%, while the average growth rate of purchased energy is 4% per year during the period from 2012/2013 till 2016/2017

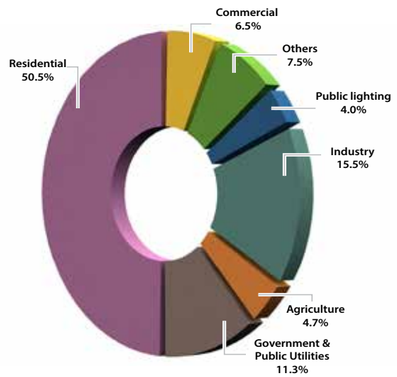
3 - Number of Customers (on Medium & Low Voltages) According to Purpose

Purpose of Usage	No. of Customers (Thousand Customer)
Industry	140
Agriculture	122
Government & Public Utilities	211
Residential	28981
Commercial	3734
Closed, postponed & zero reading	119
Public lighting	32
Others *	319
Total	**33658**



4 - Energy Sold by Distribution CO's (on Medium & Low Voltage) According to Purpose

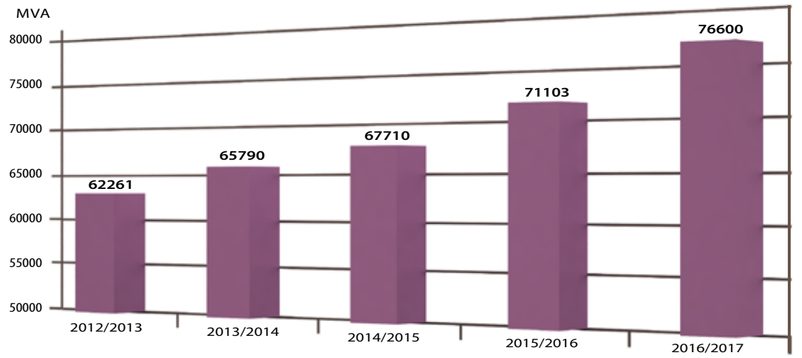
Purpose of Usage	Sold Energy (GWh)
Industry	19660
Agriculture	6033
Government & Public Utilities	14336
Residential	64125
Commercial	8272
Public lighting	5115
Others *	9529
Total	**127070**



* **Others: power theft, youth centers, Gaza, …**

5 - Total Distribution Transformers' Capacities (on Medium & Low Voltages)

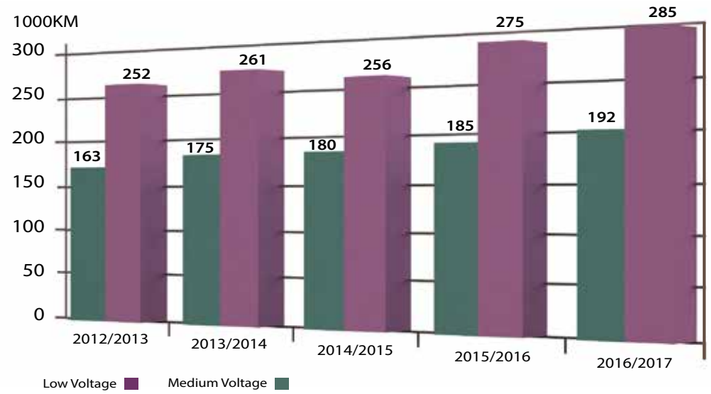
The total capacities of distribution transformers reached 76'600 MVA on 30/6/2017 compared to 71'103 MVA on 30/6/2016 at a variation rate of about 7.7%.



The yearly average growth rate of distribution transformers capacities is 5.32% per year during the period from 2012/2013 till 2016/2017.

6 - Total Lengths of Medium & Low Voltage Lines and Cables

The total lengths of medium voltage overhead lines and cables reached about 192 thousand km. on 30/6/2017, compared to 185 thousand km. on 30/6/2016, at a variation rate of 3.8%, while the total lengths of low voltage lines and cables reached about 285 thousand km. compared to 275 thousand km. on 30/06/2016 at a variation rate of about 3.6%.



The average growth rate of the total length of medium voltage overhead lines and cables is 4.2% per year, while the average growth rate of the total lengths of low voltage overhead lines and cables is 3.1% per year during the period from 2012/2013 till 2016/2017

Improvement of Customer Services

Development of Customer Service Centers:

- The electricity distribution companies are working on the continuous development of customer service centers to improve the quality of services provided to the customers and increase their efficiency.
  - The number of main service centers that have been developed in cities reached 425 out of 439 centers in total, while the number of branch centers in villages reached 740 branches during the year 2016/2017 to facilitate reporting of faults and ensure speedy repairs.

Administrative Reform of the Centers:

The Ministry of Electricity & Renewable Energy, aiming to facilitate customer services and simplify the required procedures for electricity connections to customers, has achieved the following:

- Formulating five forms for public services as follows:
  - Request for connecting electricity to buildings (all purposes of consumption).
  - Request for meter testing & replacement.
  - Request for meter disconnection.
  - Request for obtaining information or customer consumption certificate.
  - Request for the installation of power factor correction devices (capacitors) upon customer request.

Commercial Improvement:

- Automating all works performed at the service center using computers.
- Providing commercial services such as contracting procedures with customers (such as new contracting - strengthening and amending contracts - ground, subsidiary and temporary connections - moving a meter or box).

One-Window System:

This is an integrated electronic system for automating services provided in service centers of the electricity distribution companies so that a customer can benefit from (26) services through dealing with only one window at the branch providing the service, and that system aims to the following:

- Standardize the procedures necessary for performing each service as well as the time necessary for its completion.
- Reduce the use of paper transactions in providing the services and gradually transform to the automated system.
- Pay due attention to investigate customer complaints and speed up the necessary procedures to solve them and respond to customers.
- Ease of making reports and statistics of the numbers of customers who benefit from the services of distribution companies.

Automating the one-window system services has been activated in (345) centers out of a total of (485) centers at the level of distribution companies. The services are to be activated in all service centers in March 2018.

Customer Services through a Unified Call Number (121):

- An electronic system to receive complaints in the Electricity Sector on the unified call number (121) by assigning this service to a specialized national company that acts as a neutral party to ensure that service is provided according to international standards, with daily and monthly reports to follow up on the rate of closed complaints where no less than 98% for technical complaints and 95% for commercial complaints should be achieved.

Moreover, in case of any problem concerning electricity bills, a customer will be able to send an SMS to the number (91121) or send a photocopy of the bill and meter reading from the customer's mobile WhatsApp application on the following numbers:

NO.	Company	WhatsApp No.
1	North Cairo	01228388888
2	South Cairo	01278117626
3	Alexandria	01289533661
4	Canal	01270003430
5	North Delta	01097217682
6	South Delta	01207774849
7	Beheira	01000549020
8	Middle Egypt	01200000724
9	Upper Egypt	01002822513

The one-window services are now linked to the unified call number (121) system of receiving complaints and faults to respond to customers' inquiries about the services provided by the distribution companies.

Smartphone Applications:

- The smartphone applications have been activated to record the meter reading by a customer on a monthly basis, in addition to the existence of the time-alert feature in the application as the time of recording monthly reading approaches. Through this application, a customer is able to know the bill value and consumption, to inquire about previous bills and calculation of consumption through the website of the smart electricity services, or to download the application on his mobile phone.

Use of Insulated Conductors Instead of Non-insulated:

- Insulated conductors are used instead of non-insulated ones on the low voltage network for all new connections as well as replacement and renovation operations without any additional cost to customers to protect them from fire dangers due to the falling of non-insulated conductors. The total lengths of the insulated conductors installed in the distribution network reached about 596 thousand km. up to 30/6/2016, representing 89% of the total low voltage network of electricity distribution companies.

For more information please visit the website:
www.eehc.gov.eg

Smart Meters and Pre-Paid Meters

According to the Ministry of Electricity & Renewable Energy's plan to provide electricity for all utilizations with a high level of quality through modern technological solutions, EEHC took the initiative of adopting a project for applying the smart and pre-paid meter system aiming to improve the network potentials, managing the energy demand more efficiently, in addition to other benefits including the decrease of network losses. To that end, the following procedures have been taken:

1- Smart Meters:

Cooperating with Wadi El-Nile Company to implement a pilot project to install 250'000 smart meters in the geographical range of six distribution companies (namely North Cairo, South Cairo, Alexandria, Canal, South Delta and Middle Egypt) in addition to the establishment of the main Data Centre at EEHC.

The pilot project is expected to be completed by the end of 2018.

2 - Pre-Paid Meters:

- The use of this type of meters has been expanded since 2011 and was generalized in 2014, with about 4.3 million meters installed by October 2017.
- To encourage local manufacturing, a limited tender was published in July 2016 for the supply of one million pre-paid meters (850'000 single-phase and 150'000 three-phase meters) to the distribution companies, and procurement was completed in May 2017.

3 - Pre-Paid Coded Meters:

- On 9/5/2016 the Ministerial Decree no. 254 of 2016 was issued in determination of the controls of implementing the Cabinet Resolution no. 886 of 2016 regulating the installation of temporary pre-paid coded meters at the facilities and buildings which are illegally fed from the electrical network, to decrease power loss and limit the phenomenon of electrical current theft, with the following exceptions:
  - Infringed units constructed on archaeological sites, and units violating the law of the protection of electrical installations no. 63 of 1974, as amended by Law no. 204 of 1991, or the Law no. 87 of 2015 promulgating the Electricity Law.
  - Units in violation of the height limits determined under the Civil Aviation Law.
- Up to October 2017, the total number of applications reached 1.9 million and the total number of paid estimates amounted to 1.5 million of which 87% has been executed.
- The distribution companies allow for payment of 50% of the estimate value in installments in case of inability to pay the full value.

4 - A Unified Program for Management of Pre-Paid Meters:

On 19/6/2016, a contract was signed with the National Service Projects Organization (NSPO) of the Ministry of Defense for the implementation of a project for preparing a unified program for pre-paid meters' management. The objectives of the project are:

- to establish a unified central system for charging the pre-paid meters;
- to handle all types of meters through a unified program;
- to obtain standard reports at the level of all companies, or at the level of EEHC to help making decisions; and
- to facilitate the card-charging service to customers through electronic collection channels (FAWRY DAHAB-DELTA), or charge at any charging centre within the range of a distribution company with the possibility of operating new branches and the addition of different charging channels.

Improving Energy Efficiency and Rationalizing Consumption

One of the main components of the strategy adopted by the Electricity & Renewable Energy Sector is to improve energy efficiency (EE) in terms of production, transmission and utilization to ensure its sustainability, and to reduce greenhouse gas emissions and mitigate the effects of climate change. In this context, the Sector has undertaken several actions and initiatives in various areas of energy conservation, leading to a gradual market transformation towards the use of high-efficient lighting systems and the surge of LED market size to nearly 70 million lamps.

First: Use of high efficient lighting systems in the various sectors:

Street Lighting:

- In August 2015 contract was signed between the Ministry of Local Development, the Ministry of Finance, the Ministry of Electricity & Renewable Energy and the Arab Organization for Industrialization for suppling 3.6 million high-pressure sodium streetlights (100 and 150 watt) and LED lamps to be installed all over the country in a total value of EGP 2.1 billion paid by the Ministry of Finance.
- Till October 2017, an amount of 1.8 million lamps has been delivered, of which 1.7 million have been already installed.

Residential Lighting:

- The Ministry of Electricity & Renewable Energy has launched an initiative for the distribution of 13 Million LED lamps of different wattage to the customers of residential sector in Egypt. By October 2017 all lamps have already been supplied with nearly 11 million lamps distributed to and installed by customers of the distribution companies.

Lighting of Private &Government Buildings:

- Several pilot projects have been implemented (e.g. replacement of lighting systems with other energy-saving LEDs, installation of capacitors to improve the power factor, etc..) at some public and private buildings in various sectors such as the banking sector, commercial chains and hotels, which, considering their success, have been generalized in these sectors.

Second: Awareness of energy efficiency and conservation importance:

- The Ministry of Electricity & Renewable Energy launched a national initiative entitled "You are the Solution" (Inta El-Hal) supported by the Central Bank of Egypt and sponsored by EEHC through the various media channels, street advertisements and social media, to provide practical solutions and suggestions that can be implemented by citizens to rationalize electricity consumption. The campaign came out with positive results and imprinted a clear impact on the behaviour of citizens.
- The Energy Efficiency Improvement Project, funded by the UNDP, implemented a campaign under the slogan "Energy Efficiency in the Card" (kafa'it el-taqa fil-betaqa) within the geographical domain of Cairo and Giza governorates, as a first stage, to train sellers (300 vendors) and enhance their skills in selling high energy efficiency devices, as well as holding awareness seminars for consumers in the two governorates to provide information and raise awareness of the importance of being guided by the efficiency card when making a purchase decision. In addition, seven seminars were also held for information and awareness at the National Center for Women, the Egyptian Engineers' Syndicate, Heliopolis Association, and Maddi, Heliopolis & Shooting Sporting Clubs, as well as Al-Jazeera Youth Center.

Third: EE specifications & card program for household appliances:

- The Egyptian Minimum EE Performance Standards (MEPS) have been issued for dish washers, fans of all types, television sets, electric ovens and vacuum cleaners, and establishment of energy testing laboratories in collaboration between the Energy Efficiency Improvement Project, the Egyptian Organization for Standards & Quality and manufacturers of electrical appliances .
- Work is underway on the preparation of EE standards for air conditioners with variable-speed piston, electric heaters (instant), and household water pumps, and updating the fridge specification issued under No. 3794/2008 to comply with the requirements of the new version of the international specification.

Information about Distribution Companies

Distribution Company	Geographical zone	Headquarter	Capital (million EGP)	Ratio of Company's Capital to EEHC Investments	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 in Qalyoubeya Governorate	Cairo	306.685	1.83%	2 Nasr Road - Nasr City	02/22725095 02/22724499
South Cairo	South, Middle & West Cairo Sectors in Cairo Governorate; and all Giza Governorate	Cairo	437.444	2.61%	53, 26th July St., Cairo	02/25766612 02/25760383
Alexandria	Alexandria Governorate to K. 66 Alex/Matrouh Road	Alexandria	377.008	2.25%	9, Sedi El-Metwalli St., Attarien, Alex.	03/3933223 03/4948107
Canal	Ismailia, Port Said, Suez, Sharqeya, North Sinai, South Sinai & Red Sea Governorates & New Cities	Ismailia	497.338	3.00%	Osman Ahmed Osman Square, El-Sheikh Zayed, Ismailia	064/3209600 064/3208240
North Delta	Daqahleya, Damietta & Kafr El-Sheikh Governorates	Dakahlya	449.246	2.68%	Gomhorya St.,	050/2304186 050/2304187
South Delta	Qalyoubeya (Except Greater Cairo extension); Menoufeya (Except Sadat City and its affiliated villages & El-Khatatba Center) & Gharbeya Governorates	Gharbia	357.439	2.13%	Tanta- Kafr El Sheikh Road	040/3455516 040/3455519 040/3451922
Beheira	El-Beheira & Matrouh Governorates and beyond K. 66 Alex/Matrouh Road; Sadat City and its affiliated villages & Khatatba Center in Menoufeya Governorate	El Behera	342.537	2.04%	Gomhoreya St. Damnhour, Beheira	045/3324399 045/3221509
Middle Egypt	Beni Suif, Fayoum, Minia, Assiut & New Valley Governorates	Minia	474.843	2.83%	78, Horreya St. Minia	086/2346733 086/2353527
Upper Egypt	Sohag, Qena, Aswan and Luxor Governorates	Aswan	435.766	2.6%	High Dam, West Aswan	097/3480416 097/3480317

Human Resources and Training

Human Resources and Training

As part of its continuous pursuit to keep up with the latest changes and global trends for the aim of achieving the utmost care of the human resources as a real pillar and foundation to realize its strategic objectives, EEHC and its subsidiaries saves no effort to develop and improve the potentials of their human resources. The following are the most important indicators of human resources at EEHC and its subsidiaries.

First: Man Power:

On 30/06/2017, the total number of the employees at EEHC and its subsidiaries amounted to 165'523 employees against 169'933 employees on 30/06/2016, in decline of (4410) employees at a rate of 2.6%, due to retirement, death cases in addition to suspension of new recruitments.

The following is a statistic of the number of employees of EEHC and its subsidiaries on 30/06/2017:

Total No. of employees at EEHC and its Affiliated Companies
165523

EEHC | Total = 2712

Head Office = 1998
Electricity Hospital* = 714

Production Companies | Total = 33147

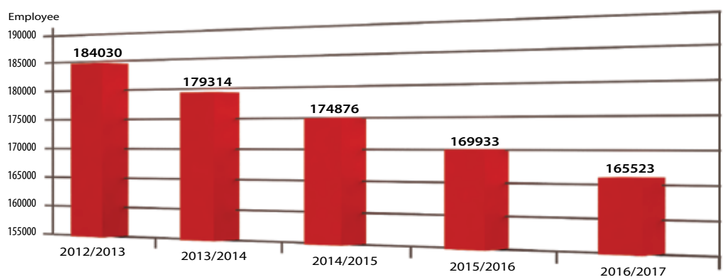
Cairo = 5399
East Delta = 6958
Middle Delta = 7916
West Delta = 6497
Upper Egypt = 3142
Hydro power plants = 3235

Egyptian Electricity Transmission Company Total = 30147

Distribution Companies | Total = 99517

North Cairo = 12472
South Cairo = 17054
Alexandria = 12053
Canal = 15509
North Delta = 8278
South Delta = 9466
El-Beheira = 8043
Middle Egypt = 9114
Upper Egypt = 7528

The total number of employees at EEHC and its affiliated companies



The average rate of decrease in the total number of the employees at EEHC and subsidiaries amounted to 2.6% per year during the period from 2012/2013 to 2016/2017.

* In addition to 1490 employees at the fast-track plants and Siemens Projects.

Second: Development of Human Resources:

Out of its belief of the significant change that can be affected by human resources being the most important element of the production process, the Company's leadership constantly strives to develop the human resources capacity and raise their ability to deal with the technological development and its innovations, especially with the issuance of the unified Electricity Law and the encouragement of the private sector to invest in energy projects to create a competitive environment. In consequence, it was a must to change our policy and strategy to enable EEHC and its subsidiaries meet the challenges to ensure sustainability, and in this regard following measures have been taken: -

- The Company completed the implementation of the main axes of its strategy for development of human resources, that focuses on building a culture based on performance quality, accountability and the creation of a more diversified work force.
- The documentary cycle is being developed with the aim of reducing waste paper as well as storage burdens.
- An analytical study of the organization structures of the distribution companies has been completed aiming to prevent duplication of job functions and achieve integration of sub-activities.

Third: Health Care:

In the context of developing and improving the performance of the medical service for the workers in the Electricity Sector, the Electricity Hospital has been developed and renovated where the following has been implemented: -

- Developing the work system at outpatient clinics, inpatient sections, supporting sections and the intensive care.
- Introducing some treatment services and operating some clinics in night shifts.
- Introducing the clinical pharmacy to implement therapeutic protocols to reduce expenses and control patients' doses, and reduce expenses.
- Conducting monthly training courses for staff (more than 380 persons).
- Taking measures for tightening the documentary cycle and internal control.

These efforts have led to achieving a surplus amounting to EGP 31.7 million in FY 2016/2017 compared to EGP 10.1 million in the past year, at a growth rate of about 214%.

Fourth: Training & Capacity Building:

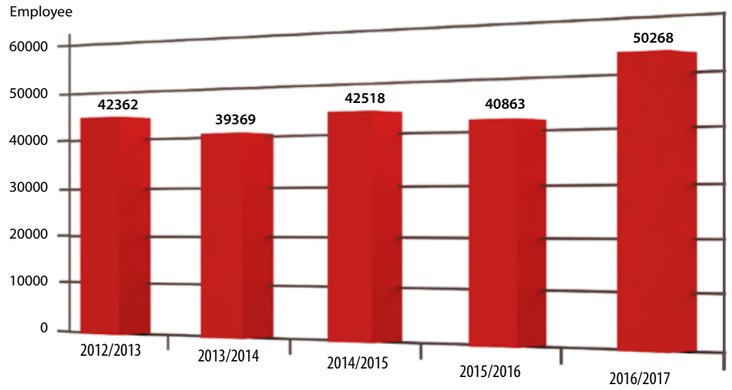
The strategic objective of training is to contribute to the Company's success and continuity through the development of an appropriate training plan that maintains a high level of skills and competitiveness of employees, the outstanding performance and continuous improvement through development of human resources, refining their skills and enabling them to perform their roles that they contribute in achieving the objectives of the company and achieving the overall effectiveness of these objectives.

Considering the new strategy adopted by EEHC to develop and improve the efficiency of the training system, the following has been achieved: -

A. Training of Employees:

The total number of trainees and employees enrolled in post-graduate programs at EEHC and its subsidiaries has amounte to 50'268 trainees in 2016/2017 inside and outside Egypt compared to 40'863 trainees in 2015/2016 at a variation rate of 23%.

Total number of Trainees at EEHC and Subsidiaries



The average growth rate of the number of trainees at EEHC and its subsidiaries amounted o 4.4% per year during the period from 2012/2013 to 2016/2017

B. Training of Others:

According to the Agreement concluded with the Ministry of Education and in support of the social responsibility of EEHC, joint classes for industrial education were established with a total enrollment of 755 students and 255 graduates in the FY 2016/2017.

In the framework of cooperation with the Arab and African countries in the field of training, training agreements were concluded between EEHC and a number of countries, as follows:

Country	No. of Trainees in 2016/17
Palestine	48
Nile Basin Countries	195
African Countries	29
Kingdom of Saudi Arabia	45
TOTAL	317

In addition, expatriates in Egypt (from outside the Electricity Sector) were trained with a total number of 595 trainees.

Fifth: 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 1996 to achieve the following mission:

"Prepare a new generation of leaders who are capable through their knowledge, behaviors and experience to achieve the sector goals."

The achievements of the LDC during FY 2016/2017 were the following: -

- Training of several employees from (7) ministries and entities outside the Electricity Sector with a total number of 128 trainees after accreditation of the LDC by the Central Agency for Organization and Administration.
- Completing the rehabilitation of Abu-Qir Training Center of West Delta Electricity Production Co. for obtaining the ISO 9001/2015 Certificate from the granting company.
- Initiating the updating of the quality systems and procedures at the LDC to match the requirements of the International Standards of ISO 9001/2015.
- The total number of LDC courses during FY 2016/2017 amounted to (194) training courses for 3600 trainees, compared to (168) training courses for 2555 trainees in FY 2015/2016.
- Graduation of Batch (23) of the Leadership Development Course comprising (25) trainees, that brings the total number of graduates of the LDP Course to (600) trainees.

Sixth: Development of EEHC's Regulations:

In the framework of the desire of EEHC and its subsidiaries to keep up with all developments that occur on the work system and the policies of human resources, some guidelines regulations and procedures have been issued and modified for the creation of a stimulating work environment, and these are represented in the following:

- Two training centers (Mokattam Training Center & Plants Training Center in Aswan) have been accredited as distinct training centers by the Association of Power Utilities of Africa (APUA) within The African Network of Centers of Excellence in Electricity (ANCEE) initiative funded by a grant from the African Development Bank (ADB) and the French Development Agency (AFD).

- The establishment of an Egyptian joint stock company for training services is underway for assembling the training centers of the affiliated companies in one strong entity based on the principles of modern management to achieve the optimum utilization of the capacities and capabilities of the training system.
- A specialized company has been hired for founding a medical service company for a better medical system to serve the employees.
- A unified regulation has been prepared to organize the work of the Boards of Directors and boost the effectiveness of the control role, and arrangements are ongoing for its approval and issuance.
- Modifications of all work regulations and systems of the Company have been completed to keep pace with current business requirements and be standardized at the level of the affiliated companies, and the necessary arrangements are ongoing for their approval and application.
- The modification of the organizational and functional structure of EEHC and its subsidiaries is being finalized with a view to streamlining work procedures and preventing duplication of competencies between organizational divisions and integration of sub-activities operating in one specialty.

Seventh: Adoption of the Financial & Administrative Restructuring, Governance and Capacity Building:

The implementation of the Financial & Administrative Restructuring, Governance and Capacity Building Project is ongoing at the level of EEHC and subsidiaries in coordination with the World Bank and under supervision of the Ministry of Electricity & Renewable Energy, and its impacts were reflected on activating governance to ensure transparency, which is represented in the following: -

- A grant agreement was signed with the European Bank for Reconstruction & Development (EBRD) to provide technical support for the preparation of the consolidated financial statements of EEHC and subsidiaries in accordance with International Financial Reporting Standards (IFRS).
- A code of governance has been prepared by the consultant PricewaterhouseCoopers (PWC) and is being considered in preparation for adoption and application.
- In support of transparency and disclosure, the process of recruiting new employees has been conducted through a company specialized in the field of employment to ensure equal opportunities.
- A series of training courses have been implemented in the field of corporate governance, internal auditing, performance evaluation, and valuation of assets to upgrade the level of employees at EEHC and subsidiaries.
- The year 2016/2017 witnessed notable progress in the application of governance mechanisms, represented in activating the role of Audit Committees at the level of EEHC and subsidiaries to assist the board of directors in carrying out its control role. Regarding financial reports and internal control systems, the audit committees have been able to achieve the following:
  - Studying and reviewing the amendments to the financial regulations in line with the current work requirements and standardization at the level of subsidiaries.
  - Reviewing the planing budgets of FY 2017/2018 and final financial statements for FY 2016/2017 before submission to the Board of Directors.
  - Currently studying and evaluating internal control systems, documentary cycles and information circulation systems in EEHC and subsidiaries to identify the strengths and weaknesses.

Eighth: Compliance

Within the framework of EEHC's keenness to apply the principles of governance, especially in view of the issuance of the unified Electricity Law, the General Department of Compliance has been introduced as an essential step to help manage the risks of non-compliance effectively through the following:

- **Preparation of the Policy Manual on Reporting Illicit Practices and Protection of Whistleblowers:**

  The Manual promotes the policy of combating corruption and dissemination of the culture of transparency and protection of whistleblowers in case of reporting on illicit practices.

- **Identification and Assessment of Inherent Risks:**

  The risk register for the different sectors and departments within the Holding Company is being prepared in cooperation with the consultant (PWC), which is expected to be completed by June 2018.

- **Preparation of Compliance Policy & Manual of Procedures:**

  In collaboration with PWC, compliance policies and manual of compliance procedures for EEHC and subsidiaries are being prepared aiming to ensure compliance by all sectors and departments with the laws, regulations and procedures organizing the work to enhance the reputation of the Company and its credibility with all parties dealing with it and with the international financial institutions. Approval of the manual by the Company's Board of Directors is underway.

7 Commercial and Financial Activity

Commercial & Financial Activity

Electricity Tariff Reform:

The internationally recognized pricing policies aims to achieve the following:

- Prices realize financial and economic efficiency of the electricity utility.
- Prices cover costs according to supply voltage.
- Prices reflect the right indicator of electricity use, taking into consideration the social dimension (i.e. affordable price to consumer), transparency, simplicity and equality.

- On 17/07/2014, the Cabinet issued the Decree no. 1257 approving the study conducted by the Electricity Sector for tariff restructuring to rectify electricity prices and gradually phase out government subsidy. Restructuring is meant to bring the electricity tariff up to a level that covers the real cost of generation, transmission and distribution of electricity by the end of a five-year period commencing on 01/07/2014 and ending 30/06/2019, to overcome the hardships and challenges facing the electricity companies and ensure sustainability of their activity and soundness of their financial situation. Prices would be revised on an annual basis in view of the changes that occur on the cost elements prevailing at the time of preparing the study.
- The study took into consideration the protection of low income families and the full adherence to the State policies and orientation in adopting the principle of energy conservation and directing the government subsidy to those who deserve it.
- On 08/8/2016 the Minister of Electricity and Renewable Energy issued the Decree no. 436 of 2016 regarding the modified electricity tariff for FY 2016/2017 (3rd year of the electricity tariff restructuring plan "ETRP") to be applied as from 01/07/2016.
- Several economic decisions were issued on 03/11/2016 and beyond, the foremost among which were the VAT Law No. 67 of 2016, the liberalization of foreign currency exchange rates, the increase in the lending rate by 300 base points in November 2016 and another 200 base points in May 2017, and the increase in operation fuel prices. All these decisions have led to a significant change in cost elements, mainly fuel, spare parts, compulsory maintenance required to continue operating power plants efficiently, taxes and customs duties, as well as the financing burdens of existing and under-construction projects. This, in turn, resulted in widening the gap between electricity prices as set by the Ministerial Decree no. 436 of 2016 and the cost of sold unit of electric power, and the sharp increase in subsidy provided to consumers from about EGP 30 billion (expected) to EGP 61.7 billion (actual) for FY 2016/2017.
- According to the provisions of the Presidential Decree on Law No. 87 of 2015 issued on 07/07/2015, promulgating the Electricity Law (Chapter 2, Section 1, Article 4, para. 3), the Electricity Utility and Consumer Protection Regulatory Agency (EGYPTERA) is responsible for setting proper economic rules and principles to calculate the electricity selling tariff to consumers and having those rules and principles approved by the Cabinet. By virtue of that Decree, EGYPTERA was mandated to revise the prices approved by the Cabinet for selling electricity in the 4th year of the ETRP (FY 2017/2018) and make suggestion to adjust prices to achieve balance between the interest of electricity companies and maintaining their continuity in providing the service entrusted to them, taking into account the low-income population and the gradation in electricity selling prices to different consumer segments according to the amount of consumption.
- On 06/07/2017, the Minister of Electricity & Renewable Energy issued Decree No. 312 of 2017 in modification of the electricity selling tariff for the year 2017/2018 (4th year of the ETRP) as from 01/07/2017 to 30/06/2018.
- All consideration is given to maintain subsidy to household consumers up to 1000 kW/h. per month, the subsidy for whom is expected to amount to about EGP 47.3 billion out of the total subsidy expected for FY 2017/2018 in the amount of about EGP 52.7 billion.

The following table illustrates the electricity tariff and the service charge for different purposes of consumption for FY 2017/2018.

Purpose of using	Demand Charge (2) Pound/ KWh	Energy Average Price (4) Piaster/ KWh	Off Peak (3) Piaster/ KWh	On Peak (3) Piaster/ KWh	Customer Service Charge Pound/cons/m
Extra High Voltage (220,132) K.v					
Kima	-	-	30.0		35
Metro- Ramses	-	-	40.0		
Intensive industries (1)	30.0	67.6	62.4	93.6	
High Voltage (66,33) K.v					
Metro- Ramses	-	-	40.0		35
Heavy industries (1)	40.0	70.9	65.4	98.2	
Medium Voltage(22,11) K.v					
all Consumers	50.0	76.7	70.8	106.2	35
Water and sanitation companies		90.0			
Low Voltage(380 V)					
Irrigation	-	35.0	-	-	4
Water and sanitation companies		90.0			15
Other Consumers	-	90.0	-	-	
Public Lighting	-	105.0	-	-	

Residential

Electricity Selling Prices		Customer Service	
Sliced consumption (KWh/m)	P/KW.h	Sliced Consumption (KWh/m)	Customer Service Charge Pound/cons/m
0 - 50	13	0 - 50	1
51 - 100	22	51 - 100	2
0 - 200	27	101 - 200	6
201 - 350	55	201 - 350	11
351 - 650	75	351 - 650	15
651 - 1000	125	651 - 1000	25
Zero - more than 1000	135	More than 1000	40
		Zero Read	9

Commercial

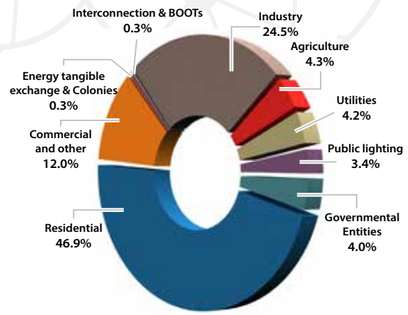
Electricity Selling Prices		Customer Service	
Sliced consumption (KWh/m)	P/KW.h	Sliced Consumption (KWh/m)	Customer Service Charge Pound/cons/m
0 - 100	45	0 - 100	5
0 - 250	84	101 - 250	15
0 - 600	96	251 - 600	20
601 - 1000	135	601 - 1000	25
Zero - more than 1000	140	More than 1000	40
		Zero Read	9

* Prices are based on Power Factor 0.92
* Energy-intensive industries include: iron, copper, cement, fertilizers, aluminum, petrochemicals, in addition to SUMED Company.
* The demand charge is based on the maximum demand of a consumer recorded over 3-month period.
* The ToU tariff is applied in accordance with the smart meter application program, and the peak hours duration is 4 hours starting at a time defined by the Ministry of Electricity & Renewable Energy.
* In case there are no meters, the applied tariff is the average energy price.

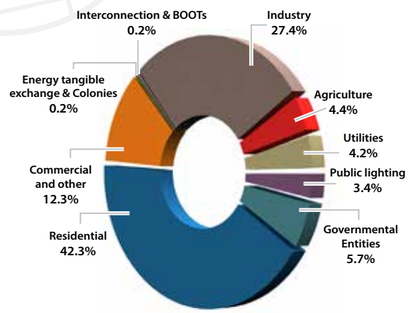
Total Sold Energy on All Voltages Classified According to Uses (GWh)

Type of Usage	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Industries	37423	37320	38242	38310	41479
Agriculture	6229	6310	6555	6755	6743
Utilities	5904	5962	6338	6519	6395
Public lighting	6210	5692	5353	5293	5115
Governmental Entities	7663	8297	6062	6292	8630
Residential	59757	61962	64546	73361	64125
Commercial and other	17068	17392	18851	18788	18585
Interconnection& BOOTs	418	417	699	510	268
Energy tangible exchange & Colonies	243	232	260	472	266
Grand total	**140915**	**143584**	**146906**	**156300**	**151606**

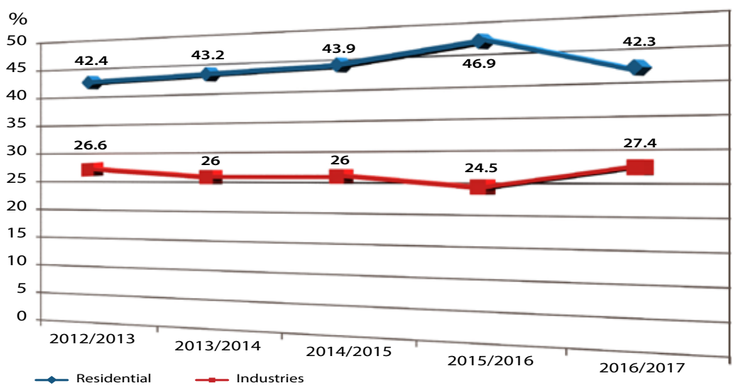
2015/2016



2016/2017



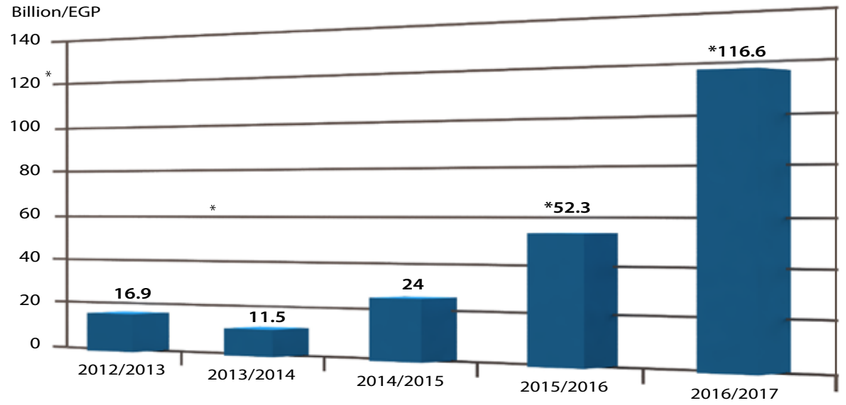
It is noticeable that the ratio of household consumption to industry and other purposes is relatively high due to the continued urban expansion under the current conditions in the country and the ongoing increase in the use of electrical appliances, especially air conditioners due to high temperatures during summer.



Financial Position of EEHC and its affiliated Companies

Description		2015/2016	2017/2016	Variation %
Net Fixed Assets	(Billion EGP)	148.7	237.1	59.4
Inventory	(Billion EGP)	14.6	21.8	49.3
Cash and Banks	(Billion EGP)	12.3	12.8	4.1
Net Working Capital	(Billion EGP)	(75.4)	(87.4)	(16)
Equity	(Billion EGP)	11.5	16.9	47
Total Revenues (excluding revenues from exchanged energy)	(Billion EGP)	92.9	125.5	35.1
Total Cost and expenditures (excluding expenditures of exchanged energy)	(Billion EGP)	94.4	128.1	35.7
Net Profit (Loss)	(Million EGP)	(1449)	(2506)	-
Investments *	(Billion EGP)	52.3	116.6	-
Financing burdens (installments & Interests)	(Billion EGP)	16.9	26.9	59.2
Balances of Loans	(Billion EGP)	114.8	280.4	-

Executed Investments at EEHC & Affiliated Companies *



The average progress rate of executed investments at EEHC and its affiliated companies is about 62.1% per year during the period from 2012/2013 till 2016/2017.

* That includes part of the fast-track plan for Summer 2015 and Siemens 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 Consultancy Engineering Services Company (ACESCO)	3 Million U$D	49 %
Egyptian Syrian Company for studies and Engineering Consultations *	20 Million SYL	50 %
African Company of Electrical and Mechanical Projects (Libya) *	5 Million LYD	10 %

* Companies stopped for the current events.

Consolidated BALANCE SHEET
of E.E.H.C and Affiliated Companies
30/06/2017

(Amounts in 1000 LE)

ITEM	Cost	Cumulative Depreciation	Net Value
ASSETS			
Non-Current Assets			
FIXED ASSETS	304441275	67373852	237067423
projects in progress	115603989		115603989
Long-term investments	45594		45594
Long-term loans & debit balances (lending)	36366186		36366186
Other Assets	7967		7967
Total Non-Current Assets	**456465011**	**67373852**	**389091159**
CURRENT ASSETS			
Retained assets for sale	5229	3022	2207
Inventory	21776996		21776996
Clients, notes receivable & debit accounts	93790563		93790563
Cash In Hand &Cash At Banks	12816901		12816901
Total Current Assets	**128389689**	**3022**	**128386667**
Total Assets	**584854700**	**67376874**	**517477826**
Equity			
Capital	17994793		17994793
Reserves			
Legal Reserve	2200961		2200961
Capital Reserve	640299		640299
Other Reserves	1836047		1836047
Revaluation Surplus	46035		46035
Carried Profit (Loss)	-5783718		-5783718
Total Equity	**16934417**	**0**	**16934417**
NON-CURRENT LIABILITIES			
Long-Term Loans From Banks	243827034		243827034
Long-Term Loans From Other Entities	36584442		36584442
Other Long Term Liabilities	4299740		4299740
Total Non-Current Liabilities	**284711216**	**0**	**284711216**
Current Liabilities			
provisions	5573279		5573279
Credit Banks	5265524		5265524
Suppliers , Notes Payable & Credit Accounts	204993390		204993390
TOTAL CURRENT LIABILITIES	**215832193**	**0**	**215832193**
TOTAL EQUITY & LIABILITIES	**517477826**	**0**	**517477826**

Chairman

Eng. Gaber Dessouki Moustafa

Board Mermber
Financial , Commercial & Financing Affairs

ACC. Nadia Abdel-Aziz Katry

Consolidated Income Statement
of E.E.H.C. and Affiliated Companies
for the Period from 1.7.2016 to 30.6.2017

(Amounts in 1000 LE)

Item	1.7.2016 to 30.6.2017	
Revenues of Current Activity:		
Net Sales of Finished Products (Other than Electricity Sales)	70801	
Net Sales of Finished Products (Energy)	20770	
Net Sales of purchased goods (Energy)	67720325	
Net Sales of purchased goods (Lamps)	45505	
Rendered Services(customer service)	1634026	
Rendered Services(Other)	4635347	
Revenues of Operation for Others	1588089	
Other Revenues of Current Activity	18839	
Total Revenues of Current Activity		**75733702**
Less:		
Cost of Production or Purchasing Sold Units	-103534464	
Plus:		
Grants and Subsidies	45156781	
Grants and Subsidies(Assets gift)	1077	
Gross Profit (Loss)		**17357096**
Plus:		
Investment Revenues:		
Revenues of Other Financial Investments	18972	
Other Revenues & Profits:		
Provisions No Longer Required	773201	
Electricity Hospital Revenues	253661	
Miscellaneous Revenues & Profits	2570918	
Less:		
Adminstrative Expenses:		
Salaries, Attendance & Transport Allowances for Board Members	-10783	
Other Administrative Expenses	-4579701	
Costs of marketing	-3199066	
Burdens and Losses:		
Provisions (other than Depreciation and Fall of Inventory Prices)	-1185126	
Bad Debts	0	
Miscellaneous Burdens and Losses	-6352398	
Financing Expenses	-8184479	
Commissions and fees for letters of guarantee	-29973	
Plus:		
Credit Interests	633319	
Net Profit (Loss) from continous operations		**-1934359**
Plus (or Less) result from non continous operations:		
Profits (Losses) of Foreign Exchange Differences	0	
Revenues (Expenses) of Previous years	0	
Capital Profits (Losses)	-154708	
Extraordinary Revenues and Profits (Losses)	163919	
		9211
Net Profit (Loss) Before Income Taxes		**-1925148**
Income Taxes		580828
Net Profit (Loss)		**-2505976**

Chairman

Eng. Gaber Dessouki Moustafa

Board Member
Financial , Commercial & Financing Affairs

ACC. Nadia Abdel-Aziz Katry