

EGYPT : Electrical Energy Transformation



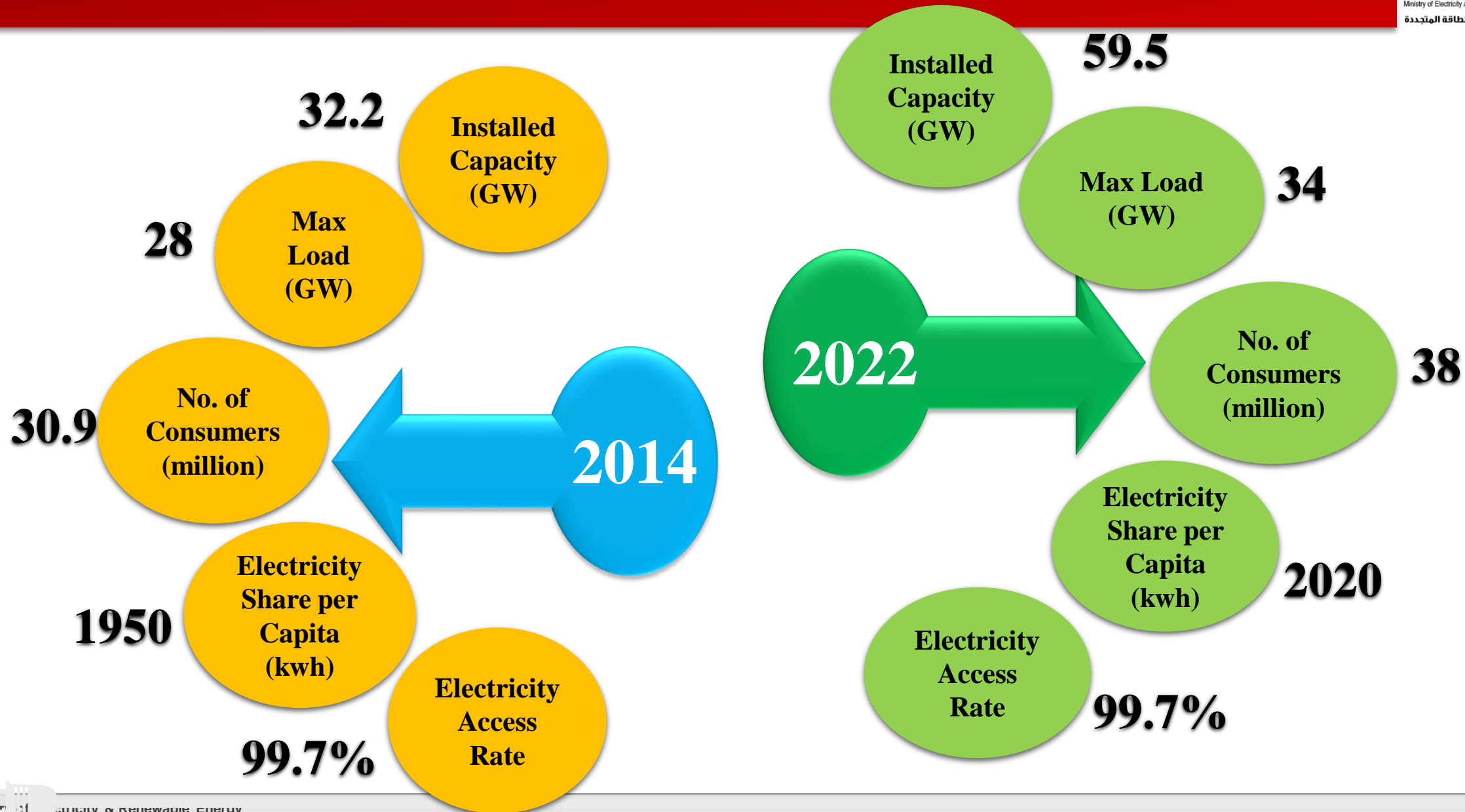
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Main Indicators 2014-2022



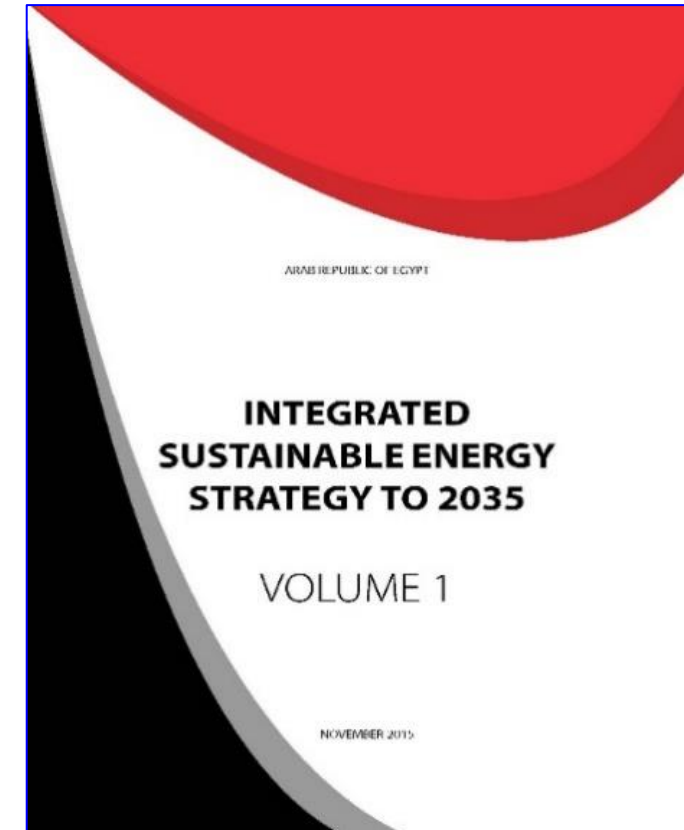
Ministry of Electricity and Renewable Energy
وزارة الكهرباء والطاقة المتجددة



Renewable Energy

Integrated Sustainable Energy Strategy to 2035

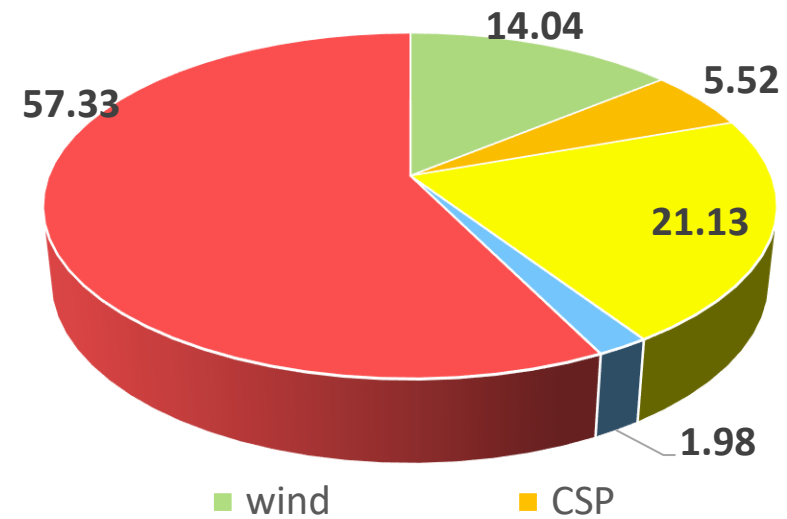
- Targeting : **20 % Renewable Energy** from Peak load by year 2022.
- Targeting by year 2035 :
 - **42 % Renewable Energy** from total installed capacity.
 - **18%** Improvement in **Energy Efficiency**.



Egypt's Energy Mix by 2035

Source	Percentage
PV	21.3
Wind	14.04
CSP	5.52
Hydro	1.98
Conventional	57.33
100 %	

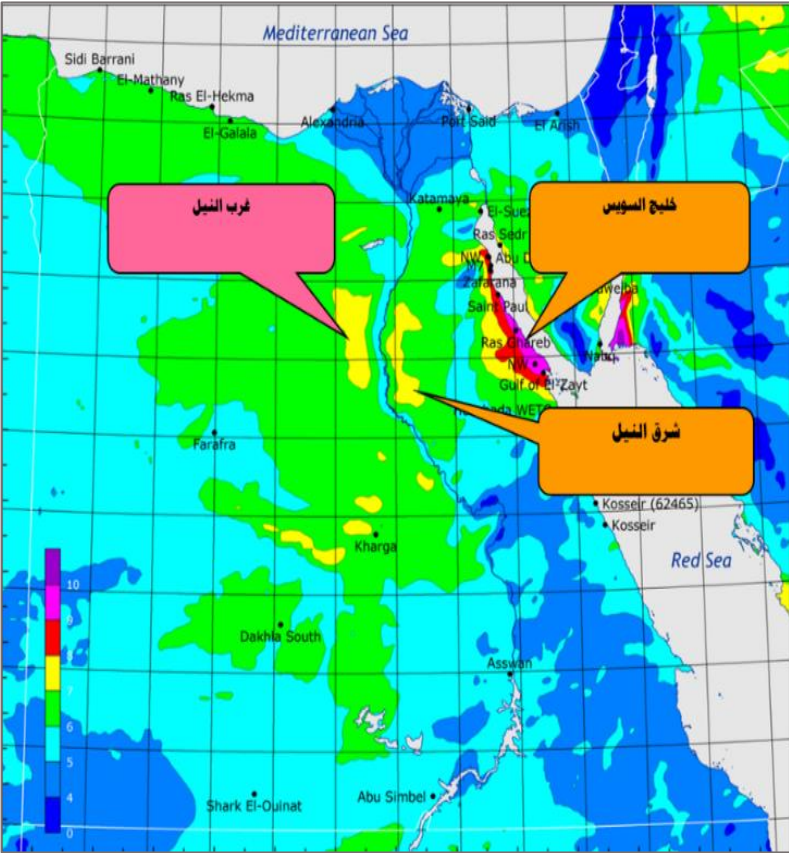
Renewable Energy
42.7 %



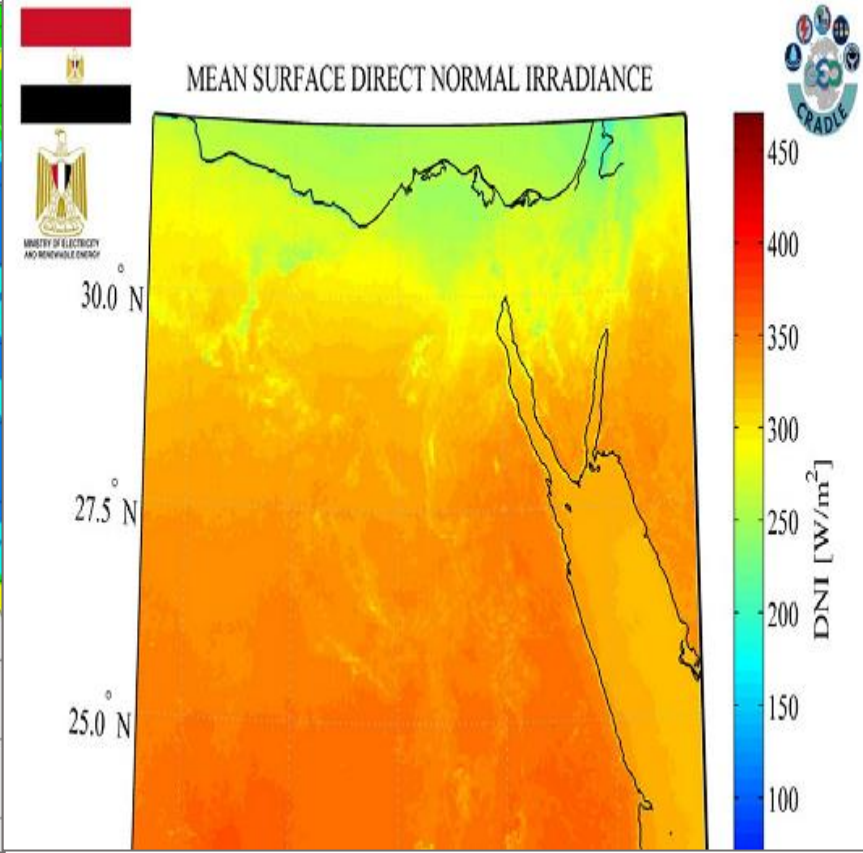
- Now, we are reviewing and updating the strategy by excluding the coal and replacing its capacity with renewable energy sources in addition to the new technology such as Hydrogen, EV and storage.

Potentials from Wind & Solar Based on (Wind & Solar Atlas)

There is About **5200 KM²** have been allocated for implementing RE projects with expected potential of **77 GW**



(Wind Atlas)



(Solar Atlas)

Incentives For Investments In Renewable Energy

Considering the Renewable Energy in our Energy Strategy until year 2035 to encourage private investments:

Incentives For Investments In Renewable Energy

Land has been allocated for renewable energy project: Solar and Wind has been allocated **5200 Km²**

Availability of information concerning **Solar Atlas** and **Wind (Available for all investors)**.

Environmental Impact Assessment Studies.

Long Term bankable PPAs.

Custom duties for all imported materials and equipment do not exceed **2%**.

Wind Energy



Wind Total Installed Capacities : 1625 MW

- **Public Sector With Total Capacities: 1125 MW**
- **Private Sector With Total Capacities : 500 MW**

Wind Energy **Public Sector**

Zafrana Wind Farm



Gabal Elziet Wind Farm



- **Public Sector With Total Capacities: 1125 MW**

Wind Energy Private Sector



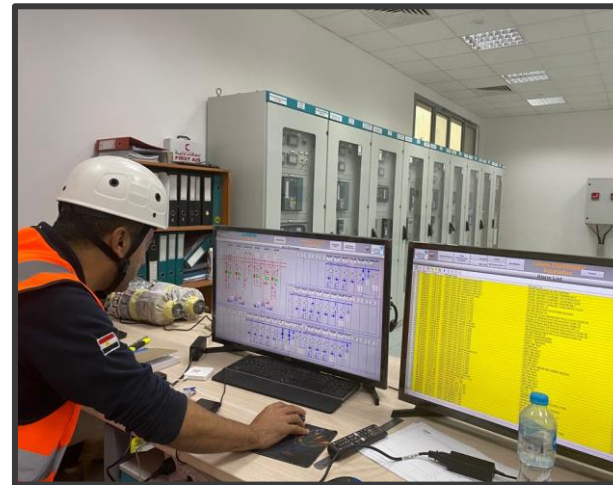
Ras Ghareb Project (250 MW)

Consortium (Toyota , Orascom, ENGIE)

Commercial operation 2020

Wind Energy Private Sector

Lekela Power Project (250 MW) Commercial Operation October 2021



Solar Energy

Total Installed Capacities :1691 MW

**Benban Solar Park
1465 MW**



**kom ombo PV
26 MW**



**kuraymat
Solar thermal power plant
20 MW (Solar Share)**



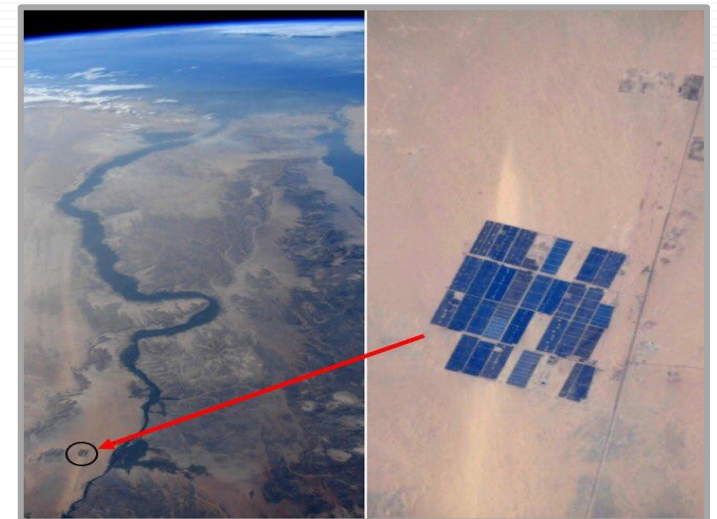
In addition to:

- Rooftop photovoltaic stations with a total capacity of 140 megawatts.
- Isolated Solar plants in remote area with a total capacity of 40 megawatts.

Benban Solar Park

Success Story of Private Sector Investment in Renewable Energy

Currently this project the largest in Middle East and Africa



Benban Solar Park

The largest in Middle East and Africa

No. of Projects	Capacity (MW)	Total (MW)
27	50	1350
3	20	60
1	25	25
1	30	30
Overall Installed Capacity		1465

Signed PPA	32
Total Area for Solar Park	37.1 Km Square
Total Investment	2 Billion \$
Workers and Job Creation	More than 10000
Co2 emission	2 million tons

BENBAN SOLAR PARK Middle East
Forbes

37 SQUARE KM
LAND NEAR THE SOUTHERN CITY
OF ASWAN, EGYPT

\$653 MILLION
INVESTMENT FOR
13 OF 32 PLANTS

PROJECT SET TO LAUNCH
BY MID-2019

2 MILLION TONS
OF GREENHOUSE GAS EMISSIONS WILL BE SAVED ANNUALLY -
THE EQUIVALENT OF TAKING **400,000** CARS OFF THE ROAD

MADE UP OF
32
INDIVIDUAL
PLANTS

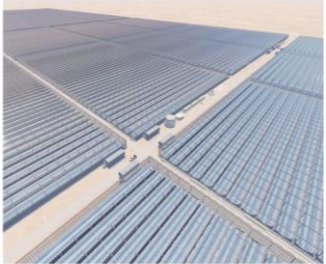
10,000
WORKERS WILL WORK
ON THE SITE

WILL BE
THE LARGEST
SOLAR POWER INSTALLATION
IN THE WORLD

Benban Solar Park

The largest in Middle East and Africa

BUSINESS
Egypt's Benban solar project wins best project prize worldwide: World Bank



Acting Head of the World Bank Kristalina Georgieva announced on Wednesday that the Benban Solar Project in Aswan won best project prize worldwide, an award that reflects the bank's support for the economic reform program in Egypt.

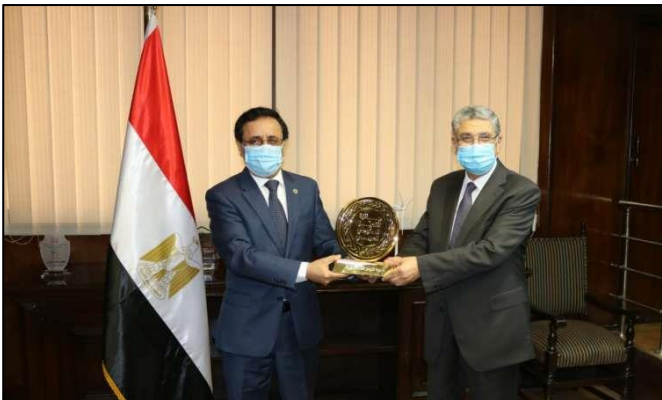
Ministry of Economic Planning and Economic Cooperation

First time for Egypt to win such an award.

The Interim President of the WBG, Kristalina Georgieva announced that **Benban Solar Project (1465 MW) in Aswan** wins best project prize worldwide.

An award that reflects the bank's support for the economic reform program in Egypt and government plans to enhance the role played by the private sector in achieving comprehensive development

November 2020 Benban Solar Park wins the Arab Government Excellence Award as the best project to develop infrastructure





Hydropower

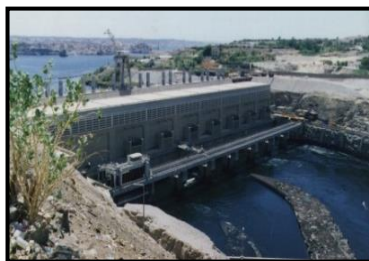


Hydropower Installed Capacities



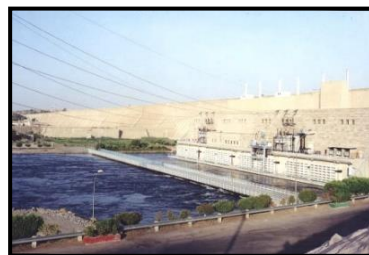
High Dam

2100 MW



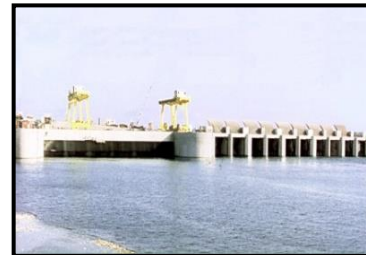
Aswan Reservoir 1

280 MW



Aswan Reservoir 2

270 MW



Esna Barrage

86 MW



Naga Hamadi Barrage

64 MW



Assyut Barrage

32 MW

Total Hydropower Installed Capacities

2832 MW

Summary

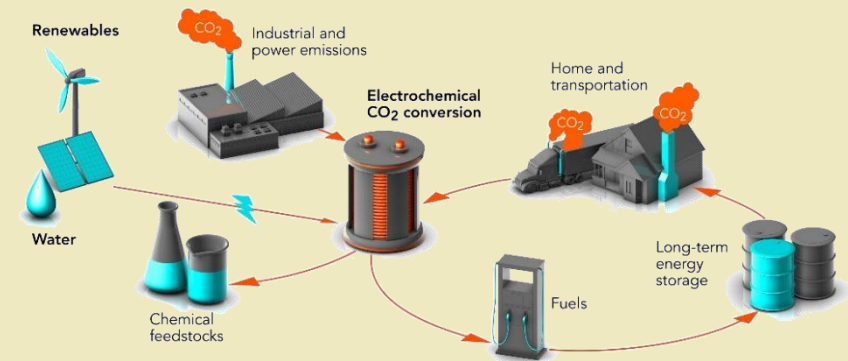


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Current Renewable Energy Installed Capacities (Hydro – Wind – Solar)	6148 MW
Wind Projects (Under Implementation)	3050 MW (will be finished by 2024)
Solar Project – PV	750 MW (will be finished by end of 2024)
Total	9948 MW

Recently, we have been focusing on innovative technologies that will help us on our path towards energy transition, such as **waste to energy, E-mobility, Energy Efficiency, Water desalination** using renewable energies and Energy Storage.

Green Hydrogen



- **Cooperation with International Companies**
- **Preparing The National Hydrogen Strategy**

Hydrogen Current Situation in Egypt

The Egyptian leadership urged the preparation of an integrated national strategy for the production of clean hydrogen as it is promising source of energy for the near future.

Hydrogen Current Situation in Egypt

A prime minister decree has been issued for forming a high – level working group from various ministries to set a road map for future steps for using hydrogen. The working group finished the final report and recommendations.

On 5th of March 2022, A MoU signed with EBRD to provide finance for consultancy work regarding the National Hydrogen Strategy. This strategy will set a clear vision for a clean, innovative, safe and competitive hydrogen industry.

Pilot Projects:

- In parallel with the preparation of the strategy, we are working with private companies in the field of hydrogen projects. In this regard, a pilot projects with capacity of 100-200 megawatts are being studied until the completion of the national strategy.

Government Support to Invest in Electrical infrastructure of Electric Vehicles

Government Support to Invest in Electrical infrastructure of Electric Vehicles



- An incentive tariff has been approved (by the Egyptian Cabinet) for EV charging.

The Approved tariff :

Voltage Level	Tariff proposed
Up to 22 k.w (AC)	169 piaster / kwh (without the use of the place occupancy fees)
	189 piaster / kwh (with the use of the place occupancy fees)
Up to 50 K.w (DC)	375 Piasters / kwh
Household	The Same as household Tariff

- In addition The government has also provide a package of Incentives to encourage the investment in this field including : Charging Tariff , Customs Exemption
- The Production Capacity of EV for the Local Manufacturer (Nasr Company) = 25000 Electric Vehicle / Annually

Energy Efficiency

Energy Efficiency

Converting simple cycle power plant into **combined cycle power plant**



Shabab P.P adding 500 MW
(Total capacity : 1500 MW)



Assuit P.P adding 500 MW
(Total capacity : 1500 MW)



6th October adding 340 MW
(Total capacity : 940 MW)



West Damietta P.P adding 250 MW
(Total capacity : 750 MW)

❑ Converting simple cycle power plant into
combined cycle power plant by adding **1840 MW**
without using an Extra Fuel.



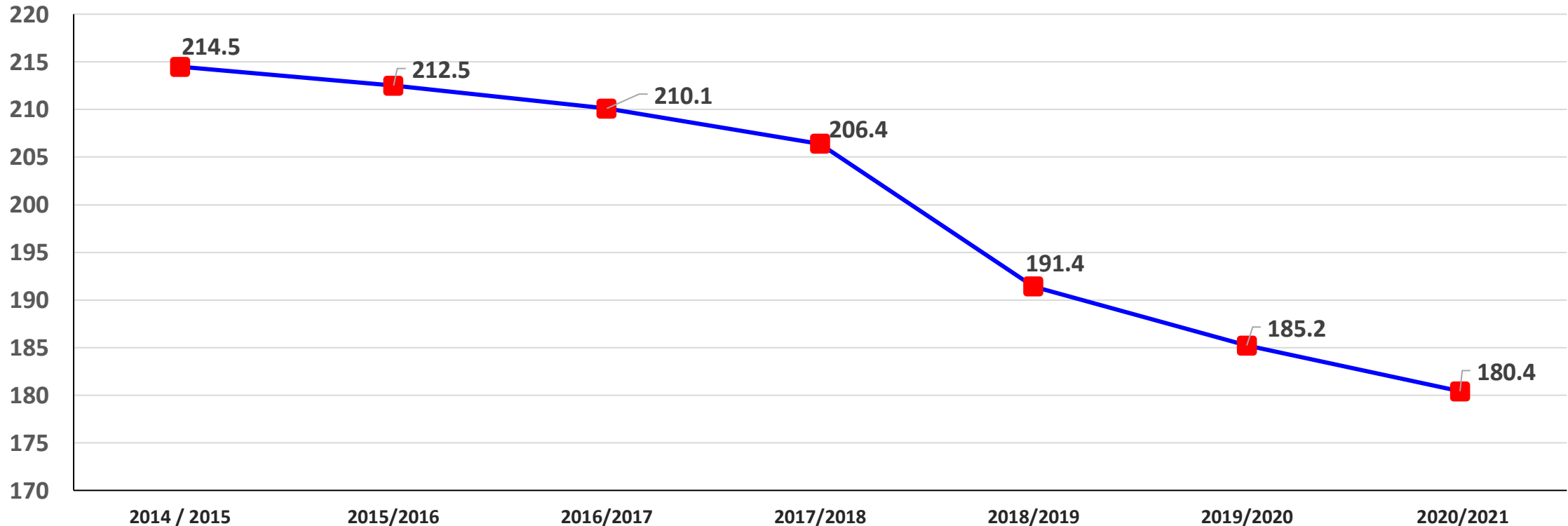
Extension W. Damietta adding 250 MW
(Total capacity : 750 MW)

Energy Efficiency

The Reduction in Fuel Consumption

The Reduction in Fuel Consumption 2020/2021 comparing with 2014/2015 about 16%

Gram / K.w.h



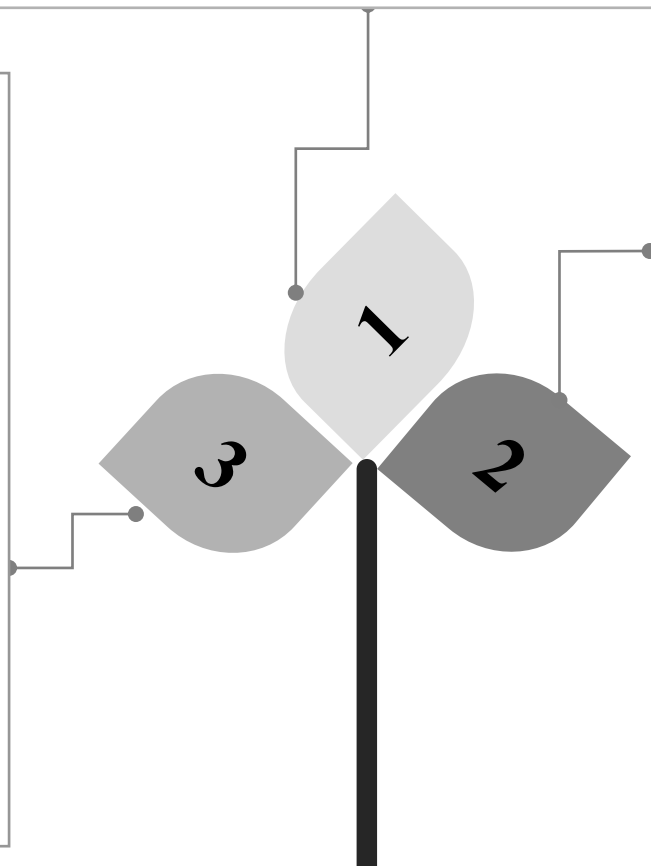
Increase of Natural Gas sharing percentage from 73.6% in 2014/2015 to 98.19% in 2020/2021 which led to improvement in fuel consumption rates.

The Total Annual Reduction in Fuel Consumption cost in 2020/2021 comparing to last year = 4.8 Billion EGP



❑ The Egypt Electricity sector is one of the most vulnerable sectors to climate change, in this regard the electricity sector communicate with national focal point to UNFCCC to submit all relevant data needed to fulfil the periodic obligatory reports as National Determined Contributions (NDC), Biennial updated report (BUR), greenhouse gases inventories (GHG).

❑ All the sector activities in the field of renewable energy and energy efficiency are accounted in the country mitigation data base, and for these activities the emission reduction in CO₂ emissions are calculated and published.



❑ The sector takes into consideration all the climate disasters that may affect the power grid, and develop the required plans to overcome these actions.

❑ For all the sector projects, all the required environmental studies are conducted according to international codes in this manner.

Cooperation with

JICA

Cooperation with JICA



There are many fields of cooperation with Japan International Cooperation Agency (JICA) to promote energy efficiency such as:

- Preparation of annual energy efficiency report.
- The Egyptian Energy Efficient Cooling Program.
- Support for improvement of energy audit capacity.
- Pilot Project at E-JUST: AC demonstration test.
- Pilot Project at E-JUST: Smart home test.
- Capacity building.

Thank you