



# ***Egypt's Renewable Energy Activities and Strategy***

# ORGANIZATION CHART OF MINISTRY OF ELECTRICITY & RENEWABLE ENERGY



Egyptian Electricity  
Holding Company

Hydro Power Projects  
Execution Authority

New & Renewable  
Energy Authority

Atomic Energy  
Authority

Nuclear Power  
Plants Authority

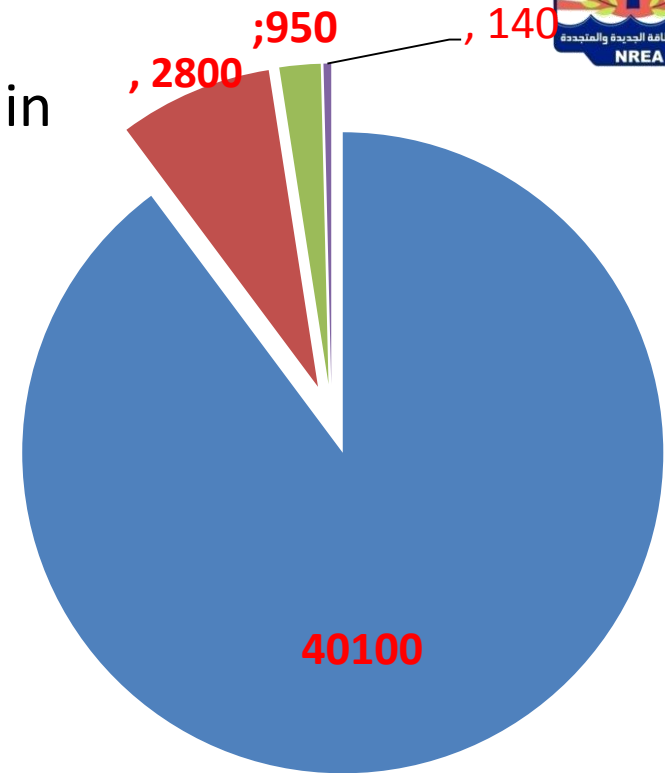
Nuclear Materials  
Authority



# Electricity in Egypt



- Total installed capacity about 50GW in 2018
  - 40.1 thermal,
  - 2.8 hydro,
  - 0.95 wind
  - 0.14 CSP
- Secured supply to 99% of the population.
- Renewable Energy (Wind & solar) represent about **2.5% from the capacity & 0.8% from the electric energy.**
- Targeting to reach **20% of the electricity generation by year 2022**





## Institutional framework: Establishing NREA (1986)



The national focal point to develop and introduce renewable energy technologies to Egypt on a commercial scale together with implementation of related energy conservation programs

# Areas of Activities

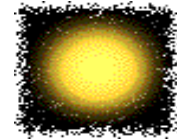


➤ The activities are concentrated into 4 areas:-

1- Wind Energy.



2- Solar Energy.



5-Geothermal Energy...



3- Testing & Certification.



Training Program on "PV Applications"

4- Capacity Building.

# MOU

- The New and Renewable Energy Authority (NREA) and Ganoub El-Wadi Petroleum Holding Company (GANOPE) signed a memorandum of understanding (MoU) to utilize geothermal energy.





# TOR

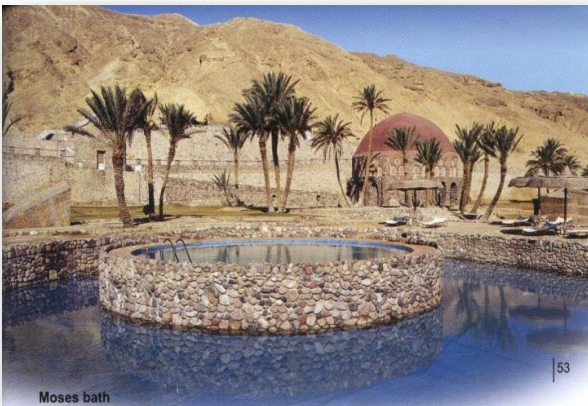
- To establish a Geothermal Atlas for Egypt
- To estimate the current overall potential of geothermal heat and power generation in Egypt. The focus is oriented toward power generation
- To estimate the ability of geothermal power to assist in meeting the objective of the Egyptian government in meeting 20% of its total energy needs from renewable energy sources by 2020 (and beyond), considering technological maturity, economic costs, environmental and social constraints, opportunities and considerations.
- Provide a development plan for the promotion of Geothermal power generation capacities in Egypt. It should deliver scenarios demonstrating the technical and economic optimum. It should outline appropriate legal and financial measures and initiatives to support the development of large scale utilization of resources.

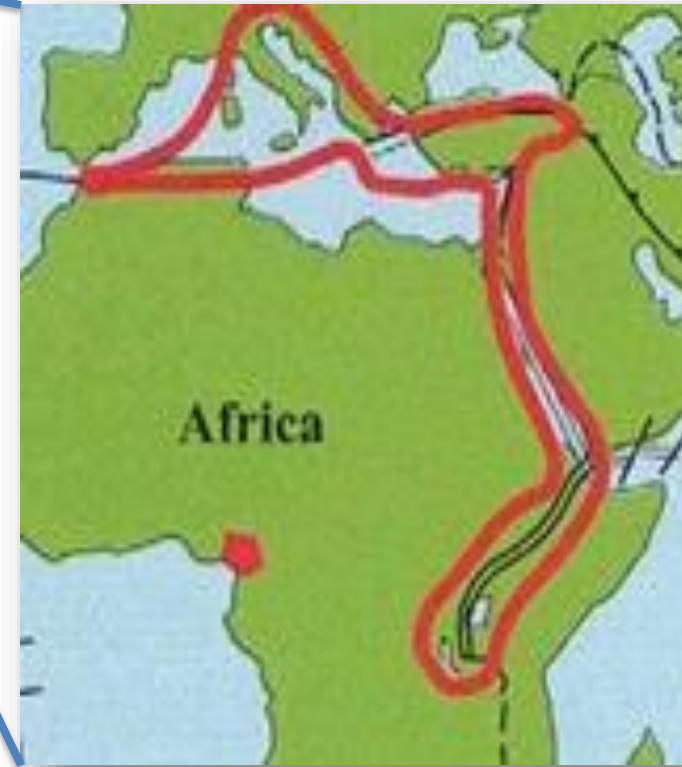
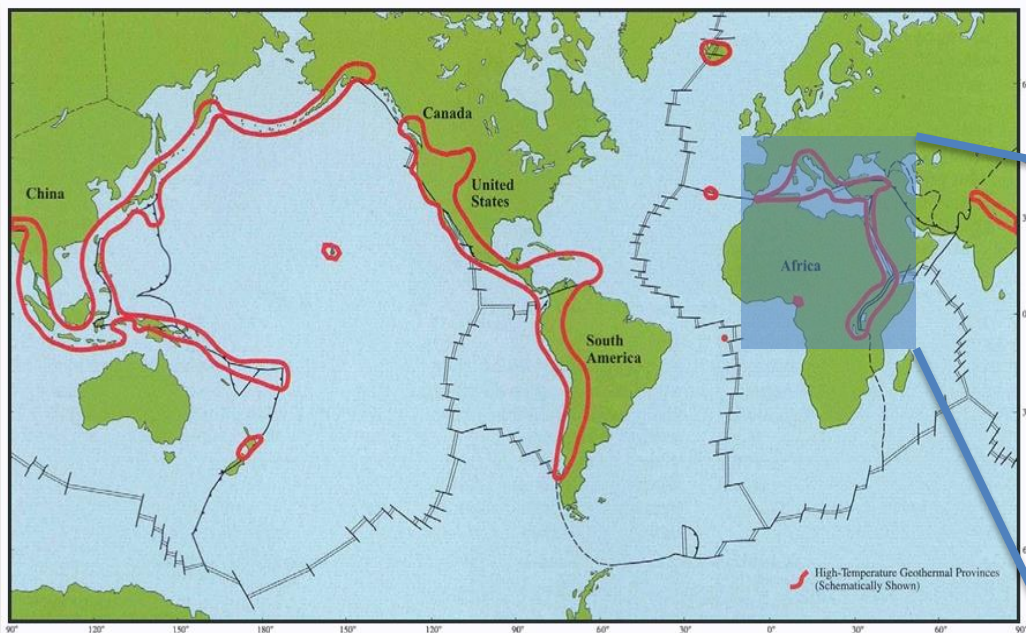


- Previously published studies and researches prove that there were distinct opportunities to utilize geothermal energy in the areas of Pharaoh's Springs (Hammam Pharaun) and Ain Sukhna in the Gulf of Suez and Farafra in the Western Desert.



# Photos of geothermal manifestations in some locations in Egypt

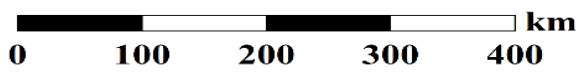
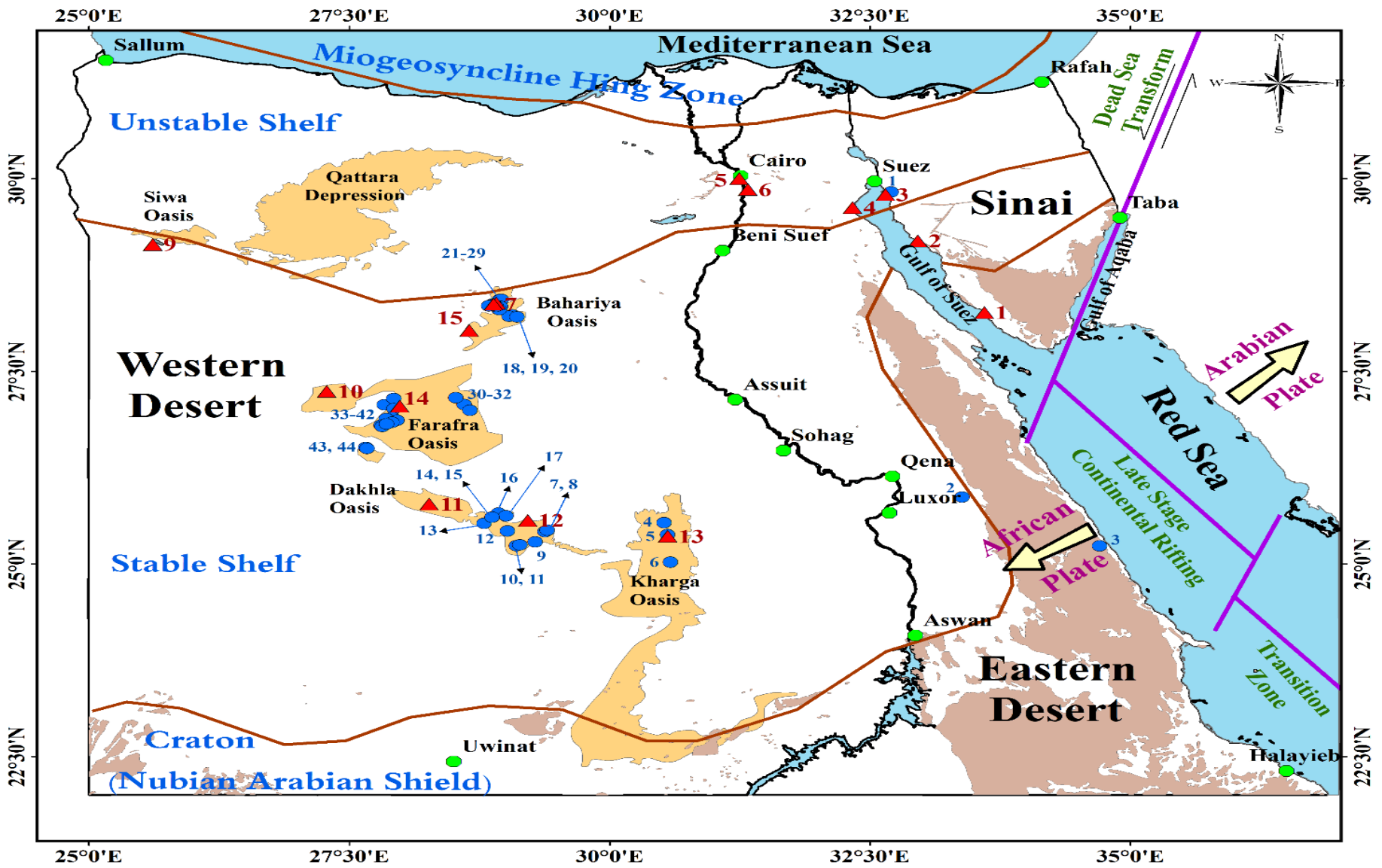




**The area within the red line depicted in the diagram below represents geological locations where very high temperatures are reached at relatively low depths; these are called “Hot Zones”.**



Name or location	Temperature of water (°C)	Remarks
Ain El-Sira, near Cairo.	40	Water level in pool varies with height of Nile River.
Ain Helwan, 25 km south of Cairo and 4 km east of Nile River.	23-34	3 main springs and 15 wells. Springs developed before 1600 B.C. Water was used for bathing resort.
Ain Sukhna, 50 km southwest of Suez and 2 km from western shore of the Gulf of Suez.	32-33	Spring rise in several pools near base of fault scarp.
Ayun Musa, 25 km southeast of Suez, on the eastern shore of the Gulf of Suez.	37	Known as springs of Moses. Water was used for irrigation and refreshment of caravans.
Hammam Faraun, on the Gulf shore.	<b>70-72</b>	Many springs occur within 400 meters stretch along shore, at base of cliffs. Known as "Baths of Pharaoh." Water has petroliferous odor.
Hammam Musa, 3 km North of Tor, Sinai.	48	Several springs; known as "Baths of Moses, the Master." Water was used for irrigation. Ruins of ancient baths.
Bowitti, near El-Kasr in Bahariya Oasis.	33.7 & 34.2	Two springs. Water were used for irrigation.
Ain El-Bishmo, Bahariya Oasis	28.9- 31.6	located in the northeastern part of Bahariya Oasis near the El-Bawit fault.
Ain Dalla, 60 km west of Farafra Oasis.	35	Water issues from top of sandy mound in center of depression. sulfurous water.
Ain El-Kasr (Qasr), Dakhla Oasis.	39	Named also Ain Sheikh Mawhub, 10 km west of El-Kasr.
Ain El-Gabal, Dakhla Oasis	40	Ain El-Gabal is well known for its therapeutic uses. The spring issues





## Legend

### Hot springs in Egypt

No.	T <sup>o</sup> C	Hot spring name
▲ 1	48	Hammam Musa
▲ 2	71	Hammam Faraun
▲ 3	37	Ayun Musa
▲ 4	33	Ain Sukhna
▲ 5	40	Ain El-Sira
▲ 6	23-36	Ain Helwan
▲ 7	28.9-31.6	Ain El-Bishmo
▲ 8	33.7	Ain Bowitti
▲ 9	27	Ain El-Arayes
▲ 10	35	Ain Dalla
▲ 11	40	Ain El-Gabal
▲ 12	39	Ain El-Kasr (Qasr)
▲ 13	31	Ain El-Bousa
▲ 14	28	Ain El-Balad
▲ 15	28.3	Ain El-Ris

● Cities

— Red Sea Rift

■ Basement

### Thermal wells in Egypt

No.	T <sup>o</sup> C	Well name
● 1	48.3	Ayun Musa Well
● 2	35	El-Laqeita
● 3	35.8	Umm Khariga
● 4	37.5	Mahariq
● 5	38	Kharga
● 6	35	Bulaq 5
● 7	38.9	Bir Balat No. 10
● 8	37.2	Bir Balat No. 10A
● 9	41.1	Bir Masara No.3
● 10	35	Bir Mut 1
● 11	42.2	Bir Mut 3
● 12	37.8	Bir Ezab Qasr 1A
● 13	42.8	Bir El-Mahub
● 14	42.8	Bir Ezab Qasr 3
● 15	38.3	Bir El-Dinariya
● 16	39	Bir El-Omda
● 17	38.3	Bir El-Qasr Elbalad
● 18	41.1	Ain El-Wadi
● 19	41.1	Bir Sigam
● 20	42.2	Halfa

### Current study (Dec, 2016)

No.	T <sup>o</sup> C	Well name
● 21	47	El-Gawak
● 22	45.5	Halfa
● 23	46	El-Nebiga
● 24	37.5	Matar
● 25	50	Qasaa
● 26	45	Hamra
● 27	43.5	Sigam
● 28	42	Givara
● 29	42	Agouz

### Collected after [57]

No.	T <sup>o</sup> C	Well name
● 30	37	QRHO
● 31	47	QR1
● 32	41	QR2
● 33	44	S015
● 34	44	FRS
● 35	41	FELLA
● 36	45	F39
● 37	44	MZ15
● 38	46	T3
● 39	45	RE1Z
● 40	49	MARS
● 41	46	MZ12
● 42	48	HUDR
● 43	44	MQ3
● 44	46	MQ1R



***Thank you for your attention***