

FROM BASINS TO BARRAGES:

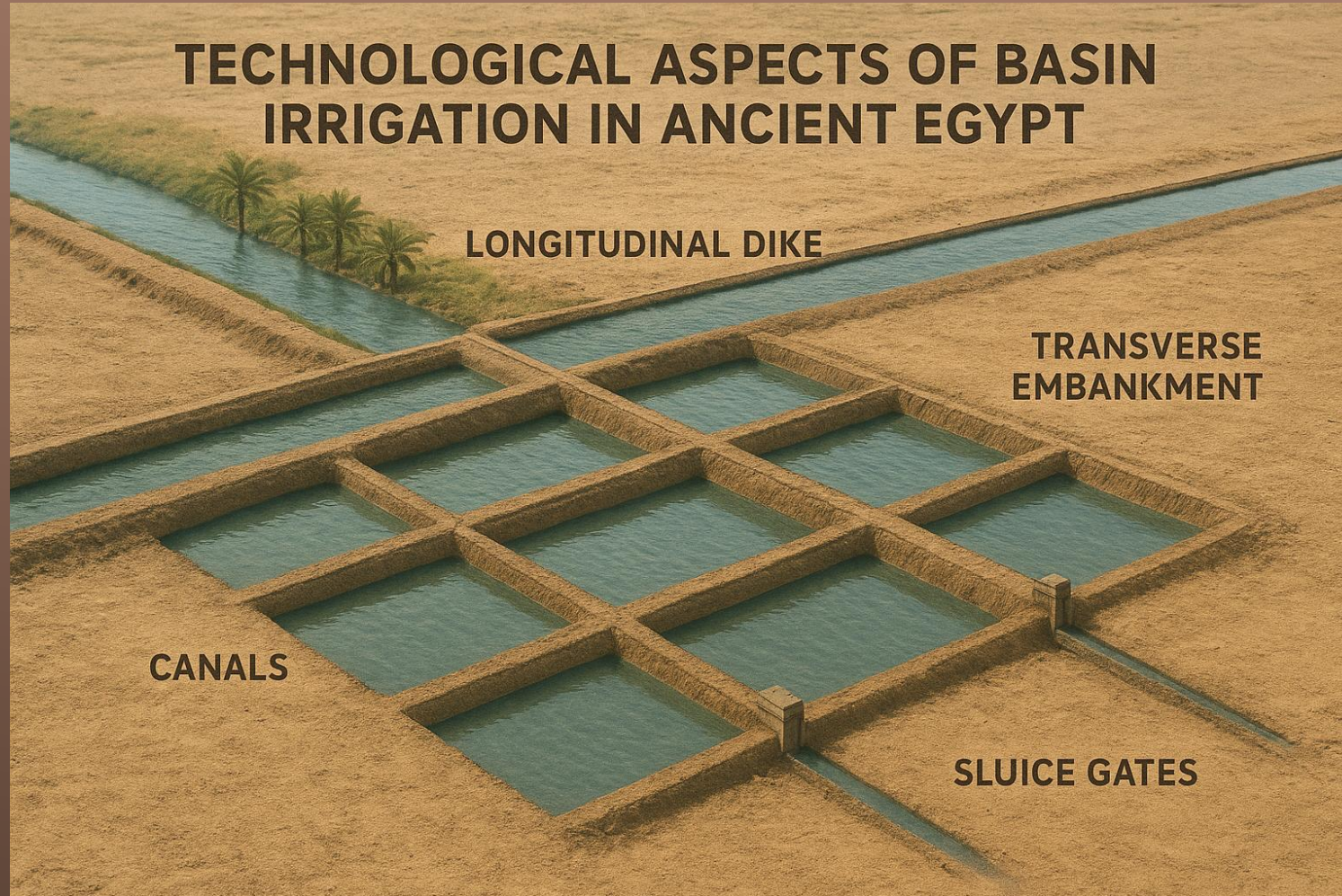
INTERPRETING EGYPT'S
INDUSTRIAL NILE HERITAGE
THROUGH IRRIGATION SYSTEMS AND
MUSEUM NARRATIVES



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TECHNOLOGICAL ASPECTS OF BASIN IRRIGATION IN ANCIENT EGYPT

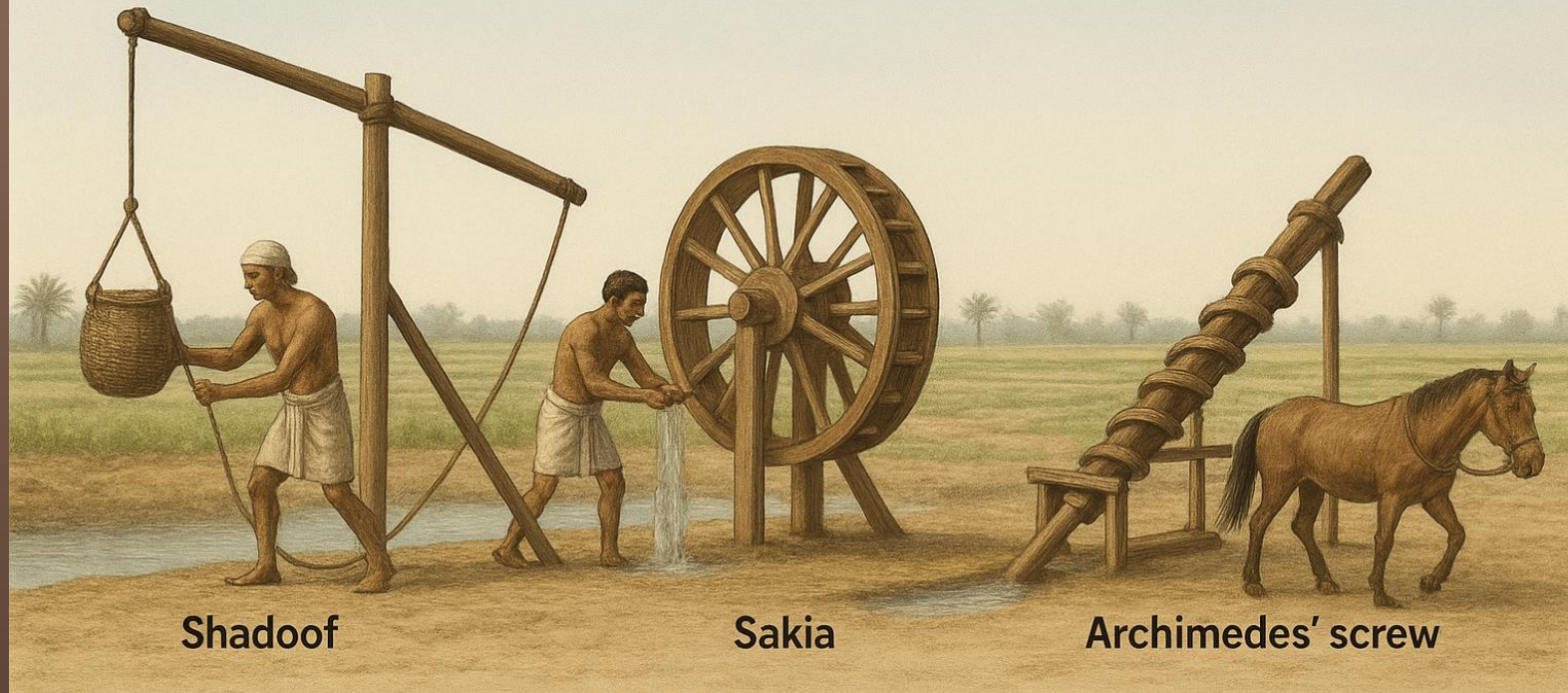


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ANCIENT BEGINNINGS: SEASONAL BASIN IRRIGATION



Device	Period Introduced	Maximum Lift Height	Efficiency
Shadoof	Pre-dynastic period	6.2 meters	60 %
Sakia	Ptolemaic period	10+ meters	50-60 %
Archimedes' Screw	Ptolemaic period	3-4 meters	50-70 %



Shadoof

Sakia

Archimedes' screw

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WATER-LIFTING DEVICES IN ANCIENT EGYPT





Brickmakers Getting Water from a Pool, Tomb of Rekhmire New Kingdom Nina de Garis Davies ca. 1479–1425 B.C.

@<https://www.metmuseum.org/>



Wooden model, made by a local carpenter, of a water-hoist, 'shaduf'. Production date 1900-1927 British Museum

ARCHAEOLOGICAL AND HISTORICAL EVIDENCE





Measuring shaft of the nilometer on Roda Island, Cairo



Nilometer of Satet Temple (Elephantine) By the Editors of the Madain Project

NILOMETERS AND INSCRIPTION EVIDENCE





DETAILS OF NILOMETER OF SATET TEMPLE (ELEPHANTINE) @THE MADAIN PROJECT





The Palermo Stone, the fragment of the Egyptian Royal Annals housed in Palermo,. 2450 BC Discovered before 1859 Present location Palermo, Sicily, Italy – fragment in Petri Museum & Egyptian Museum

EARLIEST ARCHEOLOGICAL EVIDENCES

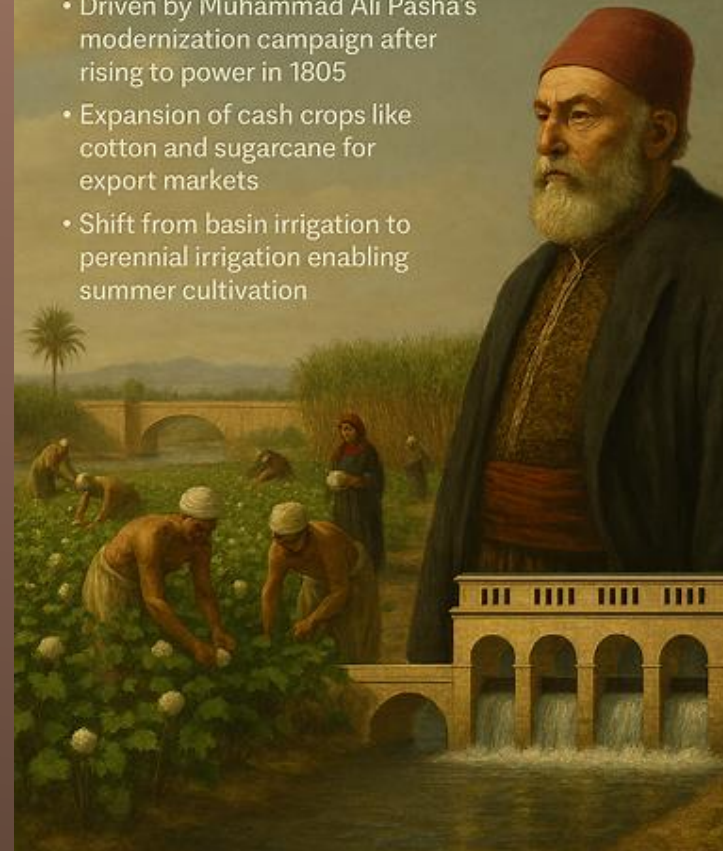




Muhammad Ali Pasha'

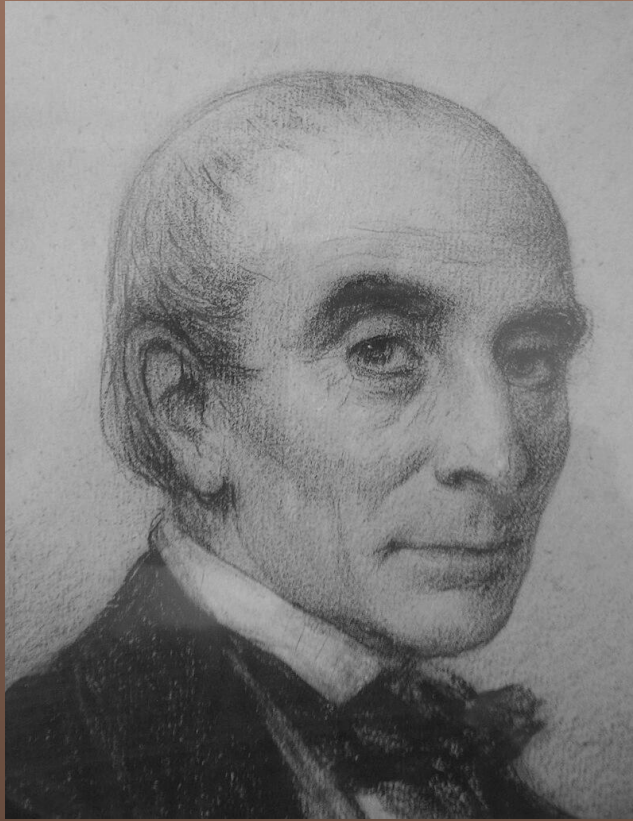
AGRICULTURAL TRANSFORMATION IN EARLY 19TH CENTURY EGYPT

- Driven by Muhammad Ali Pasha's modernization campaign after rising to power in 1805
- Expansion of cash crops like cotton and sugarcane for export markets
- Shift from basin irrigation to perennial irrigation enabling summer cultivation

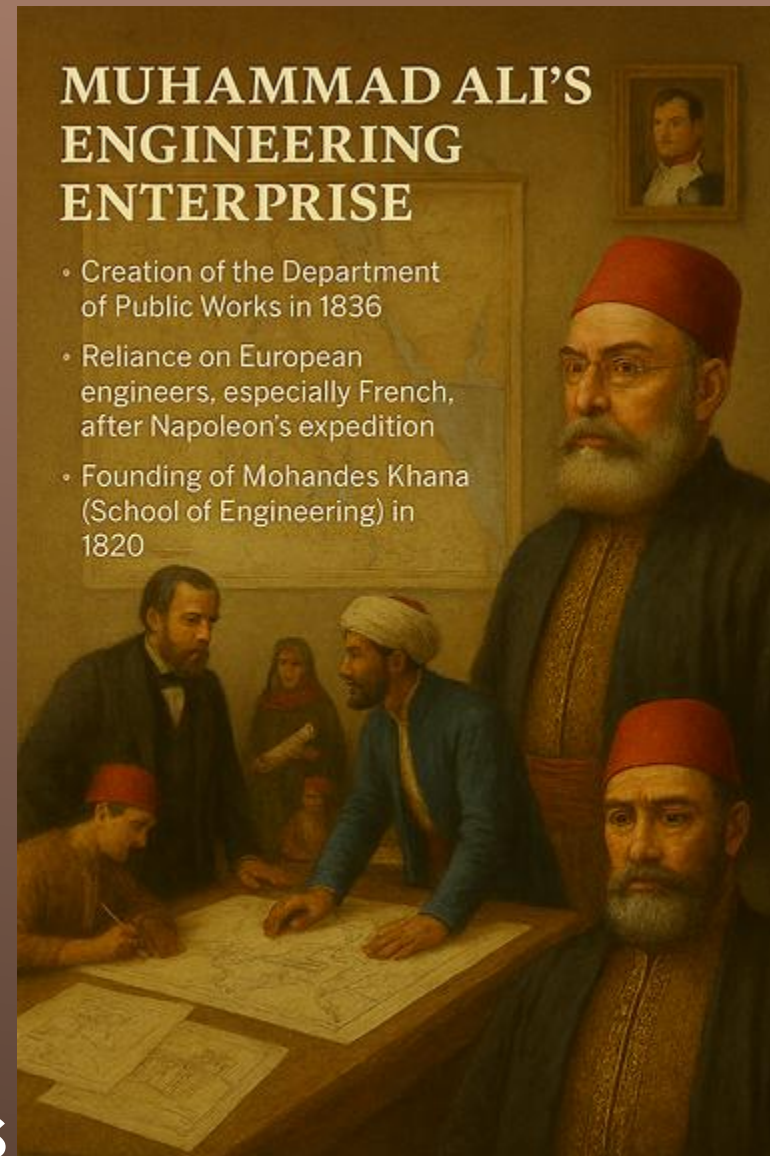


**19TH CENTURY EGYPTIAN MODERNIZATION:
IRRIGATION ENGINEERING AND
AGRICULTURAL TRANSFORMATION**





French engineer Pascal Coste (1787–1879). First Chief Engineer for Lower Egypt (1819–1829)



MOHAMED ALI'S MODERNIZATION INITIATIVES

ADMINISTRATIVE AND TECHNICAL FOUNDATIONS





1893



Today

KEY INFRASTRUCTURE PROJECTS

THE MAHMOUDIYAH CANAL (1818-1820)





KEY INFRASTRUCTURE PROJECTS

THE DELTA BARRAGE IS BARRAGE-TYPE DAM THAT WAS CONSTRUCTED INTERMITTENTLY BEGINNING IN 1833 TO ITS INITIAL COMPLETION IN 1862.





**THE DELTA BARRAGE TODAY IMPORTANT INDUSTRIAL
INFRASTRUCTURE**





First Aswan Dam Aswan Low Dam(1899-1902)



First Aswan Dam Aswan Low Dam Today

REGIONAL EXPANSION AND SYSTEM INTEGRATION





NAG HAMMADI HYDROPOWER STATION (66.2 MW)

ORIGINAL BARRAGE BUILT: 1930

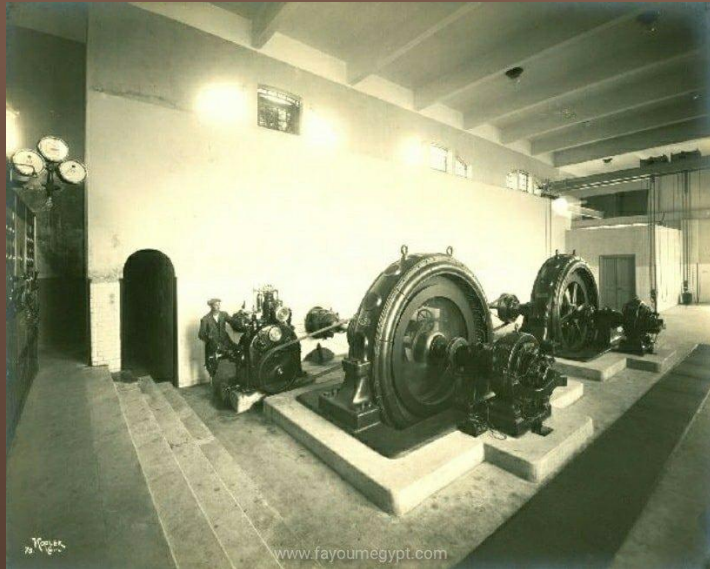
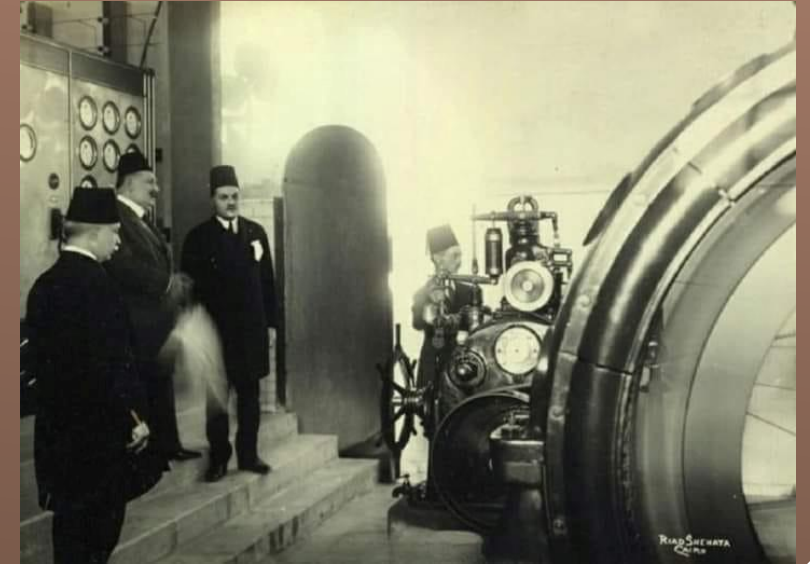
Role: Enhances irrigation and navigation in Upper Egypt while generating electricity.

HYDROPOWER & ENERGY LEGACY IN EGYPT: HISTORICAL OVERVIEW



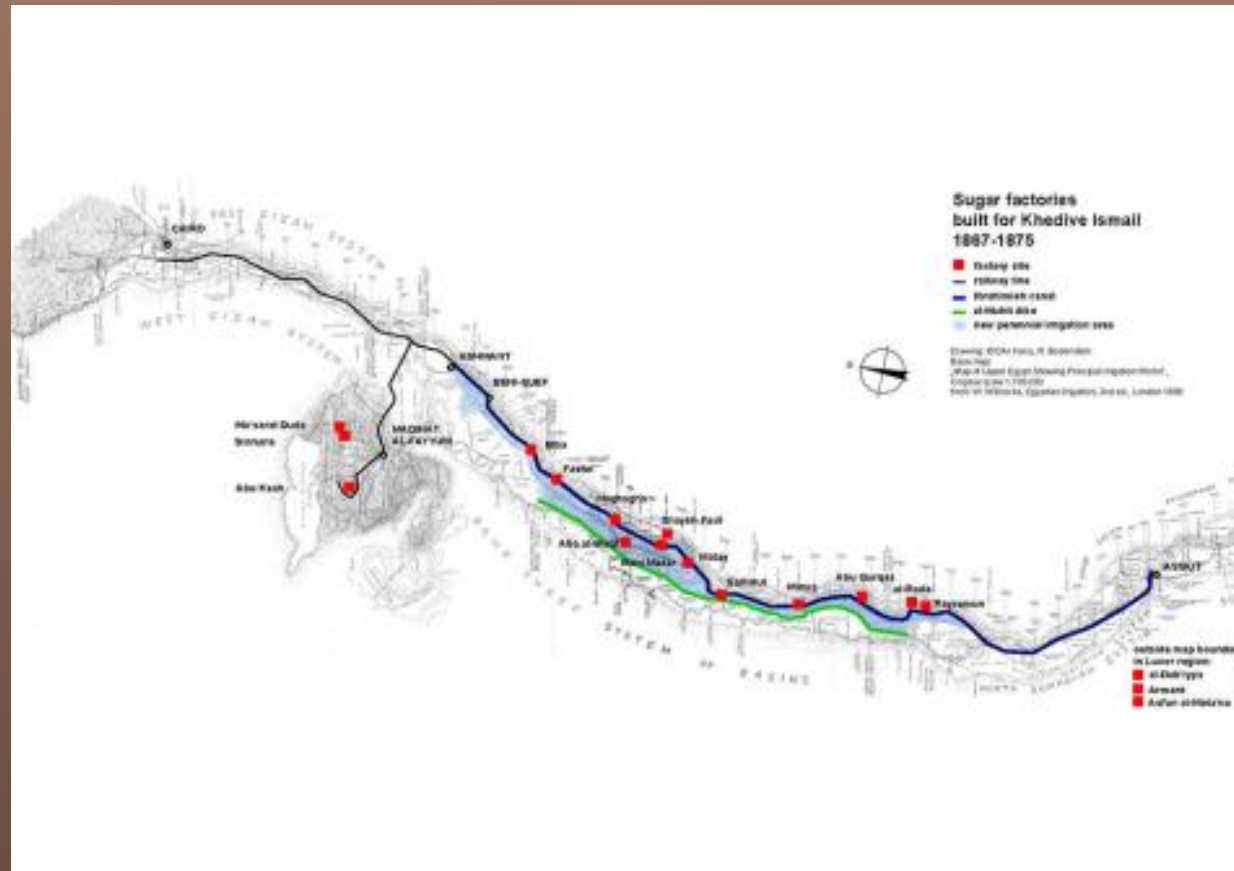
ASSIUT HYDROPOWER STATION (43.5 MW) ORIGINAL BARRAGE: CONSTRUCTED BETWEEN 1898–1903

Role: Improves water flow into the Ibrahimiya Canal. Enhances navigation and irrigation across four governorates. Represents Egypt's largest water project north of the High Dam..



A HYDROELECTRIC POWER STATION IN FAYOUM IS THE AL-AZAB STATION, WHICH WAS INAUGURATED BY KING FUAD I IN 1927.

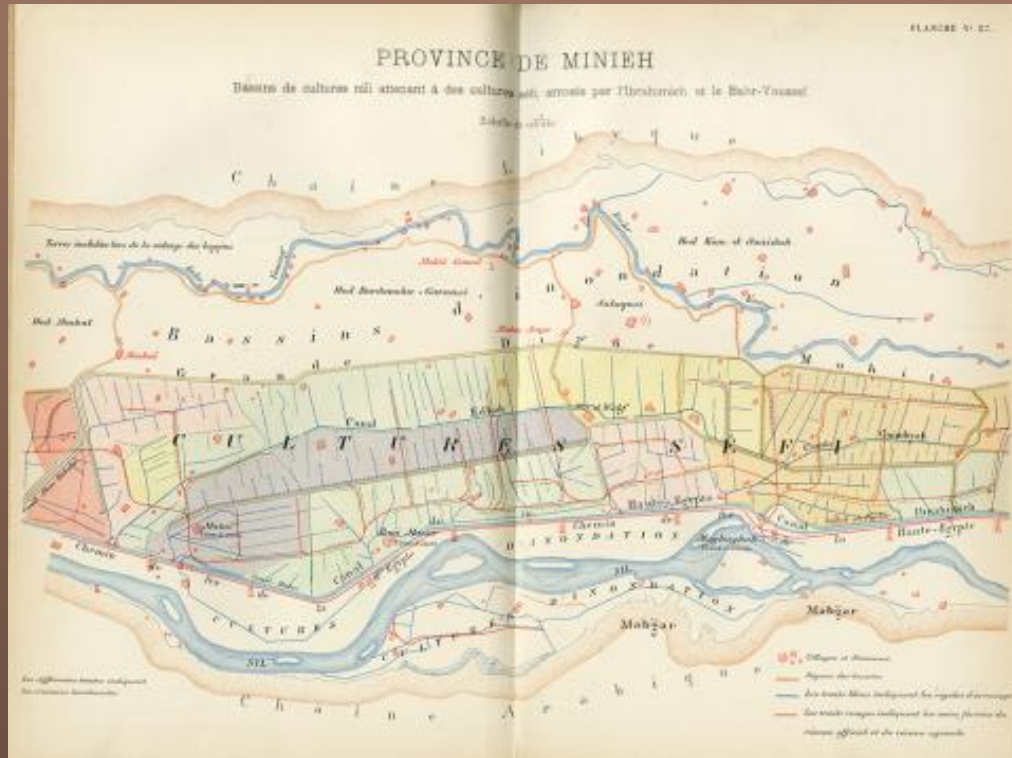




Source: Ralph Bodenstein, DAI Cairo; base map: "Map of Upper Egypt Showing Principal Irrigation Works," from William Willcocks, Egyptian Irrigation [2nd ed.], London: E. & F.N. Spon; New York, NY: Spon & Chamberlain, 1899

SURVIVING STRUCTURES AND HISTORICAL DOCUMENTATION





The map shows a section of al-Minya province with the factory sites of Matay, Bani Mazar, Maghagha, and Aba al-Waqf, the irrigation area of the Ibrahimiyya Canal, secondary canals (in blue) and the agricultural railway network (in red). Source: Alfred J. Chélu, De l'équateur à la Méditerranée : le Nil, le Soudan, l'Égypte, Paris: Chaix, 1891, pl. 57.

SURVIVING STRUCTURES AND HISTORICAL DOCUMENTATION



Qanater El Khayreya - Egypt..



**BRIDGING ENGINEERING AND MEMORY: THE MUSEUM'S ROLE IN
INTERPRETING EGYPT'S INDUSTRIAL NILE HERITAGE (THE IRRIGATION
MUSEUM IN IN QALYUBIA**





THE IRRIGATION MUSEUM IN QALYUBIA EDUCATION PROGRAM FOR CHILDREN





CHILD MUSEUM FOR WATER SCIENCES – EL QANATER EL KHAYREYA





NILE MUSEUM IN ASWAN



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Ministry of Water to produce series of documentaries on history of irrigation

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MINISTRY OF WATER TO PRODUCE SERIES OF DOCUMENTARIES ON HISTORY OF IRRIGATION

Key Outcomes of the Lecture



Interpretation of Irrigation Heritage

Viewing infrastructures as cultural assets



Addressing Global Challenges

Connecting history to climate resilience, sustainable agriculture, and energy



Alignment with UNESCO Vision

Embodying innovation and sustainable development



Role of Museums

Transforming irrigation histories into learning experiences

CONCLUSION

