

## China's Dominance in Africa's Nuclear Energy

**Prelims (GS - I)** - *International Relations, Science & Technology*

**Mains (GS - II & III)** - *GS II (International Relations) | GS III - (Science & Technology & Economy)*

### Why in news?

The recent emergence of China as the dominant player in Africa's nuclear energy market poses strategic and energy security challenges for other global players, including India.

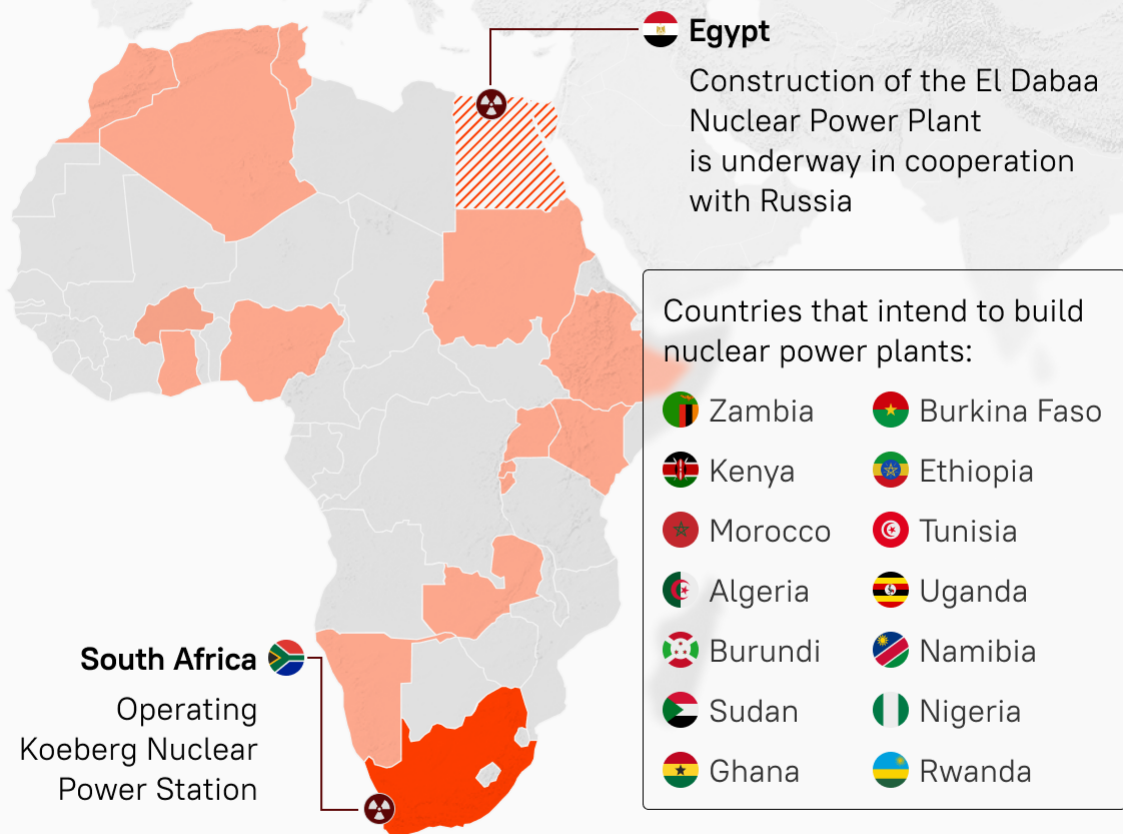
### What are the countries having nuclear energy stakes in Africa?

- **France** - So far, it had dominated Africa's nuclear market but it is *rapidly losing its influence* and struggling to maintain its relevance, particularly in Francophone Africa.
- **United States** - It has been organised as *US-Africa Nuclear Energy Summit (USANES)* since 2023.
- **Russia** - It had *agreements with Egypt, Mali, Burkina Faso, and Burundi*, but progress of reactor building is slow due to economic issues.
- **South Korea** - It is *showing interest in entering* the market with Korea Hydro and Nuclear Power (KHNP).
- **China** - It is *now leading the market* with aggressive investments and partnerships.

### Status of Africa's Nuclear Energy Market

- **Power plants** - *Only 1 nuclear power plant.*
  - Koeberg, South Africa
- Countries like Ghana, Nigeria, Sudan, Rwanda, Kenya, and Zambia are planning nuclear energy expansion.
- **Estimated nuclear energy capacity by 2035** - 15,000 MW.
- **Investment potential** - USD 105 billion.

## Nuclear power plants in Africa



Sources: International Atomic Energy Agency, open sources

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### What are the reasons for China's Dominance in Africa's nuclear market?

- China's nuclear ambition in Africa is a relatively new phenomenon.
- **Energy development programmes** - China Atomic Energy Authority began a ***scholarship programme for students*** from African to develop national nuclear programmes.
- It was launched in 2012, in cooperation with the International Atomic Energy Agency (IAEA) and provided training in Chinese procedures.
- **Higher operational capacity** - Today, China has ***more than 50 operating reactors.***
- **Strong government support** - China's nuclear expansion in Africa is being

*spearheaded by 2 large state-owned companies.*

- China General Nuclear Power Group (CGN) and the China National Nuclear Corporation (CNNC).
- **Nuclear agreement**
  - **In Nigeria** - For design, construction, and operation of nuclear power plants.
  - **In Uganda** - For building a 2 GW nuclear plant, first unit (1 GW) to be completed by 2031.
- **Financial & technical Support** - Assisting African nations in infrastructure, financing, and transmission networks.
  - *West African nations* (Burkina Faso, Niger, Mali) initially approached Russia but may turn to China due to Russia's financial constraints.
- China is *actively building transmission networks* which other countries were lagging behind.

### What are its implications for India?

- **Strategic implications** - China's dominance undermines India's strategic influence in the region.
- It could *limit India's access to critical resources*, including uranium.
  - India plans *uranium mining projects in Niger and Namibia*.

*India's current nuclear capacity (as of Jan 2025) is 8,180 MW and its target is to generate 100 GW by 2047 that requires stable uranium supply.*

- **Economic implications** - India's nuclear industry could lose potential business opportunities, revenue, and job creation.
  - India signed a *civil nuclear cooperation agreement with Namibia* (2009).
- **Energy security implications** - India's ambition to increase its nuclear energy mix in the overall energy portfolio might be impacted due to limited access to affordable technology and fuel.
- **Diplomatic implications** - India may need to strengthen ties with other African countries to counterbalance China's influence.
- **Global position** - India's role in global nuclear governance and non-proliferation efforts might be affected by China's expanding nuclear presence in Africa.

### What lies ahead?

- India needs to strengthen nuclear cooperation with African nations through strategic partnerships.
- India can expand investments in uranium mining in Africa to secure supply chains.
- Steps can be taken to increase engagement with African nations under frameworks like *International Solar Alliance (ISA) and Global South Initiatives*.
- Developing indigenous nuclear reactor technology for export.

## Reference

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