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?

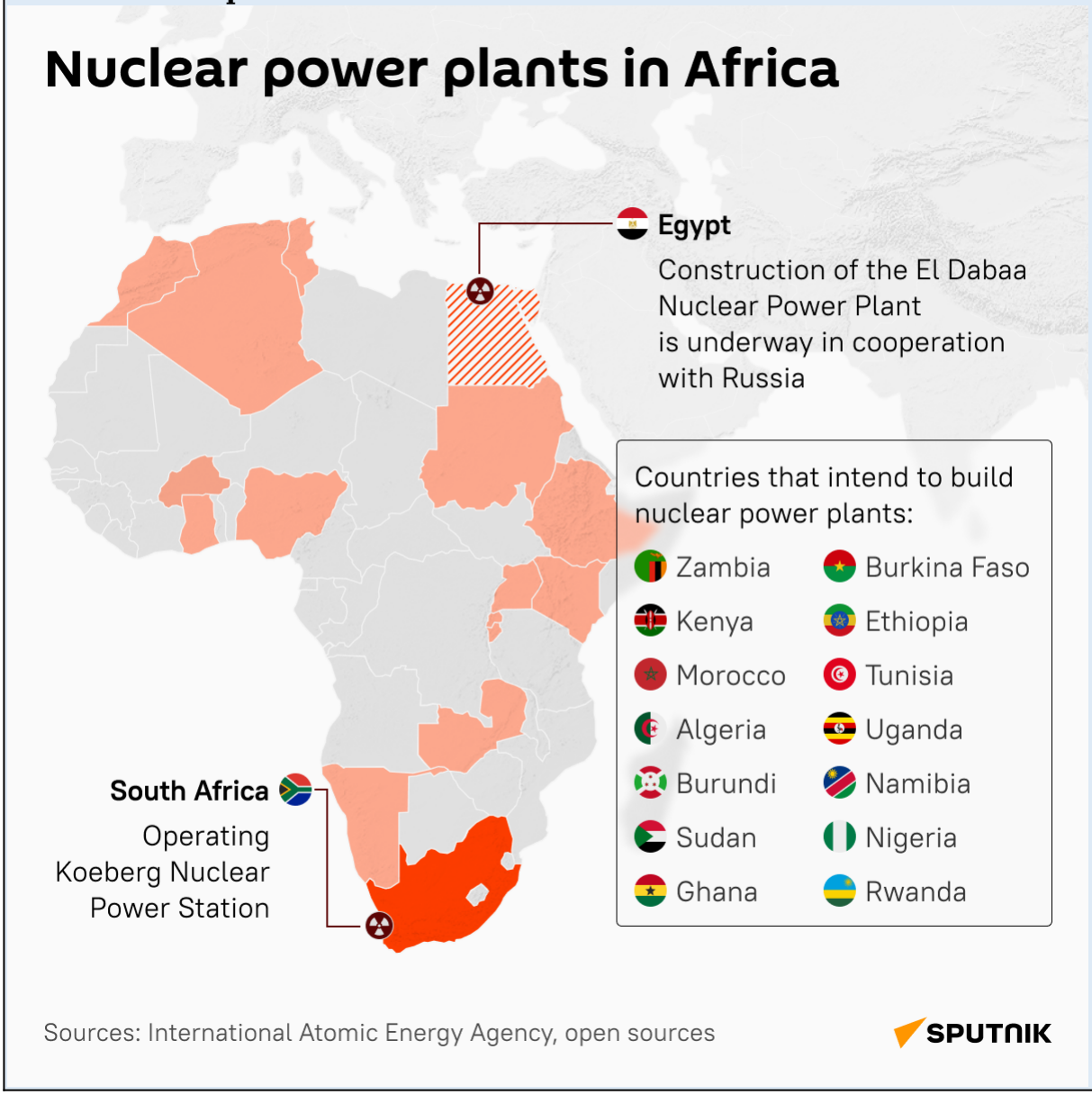
The recent emergence of China as the dominant player in Africa's nuclear energy market poses strategic and energy security challenges for other global players, including India.

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 agreem*ents 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

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- **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.



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 lied 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

[The Hindu| China’s Dominance in Africa’s Nuclear Energy]