

tion linking western Afghanistan and Iran. The eastern end of the FNRC is also functional, as China is reachable via the China–Kyrgyzstan–Uzbekistan Railway. In May 2024, the first Afghan train shipment departed westward, going through Iran to Türkiye.

### Trans-Afghan Railway

This proposed 356-mile (573 km) railway would link Uzbekistan to Pakistan via Afghanistan. The corridor would continue on to the Indian Ocean, via the China–Pakistan Economic Corridor (CPEC). A three-nation commitment exists, and feasibility studies are done. The open question is funding and

new investment.

In November 2023 a remarkable conference in Kabul—“Operation Ibn Sina: The Coming Afghan Economic Miracle”—presented an overview of economic development across all sectors. Co-organized by the Afghan-led Ibn Sina Research and Development Center, the three-day event brought together more than 550 attendees, including government officials and experts, and a team from the Schiller Institute, to discuss economic projects and broader cooperation. The Ibn Sina Research and Development Center proposes North-South cooperation in concrete [projects](#).

## Africa: Power the Projects To Build the Future

Nov. 24—The economic projects underway, and ready for launch in Africa, will employ millions of today’s 1.5 billion population, in building up the homelands of all 54 nations. The era is over of extraction for export, forced food-import dependence, and all other colonialist practices.

Certain projects recently completed stand out for the direction they give. In Tanzania the Julius Nyerere Dam was inaugurated in March 2024, providing power and river regulation. In Zimbabwe, the new Mvuma integrated steel works is operational. In Nigeria, the huge Dangote Refinery opened this year. In Egypt, the El Dabaa nuclear power complex is proceeding.

### Electricity, the Necessity

Electricity is the starting place for what has to be done. A total of 580 million Africans lack electricity according to the International Energy Agency. There are wide disparities around the continent, from over 99% of the population with electricity in Egypt, to 18% in Somalia. The worst affected countries are in Central Africa, with less than 10%.



Egypt Nuclear Power Plants Authority, September 2024

*Construction workers at Unit 2 of the El Dabaa Nuclear Power Plant in Egypt.*

The total installed electricity capacity for Africa in 2023 was 246 gigawatts. This contrasts with China’s capacity of 2,920 gigawatts; or more than 1,000 GW in the European Union. Highly developed economies in Europe average about 1 gigawatt of

installed capacity per one million people. Thus the horizon in Africa for that ratio is over 1,500 to 3,000 gigawatts.

Moreover, just three countries together account for more than half of the continent's electricity: South Africa, 60 GW; Egypt, 59 GW; and Algeria, 35 GW. Their combined population is 217 million.

The situation demands action on coal and gas, which are the most rapid means of installing generating capacity, along with hydropower, and moving on nuclear.

**Coal, Gas and Oil.** Deposits of coal, oil and gas exist at many locations in the extensive sedimentary areas of the continent, and offshore. A model of how fast a gas generating plant can be built comes from Egypt. In 2016, the German Siemens Corp. was commissioned to build a combined-cycle gas turbine power station. It was completed in 36 months, and went on line by 2018. The major components were factory-built and assembled on site. It is the world's largest such plant, with a 14.4 gigawatt capacity.

This shows the way. Following the model calls for ending the paradigm of export-orientation of coal, oil and gas, and even of electricity itself from northern Africa to Europe.

There are numerous pipelines and gas facilities in Africa, but a large share are dedicated to exports.

**Central Africa.** Moves are underway to create a Central African Pipeline System (CAPS) that would distribute natural gas throughout the region. This plan entails laying of 6,500 kilometers of new pipeline across eleven African countries. In January 2023, a memorandum of understanding was signed by many nations and the African Petroleum Producers Organization (APPO) to make the Central Africa region an "energy poverty-free zone" by 2030. The meeting was held by the Central Africa Business and Energy Forum (CABEF), and the signatory nations included Angola, which is the third largest oil exporter in Africa, after Nigeria and Algeria.

In Central Africa alone there are reserves of oil estimated at more than 31 billion barrels, with five of the 10 African oil producing nations located in the region. Besides Angola, there are Gabon, Republic of the Congo, Equatorial Guinea and Chad. The China National Petroleum Corporation (CNPC) is active in this region.

**Pipelines.** There are critical pipeline proposals. The proposed Morocco-Nigeria Gas Pipeline (MNGP) is to run 5,660 km connecting Nigeria, Benin, Togo, Ghana, Côte d'Ivoire, Liberia, Sierra Leone, Guinea, Guinea-Bissau, The Gambia, Senegal, and Mauritania, ending at Tangiers, Morocco, and



*Dr. Kelvin Kemm shows an AI image of the HTMR-100 nuclear power plant.*

Stratek Global

Cádiz, Spain. It would actually begin in Ghana where the existing pipeline ends which connects Nigeria with Benin, Togo and Ghana. This project is "transformative," the description given to it by King Mohammed VI of Morocco, speaking at the Nov. 8-10, 2024 African Investment Forum meeting in Marrakech. All countries along the route will have reliable, plentiful electricity, and also economic integration will advance. In addition, the pipeline will facilitate transporting gas from the coast into the landlocked Sahel countries, which have the lowest rate of electrification at present.

The MNGP and gas power plants would bring electricity to 400 million Africans in this region. Feasibil-

ity and engineering studies have been completed, funded by the Islamic Development Bank, and the OPEC Fund for International Development.

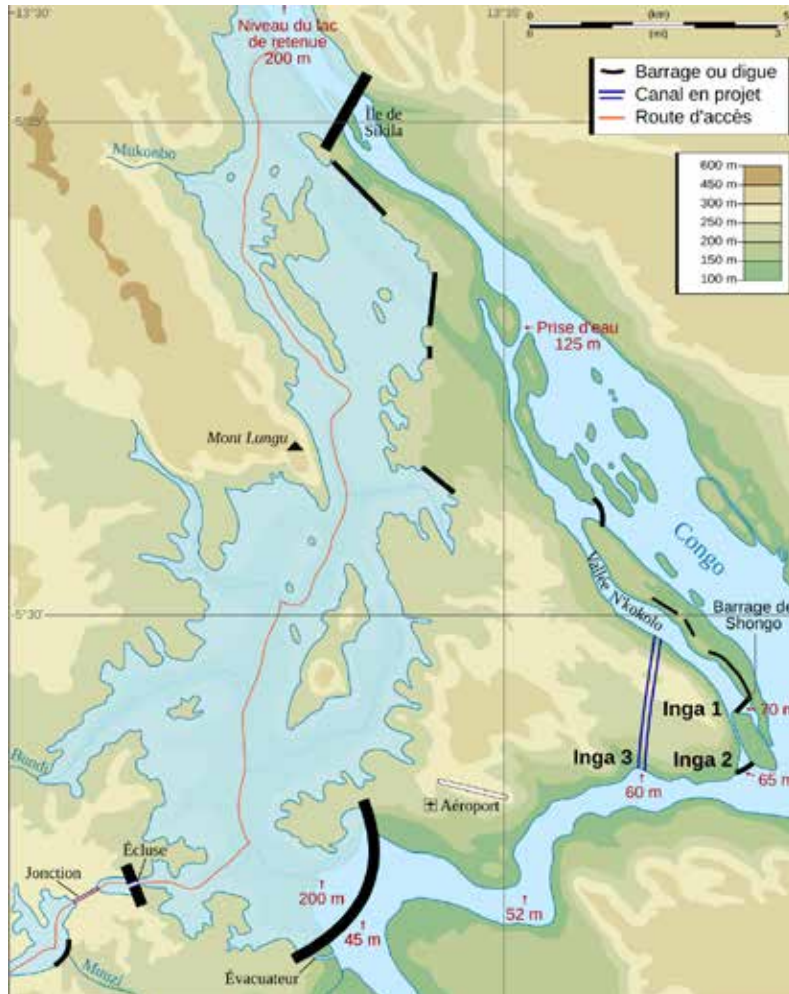
There are other projects, including smaller-scale harbingers of what can be done. On the east coast, Mozambique, which has offshore gas, is exporting gas to neighboring Zimbabwe and to South Africa, through existing pipelines, with new ones in the planning stage. To the north, Uganda and Tanzania are collaborating on the East African Crude Oil Pipeline (EACOP), which will bring recently discovered Uganda oil to Tanzania, for export. However, Tanzania does intend to be fully electrified by 2030. Tanzania will also be collaborating with Kenya, to convey gas to Kenya via the 600 km Mombasa–Dar es Salaam pipeline. Construction will begin soon.

**Nuclear Power.** Egypt will soon have its 4.8 gigawatt, Russian-built nuclear power plant (NPP) in operation, and can be expected to have more. Many African countries are on the road to getting started on nuclear power plants, but only South Africa has an operating NPP.

The future of nuclear power in Africa has the outstanding prospect of construction of a design originated in South Africa, for a 100 megawatt thermal (35 megawatt electric) NPP. The South African HTMR-100 is ready for the construction of a demonstration model. It was developed by Stratek Global, whose founder and CEO is the nuclear physicist and engineer, Dr. Kelvin Kemm.

### Large-Scale Water Projects—the Congo Basin

In the heart of Africa is the gigantic Congo River Basin. Running 4,700 km (2,920 miles), the Congo is the world’s ninth longest river, but ranks second in terms of its average rate of flow—delivering 1,000 cubic meters (1,450,000 cu ft) per second into the Atlantic Ocean. The Basin spans nine countries. Two long-studied projects involving the Congo will radically change the entire continent in their positive impact. One lower-river-channel project is the Grand Inga Hydropower Project (GIHP). The other is the “Transaqua”



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Grand Inga Hydropower Project—sites of Inga I and II hydroelectric plants.

plan to divert some of the Congo Basin run-off into the Chad Basin; and otherwise build extensive power, transportation, navigation and water management for the Congo region.

**Grand Inga Hydropower Project.** Just upstream, about 150 km (93 miles) from the mouth of the Congo River, is a project studied since the 1950s, for a series of dams along the stretch of the river flowing through gorges, where there is a drop of 96 meters (319 feet) over a length of 14.5 km (nine miles). In the 1970s the dams Inga I and II were built, and their hydropower plants are still in operation.

The enormous Inga III is Phase One of six additional dams now planned to be constructed in seven phases. The hydropower potential of the overall Inga project is in the range of 40 gigawatts.

**Transaqua.** The concept of this project involves building dams on the right side tributaries of the Congo River, and connecting the resulting reservoirs with canals, for a 2,400 km long waterway, that can be built using 5 to 8% of the Congo flow, bringing that water into the Chad Basin. The water would go by gravity through the Chari River, Lake Chad's only tributary. Up to 100 billion cubic meters of water could be transferred annually, re-filling Lake Chad, restoring a favorable environment for 50 million people.

On the Congo tributaries, each one of the more than two dozen dams would produce hydroelectric energy, with scattered middle-size (30-100 MW capacity) power stations, thus supplying the entire eastern region of the Democratic Republic of the Congo (DRC), and the Central African Republic.

Additionally, the dams would regulate river flows, which currently flood, thus supporting agro-industrial development. Finally, the waterway would be navigable, as a transport route connecting six countries.

This concept originated with the Italian engineering firm Bonifica, decades ago, when it was part of the Italian state Institute for Industrial Reconstruction. The team of Bonifica, now private, has been led by engineer Marcello Vichi. In 2018, a support declaration came from an International Conference on Lake Chad in Abuja, Nigeria, out of which the Italian government pledged



Bonifica S.p.A

*Key elements of the Transaqua Project.*

funding for a Transaqua feasibility study. Italy was receiving waves of migrants from Africa. But the study never happened after a change of government and other factors. Now the Transaqua is again on the agenda.