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REFLECTIONS FROM A STUDY VISIT

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In June 2025, I was part of a team from the Nigerian Independent System Operator (NISO) that visited Egypt to engage with one of Africa's most progressive national electricity markets. Other members of the study visit team were: Engr. B.A. Ishola (GM, National Control Centre); Engr. M.N Nwagu (GM, System Operations); Engr. O.T. Ojo (AGM, Research & Innovation); Engr. M.A. Maiwada (AGM, Systems Operations); and Engr Gbadamosi Yusuf (Regional Operations Manager, Lagos). This trip was facilitated by the United Kingdom Nigeria Infrastructure Advisory Facility (UKNIAF.

Egypt's electricity market is transitioning from a state-dominated structure towards a more competitive and privatized system, with a focus on renewable energy integration. The market is currently characterized by increasing private sector involvement, particularly in generation and on-grid renewable integration, which makes for a very compelling case study.

Of particular interest here are the challenges that have been overcome as the market progressed along the pathways that have delivered both universal electricity and returns on investment. Over four days, we visited the Ministry of Electricity and Renewable Energy, the Egyptian Electric Utility and Consumer Protection Agency, the Egyptian Electricity Transmission Company, the National Energy Control Centre and a Solar Farm managed by the Arab Renewable Energy Company. A few key points stand out. One of these is the **country's phased approach to renewables integration**. Instead of an all-at-once target, Egypt's Energy Transition Plan commits to increasing renewable energy share in two stages, first to 42% by 2035 and then to 65% by 2040. This will be done through a two-pronged strategy that involves massive investments in solar, wind, hydro, nuclear, and green hydrogen on the one hand. On the other, the country will develop smart grids, reinforce local manufacturing capacity, and upgrade infrastructure.

L - R Engr. Mona Rezk, Chairperson of the Egyptian Electricity Transmission Company (EETC) with Engr. Nafisatu Ali

Another outstanding feature is the **very serious focus on training, research, and workforce development**. While we could not make the link between this focus and the **high numbers of competent women engineers, technicians, and specialists** who we met in the different offices we visited, the country is very deliberate about capacity building in the energy sector. There are 22 fully functional electricity training centres in the country as well as research centres that are affiliated with the government agencies in the delivery value chain, such as the New & Renewable Energy Authority.

This critical role of this Agency in the country's power sector is evidenced by steps that they have taken to implement the feed-in tariffs, develop wind farms and promote several private investments in renewable energy generation.

The renewable energy sector is private sector driven with government providing an enabling environment and incentives such as tax reliefs, land allocations,

custom duty exemptions, cash rebates for productive installations and more. The sector's potential is further enhanced by Egypt's geographical advantages, such as high solar irradiance and favourable wind conditions. As a result of these incentives, the country's current wind energy capacity is around 1,643MW and is expanding, with significant increase projected at 220%. Of particular interest to our team were the significant efforts and costs targetted at maintaining the grid, as well as the regional and global integration models adopted by the country. **The country also undertook a national grid transformation process** between 2014 and 2024. Specific actions taken in this regard include expanded transmission lines (500kV grew from 3,000 to 8,000 km), increasing transformer capacity and the deployment of SCADA systems, control centres, and automation. It was particularly interesting to hear about the country's **strict sanctions enforcement regime for vandalism and electricity theft**, which both continue to get in the way of Nigeria's electricity delivery goals.

In terms of regional and global integration, Egypt is active in the Eastern Africa Power Pool (EAPP) and Pan-Arab Electricity Market while also building interconnections with Sudan, Libya, Jordan, Saudi Arabia, Greece, and Italy. I was particularly interested in **arrangements being made for the spot-market launch in September 2025**. This marketplace for buying and selling electricity where prices will be decided on the spot, is an innovative way of pulling in further private sector participation.

While there are still some challenges, the progress made by the Egyptian electricity market paints an inspiring picture. Private sector participation is advancing on the electricity generation side, with notable thanks to the success of the feed-in tariff rounds, the build-own-operate contracts and a few embedded generation projects supplying energy to industrial consumers. However, the market transition has also gone through multiple extensions and full tariff cost reflectivity has not yet been realised. Still, the progress made so far proves that with the right laws, policies, technologies, and people-enforcers many of the challenges in the Nigerian electricity market can be overcome. These I find very interesting and energising! There is hope!!