By Dispatch Reporter;

A regional electricity interconnection project is in the final stages of implementation that will connect up the power grids of five neighbours including Rwanda. As a result, the power cuts impacting regional economies may be history, at least for now.

High voltage transmission lines run from south-western Uganda into Rwanda. Another similar linkage is between Uganda and Kenya. The same is with Rwanda and Burundi, as well as Rwanda and eastern DR Congo.

The interconnectivity program will link Rwanda, DR Congo, Uganda, Burundi, and Kenya. Once fully switched on, the system will interconnect the power grids of all these countries – meaning should there be a shortage in one region, that can be covered up by a surplus in the other.

As of March 2022, the missing link to activate this system has been the Uganda-Rwanda section. The Kenya to Uganda link was completed back in the 1950s. Rwanda-Burundi is operational. Rwanda to eastern DRC is also in place.

To interconnect these different national grids, which have completely differing capacities, the project envisaged establishing substations in each country. These facilities are receiving the power from other countries via a dedicated transmission line, store the power to be shared locally, and then send some of that power to the neighbouring country.

For Rwanda, it is being served by substation located at Mirama, in Mbarara, south-western Uganda. This connects to the Shyango (Shango) substation located in Nduba Sector, Gasabo District of Kigali. The 220/110kV substation has two 220kV lines bays to interconnect with Uganda network, two 220kV line bays to interconnect with Northern Eastern DRC network through Rubavu substation and two 220kV line bays to Western Tanzania network through Regional Rusumo Falls hydropower plant.

Getting rid of islands in region

These substations are a small piece of big puzzle to light up the region spearheaded by the Nile Basin Initiative (NBI), an intergovernmental partnership that brings together 10 countries that share River Nile and these are; Rwanda, DR Congo,

Egypt, Ethiopia, Kenya, Burundi, South Sudan, Sudan, Tanzania and Uganda.

Shyango (Shango) substation was completed in December 2019, and so was the Mirama substation which has been there for a while.

“What is remaining,” explained Eng. Alloyce Oduor, Project Manager for the NBI Regional Rusumo Falls Hydroelectric Project, “is coordination, harmonization and synchronization of the power system protection and telecommunication equipment because these two substations must communicate. They must exchange power system data. The protection systems must communicate as they protect the line. The control engineers in Lugogo control centre in Uganda and those at national control centre at Gikondo in Rwanda must be able to visualize the take-off of power.”

The previous timetable had been that the interconnector system was to be switched on this February. Eng. Oduor said in interview that a new operational deadline has been set for May 2022. “There were some challenges with contractors who under performed and all countries are aware of that,” he said.

“The five countries; Kenya, Uganda, Rwanda, Burundi, and DRC will be interconnected. Look at it that, [currently], Kenya-Uganda are in one island electrically, Rwanda-Burundi-DRC in one island electrically. The separation is Uganda-Rwanda which we want to close. If its closed, then we will be in one network.”

With the availability of Shango substation, it adds up to a total 28 substations in Rwanda. The Rwandan government has set a target to have 44 substations by 2024. Similarly, installed capacity currently is 225.5MW, with a target of 556MW in the same period.

By October 2021, the cumulative power connectivity rate in Rwanda was at 67.1 per cent of Rwandan households, according to according to data from Rwanda Energy Group (REG). From this national total, 48.6 per cent households are connected to the national grid and 18.5 per cent accessing energy through off-grid systems, mainly solar.

In Kigali, like other regional capitals, the interconnectivity cannot come soon enough. The system will strengthen transmission networks and reduce power losses

to ensure reliability of electricity supply. The interconnection projects like Shango substation are vital for regional power exchange and trading across borders, hence access to cheaper power sources.

Rwanda can produce 1,613 MW

Rwanda's electricity generation comes from different sources including hydropower, methane gas and solar. Very soon, peat energy will be added as 80MW Peat-Fired Power Plant constructed cost of $350m is turned on in a matter of weeks. Hydropower makes up approximately 46.8% of the total installed capacity, the biggest percentage will be coming from River Nyabarongo that also leads up to River Nile. It is followed by geothermal energy (26%) and methane (14%) peat 7% and 4% solar energy.

With the economy growing at rapid rate over the past two decades, the government must avail electricity to maintain the growth rates.

Experts however, point out that the country can generate electricity economically with local resources estimated to total around 1,613 MW. The country is therefore utilizing less than 10% of its local electricity potential.

Inside Rwanda, a confluence of different small streams serve their waters to Rivers Nyabarongo and Akanyaru. These two merge to form River Akagera which flows into Lake Victoria. As a result, 0.7 per cent of Nile Basin water surface is based in Rwanda.

In addition to these interconnection substations linking Rwanda to its Nile basin neighbours, the NBI has eight other investment projects at varying stages.

The investment projects are to benefit 706,940 direct beneficiaries, supply 333 million cubic metres and generate 113.5 MW added to the national grid.

Other benefits also include 620 km transmission lines, four sub-stations, 5,981 hectares irrigated land and 765 hectares of watersheds to be restored.

Rwanda's Private Sector Federation (PSF), the umbrella grouping of the business community, is excited about the regional power project. Though in recent years power supply has increased locally, interruptions still exist. It is this loophole PSF

hopes will be rectified.

What about Rwanda-Uganda fight?

Mr Theoneste Ntagengerwa, the PSF Spokesperson said in interview: “As the private sector, our desire is to always have a high supply of power without any interruptions. We expect that the impact of the regional power project will be two-fold: sustainability of supply and reduction in cost of power”

“There are places, especially designated free economic zones and industrial areas where there is sufficient power supply. However, for our members operating in other areas, say for example residential suburbs, the power is either on or off, or the power has low intensity which affects their machines. We would want to see all machines operating smoothly.”

“The other aspect is that as quantity of power increases since the supply from regional neighbourhood is steady, we expect that it will further bring down the cost of electricity. Yes, power is relatively cheaper in Rwanda, but for us business people, the cheaper raw materials and inputs cost, the less the cost of production which eventually reduces on prices of final goods.”

Rwanda and Uganda have been embroiled in bitter geopolitical fight which broke into the open in February 2019. Since then, in addition to accusing Kampala of planning regime change in Rwanda, it also alleges the Ugandan government of President Yoweri Museveni has been sabotaging Rwanda’s economy.

Kigali alleges Uganda sabotaged a planned railway line from the Kenyan port of Mombasa, to Kampala, on to Kigali. Instead, says Kampala, Uganda prefers line heading to South Sudan.

There have also been reports that Uganda blocked export of Kenya electricity to Rwanda, as well as some supplies from Ethiopia.

Eng. Oduor, the Project Manager for the NBI Regional Rusumo Falls Hydroelectric Project, downplayed the suggestion that the fight between Rwanda and Uganda is what is delaying the regional electricity interconnection scheme.

The two governments have actually been pushing for quick implementation, he said.