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▲ 7,827GWh **Hopeful.** The Energy ministry's records indicate that the electricity sector's gross domestic energy generation in 2025 grew to 7,827.5 GWh, up from 6,573.00 GWh in 2024; 5,582.77 GWh in 2023; 5,310.94 GWh in 2022.

Issue. Karuma hydropower plant occasionally suffered dispatch challenges due to the ingress of waterweed.

Electricity sector takes two steps back for one in front

Rising domestic use and exports pushed Uganda's electricity demand up 21 percent in 2025, with hydropower dominating supply despite waterweed disruptions and plant performance challenges.

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An increase in system demand for electricity for export and domestic consumption pushed Uganda's hydropower energy demand by approximately 21 percent in the last year, a new report shows.

Of the 2025 figure, maximum domestic demand stood at 1,166.18MW, from 2024's 972.99 MW (19.86 percent). In 2024, while the maximum system demand was posted at 1,117.9 MW, up from 2020's 737.24 MW, in 2025, the country's energy bulk buyer, the Uganda Electricity Transmission Company Ltd (UETCL), registered a maximum system demand of 1,350.61MW.

The Energy ministry's records indicate that the electricity sector's gross domestic energy generation in 2025 grew to 7,827.5 GWh, up from 6,573.00 GWh in 2024; 5,582.77 GWh in 2023; 5,310.94 GWh in 2022; 4,999.55 GWh in 2021; and 4,375.07 GWh in 2020.

The gross domestic energy generation growth represents an increase of 19.09 percent in annual gross energy generation during 2025 from 2024 due to increased domestic demand as a result of increased economic activities and increased exports to neighbouring countries.

According to the figures, 72.73 percent of the total energy output, 5,730.11 GWh in 2025, was realised from large hydro plants, along the River Nile, including Kiira-Nalubale complex, Bujagali, Isimba and Karuma dams.

In 2024, UETCL records put at 70.33 percent (4,629.15 GWh) the total supply realised from large hydro plants. It is also established that, of the five major generation facilities, the Bujagali hydropower plant was the most resilient and performed at the highest level during the period.

For example, both Kiira and Nalubaale hydropower plants, referred to as the Kiira-Nalubaale Complex, realised a gross energy output of 1,985.58 GWh in 2025, representing a 29.01 percent increase from 1,539.04 GWh in 2024.

An aerial view of Isimba hydro electricity dam. According to UETCL's System Operations Data 2025 report, the stagnated increase in net electrical energy supplied from the plant to it was registered at 1.0 percent in 2025. PHOTO/FILE

Waterweed challenges

A source at the Electricity Regulatory Authority (ERA), speaking on the condition of anonymity, revealed that the Kiira-Naluable Complex suffered multiple incidences of invasion by waterweeds, which resulted in load shedding.

"We have been struggling with structural and operational challenges with water weeds being the most burdensome, including Isimba hydropower dam downstream in Kayunga," our source stated.

"In 2025, weeds were a problem between September and November when it resulted in flooding at the Kiira plant, especially once the crane broke down, and so we had to rely on the Bujagali hydropower plant, which was running optimally," the source added.

It is not the first time the Kiira-Nalubaale dams have suffered back-to-back incidents of shutdown when waterweeds clog their intake gates. On April 12, 2020, the country suffered a nationwide setback once waterweed islands migrated and clogged the intake gates for Nalubaale, Kiira and Bujagali dams, causing the three to trip.

Two years later, in December 2023, the Energy ministry said it had planned to spend up to $7.247m (Shs26.8b) in 2024 to procure a weed harvester and a floating boom to manage the floating island.

DOMESTIC DEMAND

The maximum domestic demand (Uganda only) was registered at 1,166.18 MW in December 2025. This represents a 19.86 percent increase in domestic demand compared to 2024. Uganda's energy exports to neighbouring countries also registered significant growth.

In December 2018, the 183.2 MW Isimba hydro power plant was first synchronised onto the grid. It wasn't until 2025 that it supplied a net electrical energy to UETCL of 1,041.15 GWh, up from 2024's 1,030.15 GWh.

According to UETCL's System Operations Data 2025 report, the stagnated increase in net electrical energy supplied from the plant to it was registered at 1.0 percent in 2025. UETCL attributes this to unfixed glitches in the plant.

"During 2025, the plant continued to be under the defects liability period. Units at the plant suffered a lengthy shutdown to facilitate defect rectification by the plant's EPC contractor," Mr Bright Masereka, the UETCL manager, control, noted in the report.

The 600MW Karuma hydropower plant occasionally suffered dispatch challenges due to the ingress of waterweed, rendering its dispatch unreliable.

Meanwhile, the Karuma plant, which synchronised onto the grid in March 2023, and commenced commercial operations in June 2024, could only supply a net electrical energy of 1,090.41 GWh in 2025. In 2024, all six of its units mustered 672.32 GWh, up from 2023's figure of 404.43 GWh.

As such, the plant continued to be under the defects liability period throughout 2025, thanks in no small part to the waterweeds.

"The evasion incident was the largest contributor to the increased load shedding experienced in 2025, thus highlighting the importance of a permanent solution to the challenges of water weed invasion at the intake of the Karuma plant," Mr Masereka noted.

Bujagali factor

The 250MW Bujagali hydro power plant, run by Bujagali Energy Limited (BEL), supplied a net electrical energy of 1,636.93GWh in 2025 compared to 1,409.03 GWh in 2024; 1,492.15 GWh in 2023; 1,498.90 GWh in 2022; 1,555.67 GWh in 2021; and 1,391.97 GWh in 2020.

Bujagali's performance over the past four years is also said to have demonstrated operational resilience and capacity when it dispatched an average 95 percent per month throughout 2025 to cover the deficit realised due to outages from the Kiira-Nalubaale complex. Previously, it dispatched at most 65 percent of its 250 MW capacity.

"We are generally happy with the operations at this power plant, so I commend it for the good work done as per the agreement," Ms Zinia Tibalwa Wako, the Chief Executive Officer (CEO) of ERA, said, adding that BEL has had a significant impact in the sector due to its consistency and capacity enhancement.

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Under the Kenya-Uganda power interchange, in 2025, there was a net export from UETCL to KPLC of 243.08 GWh compared to 175.51 GWh in 2024, whereas Uganda-Rwanda interchange recorded export growth up to 215.96 GWh, compared to 85.24 GWh in 2024.

In the same year, energy export to Tanzania was recorded at 210.78 GWh, compared to 172.47 GWh in 2024, and that of the DRC climbed to 3.67 GWh from 2.78 GWh in 2024.

Boom lines

The increase in net export to neighbouring countries, UETCL attributes to the increased power support requests by neighbours, facilitated by the completion of key electricity transmission lines in 2025.

Yet the waterweeds have contrived to ensure that Karuma hydropower dam reportedly operates on average 50 percent of its six units. This, experts say, is due to missing boom lines.

In his 2025 report to Parliament on UEGCL performance, the Auditor General, Edward Akol, detailed how Karuma, Isimba and Nalubaale-Kiira hydropower dams suffered technical breakdowns due to the absence of floating boom lines. His findings disclosed that none of the three plants has a floating boom.

Consequently, they have continued to incur high costs in manually tackling the problem of waterweeds. It was further established that UEGCL spent Shs386.35m on weed control and harvesting at both Isimba and Nalubale-Kiira plants.

"There is a need for concerted effort to manage the influx of the waterweeds to minimise the dam safety challenges, such as equipment damage. This may consequently increase the cost of maintenance due to regular breakdowns, which disrupt the availability of electricity to the citizens," Mr Akol noted in the report.

During a recent interview to ascertain the impact of the challenges on power distribution and uptake, the Uganda Electricity Distribution Co Ltd (UEDCL) said the situation has conditioned them to resort to load shedding due to a deficit in the energy load available to them.

"As a distributor, we only deal with what is available to us by UETCL, and if it is deficient, we can only be able to ration it accordingly, and that is how you see the country experiencing load-shedding," Mr Jonan Kiiza, the UEDCL spokesman, stated.

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