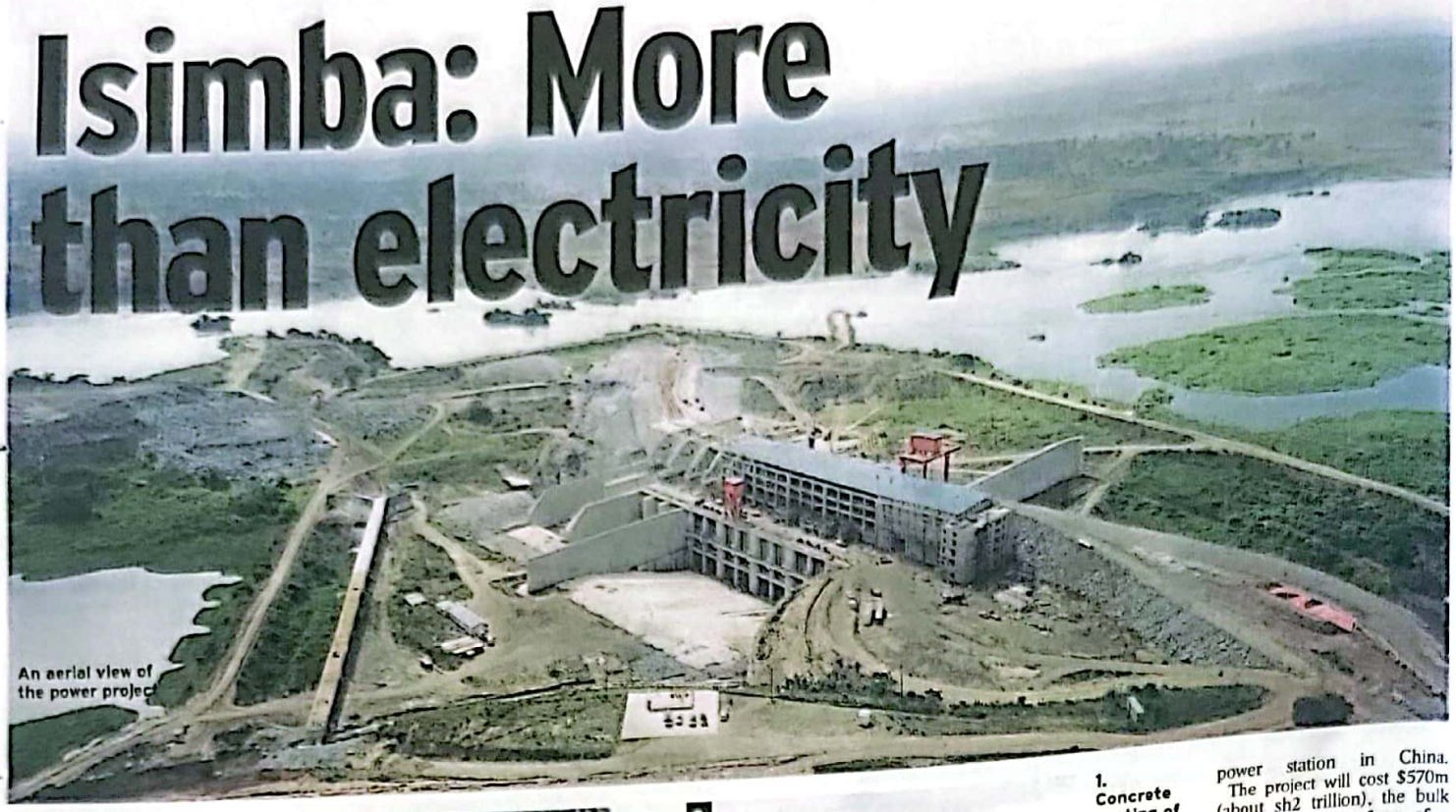
## Power supply to go up and cost to drop as Kayunga

# Isimba: More than electricity



An aerial view of the power project

By Taddeo Bwambale

When the first turbine of the 183-megawatt Isimba hydropower dam is switched on in August next year, residents of Busaana sub-county in Kayunga district will be looking for much more than light.

Four years ago, much of the area, located on the lower banks of the River Nile, was just a bushy area with sparse settlements spread all over the place. Today, the area is a stunning scene.

The multi-billion hydropower project is slowly taking shape ahead of its commissioning later next year as construction of the concrete structures is almost complete.

The project comprises a concrete gravity dam, a clay-core rock fill dam, a spillway, a power house, electro-mechanical equipment, switching stations and auxiliary power transmission works.

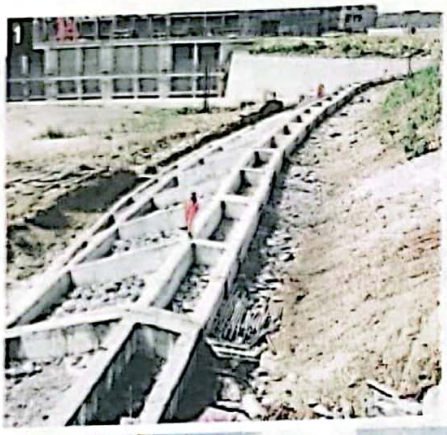
"We have completed about 70% of the work and the project will be handed over as scheduled," says Prof Wang Yongtian, the general manager of China Water and Electric Corporation, the contractor.

Construction of the hydropower project started on April 30, 2015. It is expected to be completed by August 31 next year, almost a year later than the initially set date.

If experience is anything to go by, the firm is a subsidiary of the China Three Gorges Corporation, the company that built the Three Gorges Dam, the world's largest power station in China.

The project will cost $570m (about sh2 trillion), the bulk of the money in form of a loan from China Exim Bank and the rest from government.

The 1,625m Isimba dam will be the fourth largest hydropower project in Uganda, after the 250MW Bujagali in operation, and the 600 megawatt Karuma and Ayago dams under construction.



1. Concrete casting of the guide wall

2. Concrete casting of the downstream apron

Pictures by Richard Sanya

3. Concrete casting of the floor slab

### Why Isimba is important

Isimba, located on the lower reaches of Victoria Nile, is one of the major power projects envisaged to ease power shortages, and accelerate the development of local economy.

By 2020, Uganda will need at least 1,131 megawatts to meet the energy demands for manufacturing and industrialisation. The country's current total installed capacity is 822 megawatts.

Power supply from Isimba is expected to reduce that deficit by 60%. The first turbine will be switched on in August next year and the remaining three will be powered on a month at a time, Yongtian explains.

Isimba is expected to generate hydroelectric power at 68 cents per kWh, the lowest in East Africa. It will generate 1,039GWh of electricity a year and increase the country's total electric capacity by 23%.

Power generated from Isimba will be transmitted to the substation at Bujagali, through a 42km-long 132kV Isimba-Bujagali double circuit transmission line.

Project manager Chauhan ... This employment will bring accommodated ... on site, leaves a footprint at home. ... will have a lifespan of 100 years.

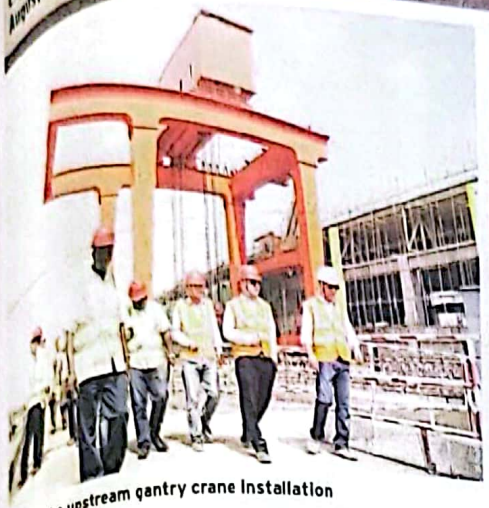
# Project starts electricty production next year

## The project in numbers

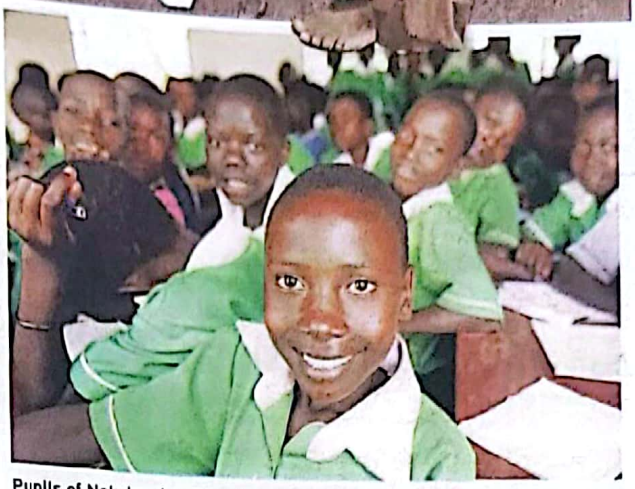
GRAPHIC BY BRIAN SSEKAMATTE

- Project cost: **$570m (sh2 trillion)**
- Isimba dam (**1,625m, 183MW**) will be the fourth largest hydropower project in Uganda, after Bujagali (**250MW**) which is in operation, and Karuma and Ayago dams (**600MW**) which are under construction.
- Isimba project employs **3,143** workers. (**2,708** are Ugandans.)

Construction started April 30, 2015.
Expected completion date August 31, 2018



Touring the upstream gantry crane installation



Pupils of Nakakandwa RC Primary School in their newly renovated classroom

Dam location: Busaana County, Kayunga

## The changing face of Kayunga

The hydropower project is changing the face of Kayunga district in more ways than one. A 15km road linking Kayunga town to the project site has been rehabilitated by the contractor, to make it motorable.

In order to uphold good relations with the host community, the contractor built a platform for residents living near the river to fetch water and set up a market for locals to sell items near the project site.

In Kiteredde, Kasaana and Nampanyi villages that are home to over 2,500 people, the company has widened and repaired the main roads and sponsored free medical camps and football games in Kayunga.

In May, the contractor handed over the newly-refurbished Nakakandwa RC Primary School to government after renovating it with an $80,000 (about sh280m) grant.

The renovation works covered dilapidated classroom blocks, two administration blocks, teachers' quarters and sanitary facilities.

The school also received classroom desks, uniforms, filing cabinets, stationery and sports kits, which have improved the learning environment at the school, according to its headteacher, Moses Mukiibi.

"The pupils used to be rowdy and concentration was low since they were uncomfortable sitting on bare floor. Now, they all sit on desks and their attention in class has greatly improved," Mukiibi says.

The renovation of the school has attracted more pupils from neighbouring villages leading to a sharp increase from about 700 pupils last year, to 929 pupils today.

The towers for the power transmission line have already been erected, skirting across numerous villages and awaiting connection by cable and the eventual roar of turbines.

**Works on schedule**

According to VPS Chauhan, an official hired by the contractor to supervise the project, Isimba dam is undergoing construction in two phases, with the first stage nearing completion.

"The first phase involved diverting the river to the left bank and this process is almost complete," Chauhan explains during a tour of the facility by Vision Group.

Next month, works on diverting the river to the right bank will commence, Chauhan says.

A few feet at the base of the dam, dozens of workers put final touches on giant steel structures to house four turbines.

Construction of an erection bay, a large building above the dam that will house a control room in one section and generators about 10 metres below, has been completed.

The concrete structure will support a large crane which will be used to lift steel gates for maintenance works and to control the flow of water getting into the dam.

According to Chauhan, the dam is built to withstand the most intense earthquake and it will have a lifespan of 100 years.

### QUALITY CONTROL

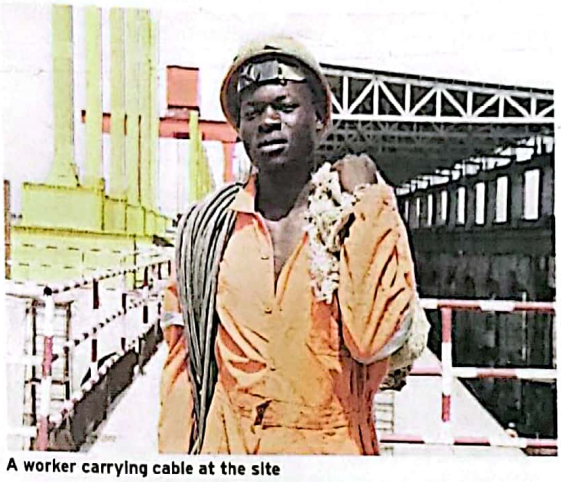
## Test, test and test again

There is a special laboratory on site, where all construction materials used at the hydropower station are put to rigorous test before they are used.

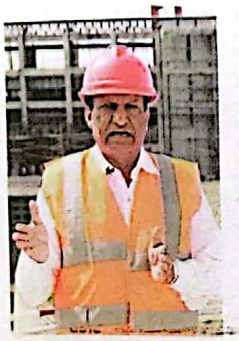
Concrete blocks, aggregate, cement and steel bars, are tested at a special laboratory set up on site, even when the testing has been done at the manufacturer's plant.

At the laboratory, each of the materials used is tested for strength, moisture and temperature in order to guarantee that they are durable.

Since most of the construction materials are procured locally, they are tested at the manufacturers' factory before they are ferried to the project site, where they are tested again.



A worker carrying cable at the site



Project manager Chauhan

**Job creation**

Isimba hydropower project employs 3,143 workers, of whom 2,708 are Ugandans working as welders, joiners, carpenters, porters, accountants, electrical and mechanical engineers, cooks and cleaners.

The creation of jobs through the hydropower projects is in line with both China and Uganda's commitment to enhance good and fair terms of co-operation through development.

"We will build their capacity to manage future projects. This employment will bring technology transfer and related financial trickle down in the economy," Yongtian says.

Besides earning income, at least 2,500 workers have undergone training in 12 different disciplines under the guidance of Chinese engineers, according to Li HongXu, a project officer at CWEC.

Apart from onsite training, about 40 Ugandan engineers have been sent to China for training on a range of technologies relating to civil and dam construction, hydrology and electrical engineering.

The workers are accommodated on site, in modern camps, with access to water and power.

Considering the multicultural environment, many Ugandans are now employed as interpreters.

Construction of the dam has brought returns for many local companies supplying materials to the project. For instance, all the fuel, communication gear and cement, are procured locally, Hongxu says.

All the food, vehicles, labour, customs clearance for imports and construction equipment are sourced locally, to guarantee that the project leaves a footprint at home.