Ituango hydro: hopes for sunrise over flooded lands

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Where there is crisis, there is usually opportunity. The disaster that hit the Ituango hyrdoelectric dam project in Colombia is turning on a light at the end of the tunnel for renewable energy projects in the country.

Developed by local Empresas Públicas de Medellín (EPM), the gigantic 2.4GW hydropower project was supposed to provide 17% of total electricity generation in Colombia by year-end 2018. But after a succession of problems, there is now little hope that the project will ever become a reality.

International investors are now hoping this will give a much needed boost to the country's renewable energy sector – as without the speedy construction of new generation assets to plug the gap left by Ituango's failure, the country risks blackouts.

Renewables' scenario

Colombia is well-suited geographically for renewable energy generation, particularly solar, with some regions receiving on average over 12 hours of sunlight per day.

However, unconventional renewable energy is today almost nonexistent in the country – with only 19MW of wind and 35MW of solar – representing less than 1% of the energy mix. Meanwhile, 70% comes from hydropower and 30% from gas and coal.

The country has made progress in building up the necessary regulatory framework for renewables projects. In March (2018), the Ministry of Mines and Energy issued a new decree (number 0570) establishing guidelines for long-term renewable power generation contracts.

Colombia now has 299 projects registered in the planning unit of the Ministry of Energy to participate at an eventual auction, comprising:

- 255 solar
- 18 small hydro
- 10 biomass
- eight CHP
- six wind
- one geothermal
- one hybrid

The government has also announced a project to build a 1,360MW wind power transmission line in the country's La Guajira department, scheduled to enter operation in November 2022.

Enel announced in May (2018) that it was constructing the largest solar power plant in the country, El Paso, in the northern department Cesar. The project will have an installed capacity of 86.2MW, requires $70 million of total investment, and is expected to be operational by H2 2018.

In further good news for the renewables sector, the recently-elected Colombian president Iván Duque has said he will promote a diversification of the energy mix in the country by boosting the use of renewables.

Understand the disaster

The Ituango dam is located over the Cauca River, the second largest river in the country, about 175km north of Medellín. It was just months away from being completed when disaster struck.

To understand what happened, it is important to know how a dam is built. This process includes the construction of different tunnels to divert the water while raising the dam. As the project neared completion, EPM closed two of the three tunnels it had built.

On 28 April, a landslide near the site blocked the remaining tunnel. With rain and new landslides, water rose to critical levels.

That led EPM to what would be only one of a series of hard decisions: on 10 May, the company flooded the dam's turbine rooms to release the pressure being exerted on the structure by the river.

Water levels were reduced, but all the equipment that had already been installed suffered irreversible damage.

Two days later, one of the sealed tunnels ceded the pressure, unblocked and caused flash floods downstream.

Over 113,000 people living downstream of the dam have already been evacuated, due to the risk of a collapse.

Even today, the risk of new landslides from nearby mountains still remain, which could potentially compromise the integrity of the entire project.

The attempt to save the dam includes the construction of a new project tunnel to reduce the levels of the flooded river, which would take several months.

The financing

In January, after almost two years of negotiations, Empresas Públicas de Medellín signed a $1 billion senior, unsecured A/B loan package to help build the Ps11.4 trillion ($3.9 billion) Ituango hydropower plant.

The financing package included:

- $300 million A loan from the IDB Group
- $50 million co-loan from the China Co-Financing Fund for Latin America (administered by IDB Invest)
- $650 million B loan from international commercial banks and institutional investors

The following banks underwrote the B loan:

- BBVA
- BNP Paribas
- CDPQ
- ICBC
- KfW IPEX
- Santander
- SMBC

EMP says it is still working to "regain control over the project." It means that the project is still under development,

although with unpredictable delays.

IDB Invest issued a statement on 8 June saying it is working on support for the affected families and that the group's goal "is to support EPM to ensure that the project will generate clean and affordable electricity."

It is unclear, however, what will happen with the financing if the project reaches a point of no return.

Vultures of a social, environmental and financial disaster – or saviors of the country from an eventual deficit of power generation, renewable energy investors watch closely the new developments at Ituango.