

Colombia at the crossroads

Latin America | Bogotá seems ready to kickstart its dormant renewable sector to bolster a hydro-reliant power mix but auction delays suggest the road may be bumpy. José Rojo explores the factors behind the country's slower PV awakening as Brazil, Mexico and other neighbours surged ahead



Credit: Celsia

For an illustration of Colombia's present approach to renewables, look no further than one of its national symbols.

Much like the fragrant, flamboyant orchids carpeting its valleys and cloud forests, the Andean state has in recent years waged a charm offensive for clean energy developers; an appeal to help boost non-hydro renewable capacity from the few dozen megawatts recorded in early 2019. The PR operation comes from the very top, with President Iván Duque and energy minister María Fernanda Suárez taking to Twitter to hail Colombia's "energy revolution" as they visit PV projects.

The campaign appears to be bearing fruit. As the government was keen to stress when *PV Tech Power* got in touch, Colombia last year overtook Canada, Mexico and Brazil in the World Economic Forum renewable rankings; it was also recently singled out by EPC firm Sterling & Wilson as a PV-market-to-watch. It helps that the country has the resources for a PV boost – irradiation in the Caribbean northeast reaches a daily 5.5 to 6KWh/m² – but also a very good reason; over-reliance on hydro makes it extremely vulnerable to climate-driven droughts.

And yet for all the potential, the going remains slow. While IRENA stats found huge PV capacity jumps from 2017 to 2018 in Brazil (1.09GW to 2.29GW) and Mexico (674MW to 2.54GW), Colombia hobbled along from 11MW to 87MW. Like bees drawn to an orchid, developers and investors attracted by the promise of Colombia's first ever renewables auction may have found the scent was not quite so alluring when the tender was postponed in February, with anti-trust concerns forcing the government's hand. Is it perhaps too soon for Colombia's quest for renewable success?

Lessons from the trailblazers

If recent conversations are anything to go by, faith in the country's odds for victory runs deep.

Gustavo González, head of PV generation at Celsia, is not overly troubled by the headlines on auction delays. His firm delivered Colombia's first two large-scale PV plants – twin 9.9MW installations near Cali and Cartagena – without the need for tenders, instead selling power via PPAs or directly to its 1,200,000-customer network.

Celsia's 9.9MW plant in Bolívar



Credit: Celsia

Gustavo González, PV generation head at Celsia

Having secured presidential visits for its first plants, the firm has now a third 9.9MW PV project under construction and is developing a further two.

Sterling & Wilson advisers spoke last year of Colombia's many regulatory challenges but González remains unconcerned. He points at the government's efforts to support via legislation – tax incentives under the so-called Law 1715 have particularly helped, he says – and adds that land purchases do not typically pose major challenges. "The first project raised some questions but we've now got a firmer handle on how permits, procurement and construction play out with a PV project," he tells *PV Tech Power*.

In line with others approached by this publication, Celsia's PV head does acknowledge delays with securing grid access: particularly in Colombia's high-irradiation, poorly linked north, demand for connection points can create a wait of several years, according to him. González plays down congestion risks, however. "The grid is ready for more renewables. Expansion is needed but the government is working to deliver it," he argues, pointing at upgrades both under construction by planning unit UPME and the substations built by Celsia across the Caribbean region.

Solarplaza consultants warned last year of "very challenging" interactions with UPME and other government agencies. González does not report those difficulties but speaks of "disorganisation"; uncertainty over who should first clear access points – UPME or the various grid operators – has left some projects in "limbo" in recent years, according to him. "My only ask for the government would be an easier process for connection points but to a great extent, the confusion has already been cleared up," he says.

Utility-scale picks up pace

Slow or otherwise, Colombia's PV awakening is unquestionable. The country drew eyes in April as Enel's 86.2MW El Paso facility, a project dwarfing Celsia's trailblazing duo, was linked

to the grid. As President Duque said on site, the 176GWh-a-year installation in the north-east department of Cesar is the first to provide power under the so-called reliability charge auctions, a Colombian creation where alternative sources are contracted to bolster the hydro-reliant power system in case of drought.

El Paso's status as Colombia's top PV dog looks set to be short-lived. At a whopping 240MW, Diverxia's facility would alone more than triple the current figures for PV capacity. Planning permission was secured in January. And it wouldn't be alone: PV was behind 17 of the 22 project bids tabled for this year's postponed auction; some 15 of all 22 submitted renewable bids – solar or otherwise – concerned projects in high-irradiation Caribbean shores.

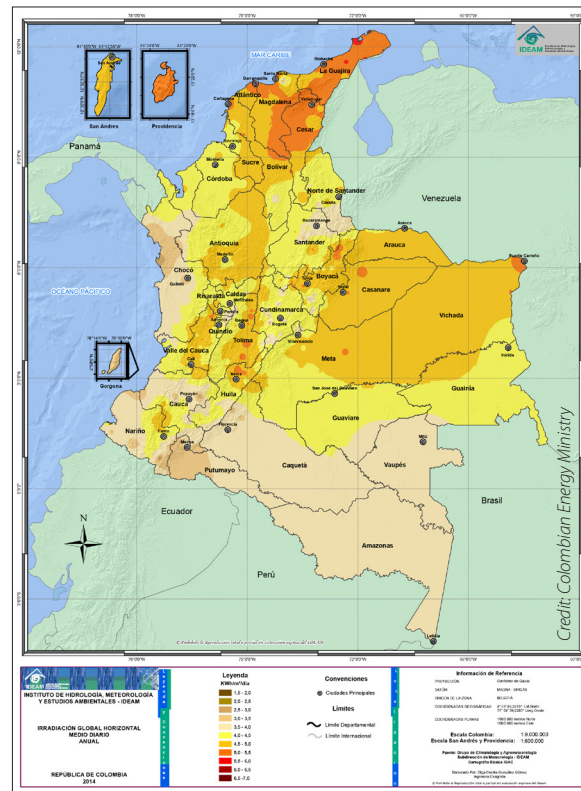
Germán Corredor, executive director of renewable association SER Colombia, echoes the talk of momentum in the Andean state. According to him, foreign developers and investors may have areas of concern – including long-term auctions, grid connection and environmental permits – but are nonetheless devoting increasing attention to the Colombian market, drawn by the potential and the government's recent legislative push.

"Since the adoption of Law 1715 and the efforts to regulate excess power sales by smaller self-generators, the country has set off on a slow but continuous path to build PV plants of all sizes," Corredor tells *PV Tech Power*. "The installation of small-scale plants, taking off only recently, is expected to gather steam as the potential is significantly high. There's still not a figure for nationwide installed capacity but we estimate there's over 50MW already being operated across small- and middle-size businesses, industries, followed at some distance by residential."

Small is good

Colombia's small-scale PV potential comes underpinned by its harsh geography, a tangle of impassable mountain valleys sandwiched between a tropical coastline and some 643,000 square kilometres of rainforest. Particularly around the Pacific and the Amazon basin, these features make it a challenge to supply grid-connected power to isolated residents, who may use little energy but can also typically afford to pay little for it.

Speaking at an event in March 2019,



Irradiation potential across Colombia

energy deputy minister Diego Mesa anticipated the government's plans to tap into renewables to keep the lights on across these so-called non-interconnected zones. Hard policy swiftly followed, with the publication later that month of proposals to subsidise the set-up of domestic PV systems. Once up and running, the scheme will help offset O&M costs via payments reflecting income levels, among other factors.

The ultimate impacts of this government money remain unclear, but developers are not waiting for the outcome as they pile into solar distributed generation. According to figures circulated by Solarplaza, the pipeline currently under development nationwide reaches into the three-figure megawatt region. Clarity on what qualifies as distributed genera-

tion – below 10kW for residential, 100kW for commercial and 1MW for industrial – and how to sell surplus power is provided by rules laid out last year by energy regulator CREG.

Celsia's large-scale projects may be hoarding the spotlight but the firm is also amongst those tapping into small-scale opportunities. According to González, a single-digit-megawatt rooftop portfolio has been deployed to date; going forward, he explains, the



Germán Corredor, executive director of SER Colombia

plan is to reach the 100MW mark via a further 50 installations. "The capacity of our [rooftop] projects is rising and rising," González adds. "We think the segment is becoming more popular and attractive for everybody."

The ball is in Bogota's court

However sizeable on paper, Colombia's PV potential will likely require auction support to materialise, particularly while the market remains at an embryonic stage. Does the postponement of the February tender herald trouble for its successor, due to be held before July? Speaking after the delay in the winter, Minister Suárez sounded optimistic. "This was a first for Colombia. We took the risk, knowing that...learning curves are fundamental to long-term success," she argued. "We're convinced we're closer than ever to realise this dream of all Colombians."

Crucially, the renewable industry appears to have come away with a similar interpretation. "Investors were understanding about the events in February. Their expectation now is that changes will be made so that the next auction attracts greater participation of both demand and offer," says SER Colombia's Corredor. "We now anticipate a tender this year and at least another under the current term of office, which the current government has shown interest in."

The blooming every year of Colombia's orchids is a delicate event, only made possible by a finely tuned mix of predictable sunlight, humidity and water conditions. Nurturing a buoyant PV ecosystem, where years ago there was none, will demand a similar balancing act, the combination of the right dose of policy incentives and market dynamics. Bogotá has seen greater challenges than boosting renewables – not least healing the wounds from decades of guerrilla conflict – and appears to count, for this particular task, on support from the PV ranks.

"Everything is clearly set out by the government and the new regulation, so it's now down to all of us market players to get together and undergo the learning process," says Celsia's González. "It was unfortunate that the auction didn't turn out as we wanted but Colombia is ready for the arrival of renewables – in fact, they have already arrived. Everything is set so that the business of solar PV continues and thrives."