



The rise of Asian solar: A first-timer's travel diary

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Emerging solar | From China's bullish manufacturers to Malaysia's blossoming ecosystem and Taiwan's downstream ambitions, Asia has come to shape the fortunes of global solar. José Rojo charts the continent's dazzling ascent after visiting all three markets in late 2019

Any journalist taking on the solar PV beat in 2019's world would take very little time to spot the long shadow cast by Asia over the global ecosystem.

The continent's rising star is of course best epitomised by China, both the unassailable leader of all downstream solar markets and the upstream locomotive that keeps installations ticking across the globe, from Atacama to Nairobi, Warsaw or Melbourne. The spotlight is not, however, restricted to Beijing: from Vietnam's feed-in tariff (FIT) rush to Japan's steady growth, Taiwan's multi-gigawatt campaign or Malaysia's oversubscribed tenders, once-secondary markets are rising to the fore.

Taiwan, the first stop of this correspondent's Asian tour in late 2019, is emblematic of the region's many solar triumphs and trials ahead. Its very existence, with millions crammed into a slim strip of land encroached by geopolitical hostilities and natural hazards, is an act of defiance. As the plane

takes one last, sweeping turn on the journey to Taoyuan airport, the island's mixed solar blessings are displayed in full view: blinding, bountiful sunlight that would be anyone's envy but also an intractable geography, the sort that forces site-seeking solar players to choose between steep forest valleys or overcrowded lowlands.

The contradiction between Taiwan's solar strengths and its structural weaknesses is apparent from the moment Energy Taiwan 2019 kicks off. Two discourses jostle for attention at the trade show in Taipei, attended by *PV Tech Power* on 16-18 October. There is the confidence of government officials taking the floor to talk up plans for installed PV capacity to hit 20GW by 2025 from about 3.4GW today. There is also, however, the more cautious mood of actual solar operators, who agree the goal is feasible but tend to doubt it can be achieved as quickly as top officials would want.

On one corner, the government offered grand statements about how Taiwan's

Chinese PV makers may have wiped out rivals all over the globe but now face a game of musical chairs at home, with domestic roll-out tanking.

bright solar future was inextricably linked to its supposed status as an industrial powerhouse. If Taiwanese PV is to triumph, president Tsai Ing-wen's message said as she gave her conference keynote speech, it is because the industry can tap into the island's pre-existing strengths as a global hub for manufacturing and electronics. Terry Tsao, president of semiconductor association SEMI Taiwan, struck a similar tone as he boasted of the island's "complete PV supply chain" as he spoke after the president.

On the opposite corner, however, solar veterans poured cold water on the upbeat rhetoric with a simple question: can 20GW of PV be squeezed into a jam-packed island? Asked whether the goal is achievable by 2025, TATUNG Forever Energy project manager Max Lin countered with an emphatic "no", pointing at land scarcity and bureaucracy. By way of example, he spoke of his firm's 130MW utility-scale PV project, which cannot go forward until all 30 site owners agree and the central government gives the final

Veterans of Taiwan's solar scene had faith in the island's growth potential but doubted the 20GW-by-2025 goal was feasible



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nod. "We've put so much money, people on the ground," Lin lamented. "This is a political issue."

Interviewees also regaled with tales of what deploying solar is like in the land of earthquakes and typhoons; a reality some in the knot of visiting journalists had already been introduced to the night before, after witnessing a magnitude 5.4 tremor that shook the entire island, capital Taipei included. O&M specialist JNV Solar Power, for one, described the taking out of full insurance packages for natural hazards as an absolute necessity in Taiwan. Other conference-goers rued the impact of low power prices on solar project economics, a circumstance some linked to government intervention

The winners and losers of Asia's upstream race

If Taiwan's downstream solar players are bracing for an uphill trek to mass-scale success, its manufacturers face a near-impossible rope climb against the dominance of mainland China. The island's collapse in recent years from global cradle of upstream solar to economic ruin – and the heavy human price the industry has paid in the process – was etched all over the words of Jenny Hsu, global sales manager of Motech Industries.

"We started 37 years ago and used to be very big, with 3GW in cell and wafer capacity. We used to be pioneers ... but we failed," said Hsu, with journalists hanging onto her every word as she charted Motech's descent from global top 10 rankings in 2016 to factory shutdowns and major layoffs in 2018. Last year, the New

Taipei City-headquartered firm fired some 1,200 workers at one time as it shuttered a 1.1GW cell production line in Taoyuan, southern Taiwan. "Both for those who left and those who stayed, it was a very distressing time," Hsu recalled.

The chat with Hsu, arranged behind closed doors at Motech's Energy Taiwan 2019 stand, quickly moved towards how the firm was planning to bounce back. She spoke of a three-step recovery plan – HR engagement to ensure staff satisfaction, asset sales to shore up finances, R&D investment to regrow the manufacturing edge – and described Motech's efforts to diversify to downstream plays. Asked how other Taiwanese PV makers were adapting to low-priced Chinese rivals, Hsu felt some may have left it too late: "Adjusting was difficult for us but at least we got in at the right time."

Mainland China, a later leg of this correspondent's Asia visit in October 2019, may lie just a 180-kilometre strait away from Taiwan but the mood of its solar industry felt a world apart. Touring the skyscrapers of Shanghai's financial district and the buoyant PV factories of Hangzhou, Suzhou and others, the message could not have been clearer: this is a country where the makers still march, where a well-oiled government apparatus throws as much muscle and ruthless efficiency as it can muster behind the cause of economic boom.

For someone reporting on the comings and goings of global solar from London, it was refreshing to finally put a face on some of the firms supplying the entire ecosystem. At boardroom meetings – and

PV manufacturing site tours, a first for this correspondent – the conversation was no longer about how a firm may stay afloat but rather how high it may soar on the wings of low prices. From gigawatt-scale module-making household names to smaller players still in the megawatt region, all in China seemed to be laser-focused on how much, and how fast, production and sales could grow.

And yet – for all the undeniable strength, the upbeat talk did not mask that the inwards competition can be just as brutal. Chinese solar makers may have wiped out rivals all over the globe but now face a game of musical chairs at home, with a once-inexhaustible domestic solar market slowly grinding to a halt. Still in Shanghai, this correspondent saw the release of official stats showing China had only installed 16GW of PV as of September 2019 – compared to 45GW over 2018 – coinciding with a clampdown on subsidies. As the taps dry at home, the scene is set for a Chinese stampede abroad.

Makers march overseas as roll-out falters home

Every Chinese manufacturer *PV Tech Power* met – and those this correspondent heard of besides – was well and truly immersed in the great rush overseas, with roadmaps meticulously laid out to ensure a competitive edge over rivals.

Dr. Liyou Yang, general manager of Jinergy, sounded bullish about his firm's odds of victory. Interviewed in downtown Shanghai, he struck a measured tone as he spelled out how the PV maker plans to boost cell and module production firepower from 2.2GW today to 4.5GW next year. The 2.3GW build-up will be mostly mono-PERC modules churned out by new factories, Yang told *PV Tech Power*. In a further sign of the overseas obsessions of Chinese makers today, he said the new module facilities may lie by seaports, to ensure easier exports than under the firm's current industrial base in the inland province of Shanxi.

Later in the chat, Yang's very own remarks suggested Jinergy's boss appreciates the paradox of doubling production output at a time of global solar module glut. Noting that the performance of module-buying solar players next year remains an unknown, he conceded: "Given the drastic cost decreases we've seen, particularly on the mono-PERC side, the key question for me

is whether all this rapidly rising production capacity can be fully utilised." He remained adamant, however, that Jinergy would not struggle to find global markets for its very own "rapidly rising production capacity" of 4.5GW.

Asked to list the firm's top overseas targets, Yang said that India will be king; Jinergy's "very good reputation" after three years of brand building means it is well placed to service the next phase of growth, the general manager said. He also pointed at Europe – with Jinergy already supplying 100MW to Ukraine and also entering Germany and Spain – but added that China will remain a key destination, deployment slump or not. Jinergy's belief, Yang said, is that its focus on an area likely to stay strong on the solar front – its home in the Shanxi Province – will ensure continued strong sales.

The rewards but also the hardships of Chinese makers' overseas forays were unmistakable in the words of Lin He, Latin America general manager of module manufacturer GCL-SI. The firm, which shipped 2.3GW in 2018, has specifically set sights on one of 2019's hottest solar markets: Brazil, where a mix of inherent solar strengths – high irradiation levels, a developed grid – and support from unlikely solar champion president Jair Bolsonaro is prompting a deluge of foreign interest.

Meeting *PV Tech Power* at GCL-SI's Suzhou headquarters, Lin He seemed vividly aware that his firm is far from alone in its appetite for Brazil. The talk revolved around how GCL-SI would outrun what Lin He described as the "10 or 20" low-priced Chinese module rivals also targeting the South American market. The firm's recipe included tailored service, expansion into the distributed segment and, chief of all, the PV technology that stole the spotlight in 2019. "Normally, our tier 2 rivals have no chance to supply bifacial," Lin He said, arguing that a focus on two-sided modules would help GCL-SI take shipments to Brazil from 260MW in 2018 to 500-600MW in 2020.

For manufacturer Hoymiles, a differentiated offering was also the ticket to overseas success. Giving *PV Tech Power* a tour of its assembly line, the Hangzhou-based firm spun a confident tale of how the supposed strengths of its microinverters – around 10-30% higher efficiency, fire-safer PV modules thanks to lower DC voltage – would allow it to double sales within a year. The firm,

historically reliant on European rather than Asian buyers, shared plans to set up new bases in North America, Brazil and Australia. The globetrotting ambitions were reflected on the country-coded shelves where factory staff piled newly assembled microinverters later that day, at this publication looked on.

Relentless innovation

The packed travel schedule also left time to briefly step beyond the Chinese-speaking sphere, where a new solar era is dawning. Peering at Malaysia's Penang Island from the air, this correspondent found himself reflecting on Wood Mackenzie's predictions this year that renewables will outcompete coal across every single key Asia-Pacific market by 2027.

Some, as evidenced by the rush for Vietnam's FITs or Malaysia's auctions, won't likely wait that long to witness a downstream solar surge. Upstream growth may, meanwhile, come via the Southeast Asian factory moves of Chinese PV makers keen to sidestep the US' anti-China sanctions; judging by the chat with Jinergy's Yang, the module maker is among those considering that very route.

Bridging the gap between both halves of the solar equation – manufacturers and developers – was PV ModuleTech 2019, held in Penang on 22-23 October and the reason this reporter was in town. The annual conference, arranged by *PV Tech Power's* publisher Solar Media, assembled

downstream and upstream players to discuss the challenge that affects both: the dizzying pace of module technology innovation. Experts took the floor to deconstruct, through hard numbers, the hype around bifacial and other disruptive solar technologies.

Many in the crowds filing into Penang's G-Hotel Gurney as monsoon clouds gathered outside had, however, one chief reason to attend other than general innovation talk. The result of five years' worth of exhaustive data collection and market research, the PV ModuleTech Bankability Ratings were unveiled on stage, ranking the world's top module makers based on manufacturing and financial health. An animated hum, punctured by whispers here and there, spread swiftly throughout the conference room as the rankings flashed on screen, revealing those in and those out.

Days later, as the return journey beckoned, a common thread started to emerge when thinking back to Malaysia's technology talk, Shanghai's industrious crowds and factories and Taipei's packed conference halls and night markets: the sheer speed at which Asian solar is – much like the continent that hosts it – embracing disruption, transforming itself even as it transforms global solar in the process. The impression lingering on this correspondent's mind after stepping off the plane in London was that whatever solar's next chapter has in store, it will likely be written by an Asian hand. ■



PV ModuleTech 2019 assembled downstream and upstream PV players to discuss their shared challenge: the dizzying pace of module innovation

Credit: Solar Media