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MALAYSIA'S NEXT ENERGY HUB GAINS MOMENTUM

The Edge, Malaysia



ENERGY

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BY TAN SIEW MUNG

AS Perak emerges as Malaysia's next energy hub, key players in the industry are ramping up expansion to capture new growth opportunities. Abundant rivers, lakes and reservoirs from its tin mining legacy, coupled with good infrastructure and competitive land cost, make the state an ideal hub for renewable energy (RE).

Front runners include Tenaga Nasional Bhd (KL:TENAGA), Kinergy Advancement Bhd (KAB) (KL:KAB) and Gading Kencana Sdn Bhd, with some of them exploring opportunities for floating solar projects.

Perak, in fact, had recorded the highest number of large-scale solar projects in Peninsular Malaysia as at August 2025, with 28 projects contributing 1,441.3MW and about 6% of the country's green energy target by 2035, according to Deputy Minister of Energy Transition and Water Transformation Akmal Nasrullah Mohd Nasir.

Tenaga's roadmap for the silver state is structured around quick wins and long-term scaling, says Mohd Suhairi Mohammad Shah, the company's general manager for retail and stakeholders in Perak.

Tenaga is rolling out solar projects across residential and commercial components as well as government buildings. Early successes are already being seen in transport terminals, factories and university campuses, says Mohd Suhairi.

The energy giant is also partnering with industrial players in Perak's manufacturing zones through solar power purchase agreements to supply RE. In rural areas, it is leveraging the state's extensive river networks and palm oil waste to deploy mini-hydro, biomass and biogas projects to enhance localised energy access.

The company's immediate focus includes expanding rooftop solar adoption, solar installations, the Corporate Renewable Energy Supply (CRESS) scheme, education sector solarisation, developing small hydro and bioenergy projects,



"Perak combines three critical ingredients for a successful energy transition natural resources, industrial demand and strategic location."

Mohd Suhairi, Tenaga

and strengthening the electric vehicle (EV) ecosystem, he says.

Tenaga is supporting Perak's ambitions to become an EV hub by developing charging infrastructure along highways, rest areas and industrial corridors, complementing the state's role as host to the Automotive Hi-Tech Valley (AHTV) in Tanjong Malim.

Over the longer term, Tenaga is scaling up large-scale and floating solar projects, expanding its participation in the clean energy market, and accelerating the rollout of smart meters, says Mohd Suhairi.

With partners like GSPARX, the firm is studying potential sites for floating solar farms on Perak's reservoirs, ex-mining ponds and lakes, including Banding Lake, Temengor, and areas near Tronoh and Batu Gajah. GSPARX is a wholly-owned subsidiary of Tenaga focusing on green retail generation business.

In fact, Perak is an early adopter of Tenaga's national smart meter programme, with 200,000 premises in Ipoh and 4,000 in Pulau Pangkor already equipped. Full coverage across the state is targeted by 2027.

KAB is advancing feasibility studies for floating and ground-mounted solar projects across Perak to broaden its RE portfolio. The company is working with the Perak State Economic Development Corporation (SEDC) on a pipeline of up to 29 RE projects with a combined capacity exceeding 1,800MW spanning solar, floating solar and hydro. This initiative aligns with Perak Sejahtera 2030's Flagship 12 on water resources and RE.

"Our ambition is to grow beyond project delivery into ownership and operation, positioning KAB as a future independent power pro-



"By leveraging Perak's natural strengths, our partnership with PKNPk, and national policies we see Perak becoming a key hub for our RE portfolio."

Lai, KAB

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ducer. By leveraging Perak's natural strengths, our partnership with SEDC and national policies such as the National Energy Transition Roadmap (NETR) and CRESS, we see Perak becoming a key hub for our RE portfolio and a strategic driver of Malaysia's clean energy transition," says its executive deputy chairman and group managing director Datuk Lai Keng Onn.

Gading Kencana is expanding its presence in Perak by installing solar photovoltaic (PV) systems for factories and commercial properties to help manufacturers cut energy costs and enhance sustainability credentials.

"Installing RE will help manufacturers achieve green certification, which is increasingly important for exporters," says its executive director Datin Hasnah Awang.

"Current Malaysian RE programmes such as SelCo and CREAM (Community Renewable Energy Aggregation Mechanism) largely involve rooftop installations. With Perak developing new industrial hubs such as the Silver Valley Technology Hub

and Kerian Integrated Industrial Park, there is vast potential for industrial-scale solar deployment."

SelCo stands for self-consumption, a programme that applies when electricity is being generated for own usage and any excess isn't allowed to be exported to the grid. Its aim is to encourage individual, commercial and industrial consumers to install solar PV systems for their own consumption to hedge against rising electricity costs, according to the official website of the Sustainable Energy Development Authority Malaysia (Seda).

GREEN TRANSFORMATION TAKES SHAPE

For these industry players, Perak is fast emerging as one of Malaysia's most strategic platforms for RE development and green industrialisation.

"Perak combines three critical ingredients for a successful energy transition: natural resources, industrial demand and strategic location. This unique mix of heritage assets, new industrial growth, and abundant land and water resources positions Perak as a future green powerhouse for Malaysia and Asean," says Tenaga's Mohd Suhairi.

For Tenaga, Perak represents more than an investment destination. It serves as a tangible example of how the NETR and Malaysia's net zero ambitions by 2050 can be translated into action. The state's portfolio of major hydro assets, floating solar projects and corporate RE supply mechanisms such as the CRESS and CREAM schemes underpin this transformation.

"As Malaysia's largest electricity utility and a regional RE player, Tenaga is committed to advancing the nation's sustainability agenda while supporting states like Perak in harness-

Below: Floating solar pilot project at Stesen Janakuasa Sultan Azlan Shah

Bottom: Tenaga's floating solar pilot project at the Kenyir Dam. Tenaga is currently studying potential sites for floating solar farms in Perak's reservoirs.



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Tenaga is building a floating solar farm in Manjung, Perak

BERNAMA

TAPPING INTO OPPORTUNITIES

PERAK is quickly emerging as a key state for Malaysia's clean energy transition, with utilities and renewable energy (RE) firms expanding their reach across solar, hydro and green industrial projects.

For Tenaga Nasional Bhd, the state offers multiple pathways for growth in hybrid hydro-floating solar (HHFS), hydro life extension programmes (HLEP), rooftop and large-scale solar, biomass, biogas and electric vehicle (EV) charging infrastructure.

"Together, these opportunities show how Perak can diversify Malaysia's energy mix while enabling corporates and communities to transition sustainably," says Mohd Suhairi Mohammad Shah, the company's general manager for retail and stakeholders in Perak.

Tenaga's generation arm, TNB Power Generation Sdn Bhd (TNB

Genco), is leveraging Perak's vast reservoirs and favourable topography to develop HHFS projects in partnership with the Perak State Economic Development Corporation (SEDC). The initiative forms part of the Sungai Perak Sustainable Jungle Small Hydro Project (SSJSP) that spans the Gerik and Kuala Kangsar districts.

"Through SSJSP, we are optimising the use of dams and reservoirs for hybridisation, maximising renewable output while minimising land use," says Mohd Suhairi.

TNB Genco plans to commission 400MW of HHFS capacity at Temenggor Dam by 2028, followed by another 200MW in the next phase, bringing the total to 600MW. The company has also launched an HLEP at the Sungai Perak Hydro Scheme to extend the lifespan of its hydro assets and deliver more RE to the grid.

Over the next three to five years, Tenaga aims to complete large-scale HHFS and HLEP projects across Perak's reservoirs, with phased completion by 2030. Beyond that, it intends

to position the state as an RE hub integrated into the Asean Power Grid.

Mohd Suhairi says Perak's industrial and commercial rooftops offer rapid scalability for solar adoption, while feasibility studies are underway for floating solar farms on reservoirs and former mining ponds in Banded Lake, Tronoh and Batu Gajah.

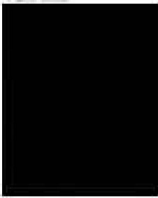
Through subsidiaries GSPARX and TNBX, Tenaga has become one of the state's leading enablers of corporate solar projects. Perak's strong palm oil base also supports potential for biomass and biogas generation, with facilities such as Maju Intan Biomass Energy in Teluk Intan already supplying 12.5MW to the grid.

As a major transit state along the North-South Expressway, Perak plays a central role in Tenaga's Electron initiative to expand EV charging infrastructure. The utility giant aims to deploy 316 charge points nationwide by end-2025 – including 250 new units – at rest areas, industrial corridors and urban centres, complementing the 66 installed in 2024.

"Perak's ambition to become a green industrial hub requires reliable, low-carbon electricity. Tenaga's projects are aligned with the state's priorities," says Mohd Suhairi.

Through GSPARX, Tenaga is partnering with state agencies and local councils to co-develop renewable projects, including bundling solar packages with new housing developments to integrate clean energy into urban and industrial growth.

Perak's flagship AHTV will serve as a future nucleus for EV manufacturing in Malaysia, with Tenaga ensuring reliable renewable supply for operations. The utility giant will also provide 5.5MW of solar-based electricity to the 1,000-acre Kerian Integrated Green Industrial Park, supporting advanced sectors such as semiconductor, information and communications technology (ICT) and electronics.



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Meanwhile, Tenaga's infrastructure investments will underpin the 9,307ha Lumut Maritime Industrial City, developed with Port of Antwerp-Bruges International for logistics, green energy and marine engineering.

Tenaga will also supply clean power to the 816-acre Silver Valley Technology Park in Ipoh, which requires up to 43MW for high-tech manufacturing. For Mohd Suhairi, integrating clean energy into industrial growth will strengthen Perak's competitiveness and attract environmental, social and governance-conscious investors.

Kinergy Advancement Bhd (KAB) is similarly expanding in Perak through hydropower, floating and ground-mounted solar, and next generation solutions. "The state's river systems offer natural opportunities for small to medium run-of-river projects under Malaysia's FiT (Feed-in Tariff) 2.0 framework," says its executive deputy chairman and group managing director Datuk Lai Keng Onn.

KAB has secured approvals for two hydropower plants and is assessing former tin mining lakes for floating solar. Together with its local partners, it has identified potential sites for future developments and is studying prospects for battery energy storage systems (BESS) and green hydrogen.

"With its water resources and strategic location, Perak is well positioned to become an early mover in hydrogen once the national framework matures," says Lai. One of KAB's projects already incorporates BESS to enhance grid stability and emergency management.

"Our projects are directly aligned with Perak Sejahtera 2030, particularly Flagship 12 on water resources and RE. By developing a pipeline of renewable projects, we are enabling the state to secure long-term clean energy supply that supports industrial growth," he adds.

Gading Kencana Sdn Bhd sees solar photovoltaic (PV) as the most promising opportunity in the state. According to its executive director Datin Hasnah Awang, regulators currently require battery storage to be part of solar PV systems. Biomass remains viable, mainly for large plantation owners with steady feedstock supply, she adds.

ing their strengths in hydro, solar, biomass and electrification, and unlocking new opportunities in green technology," he says.

For KAB, the state is uniquely suited for hydropower and floating solar projects. "Strong institutional support from SEDC further reduces our development risks through structured access to land and water rights," says Lai.

Building on this foundation, KAB's collaboration with SEDC to develop 29 RE projects with a combined capacity exceeding 1,800MW underscores both the depth of Perak's resources and the company's execution capabilities.

Gading Kencana's Hasnah shares similar optimism. She notes that Perak's abundance of ex-mining land — or brownfields — aligns with the company's policy of prioritising non-agricultural land for solar farms. According to her, Perak's land authorities welcome investment and development on brownfields, and the procedures are generally straightforward, reducing bureaucratic hassle.

Brownfields also offer cost advantages, she adds, as prices are typically lower than other land types. The widespread availability of infrastructure such as road networks and utilities further lowers interconnection costs to the Tenaga grid and facilitates transport of solar components to project sites.

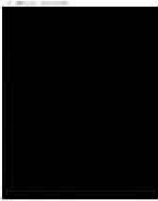
RE INVESTMENTS DRIVE JOBS, SUSTAINABLE GROWTH

RE investments in Perak are creating jobs and strengthening the state's position as a hub for green industries, according to industry players.

"From construction to long-term operations and maintenance, our projects generate quality employment while opening new opportunities across the RE value chain," says Mohd Suhairi. Reliable RE supply enhances Perak's appeal to domestic and foreign investors, accelerating inclusive growth, he adds.

TNB Power Generation Sdn Bhd (TNB Genco) supports environmental and social initiatives such as the AKEKCHEP Kelah Sanctuary in Royal Belum Temengor, where it works with Orang Asli communities on watershed management and forest conservation. TNB Genco is a wholly-owned subsidiary of Tenaga responsible for its power generation business, including the development, operation and maintenance of power plants in Malaysia and beyond.

Meanwhile, Lai says sustainable energy projects deliver strong multiplier effects. "Each



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project brings direct jobs in construction, engineering and operations, as well as indirect opportunities for local suppliers and service providers."

He adds that by securing affordable, low-carbon electricity, Perak is enhancing its attractiveness for new industries and investors. "The state is evolving from a traditional resource economy into an emerging clean energy hub that aligns with regional decarbonisation trends."

Hasnah says the RE sector is also driving new skill development. For her, jobs are created not only within the RE industry but also in maintenance, logistics, catering and other support services.

She notes that solar projects bring infrastructure benefits to surrounding communities. In Kampung Pasir Bidor, roads built for Gading Kencana's solar farm now connect nearby villages, helping farmers transport produce and boosting local housing development.

CLEARER RULES, STRONGER GRID, GREEN FINANCING NEEDED

The state's strong fundamentals in RE can be accelerated by faster approvals, stronger grid infrastructure and wider access to green financing, say the industry players.

"FiT 2.0 (feed-in tariff) is a positive step, but we encourage consistent and transparent policies for clean technology, solar, hydropower and hydrogen projects to keep the momentum strong," says Lai.

The FiT2.0 is the second phase of Malaysia's FiT mechanism managed by Seda that promotes RE development through a transparent online bidding process for biogas, biomass and small hydropower.

As more RE comes online, Perak will also need grid reinforcement and storage systems to ensure reliable power evacuation and stability. "The state's role as an energy hub depends as much on grid readiness as generation capacity," Lai adds.

Large-scale RE projects require substantial upfront capital, he asserts. Expanding green bonds, blended finance and tax incentives would allow private investors to participate more actively and reduce reliance on traditional financing. "With these measures, Perak can unlock its full RE potential and cement its position as a leader in Malaysia and Asean's energy transition."

Meanwhile, Hasnah says high land and property taxes pose challenges for long-term RE plant profitability as revenues decline with plant age. "Revenue drops as plants age, but land and assessment taxes rise after each revi-



"With Perak developing new industrial hubs such as the Silver Valley Technology Hub and Kerian Integrated Industrial Park, there is vast potential for industrial-scale solar deployment Gading Kencana."

Hasnah, Gading Kencana

sion," she points out, adding that RE plants often span multiple land titles, and the costly amalgamation process reduces available space and project efficiency.

Both KAB and Gading Kencana emphasise the importance of minimising land-use conflicts and protecting the environment.

Lai believes Perak's former tin mining lakes can be repurposed for floating solar projects, avoiding competition with agricultural or forest land. For hydropower, the company focuses on run-of-river projects with minimal environmental footprint.

"Every project undergoes environmental and social impact assessments in line with regulations," he says, adding that community engagement is essential to ensure projects deliver tangible local benefits such as jobs and infrastructure.

Hasnah says her firm promotes rooftop solar, hybrid agro-solar farms and projects on former mining lakes to reduce environmental impact. Gading Kencana also runs education and outreach programmes to improve community awareness and acceptance of RE.

While large-scale renewable projects come with challenges, Tenaga addresses them through strategies such as maximising reservoir surfaces for hybrid hydro-floating solar (HHFS) instead of using large tracts of agricultural or forest land. HHFS refers to the installation of solar panels on floating platforms over existing hydroelectric reservoirs.

In addition to minimising land use through floating solar deployment on reservoirs, the company also implements environmental offset and restoration measures — including reforestation and biodiversity conservation — to mitigate ecological impact.

"With coordinated infrastructure upgrades, streamlined regulations and broader access to green finance, Perak is poised to become one of Malaysia's most pivotal RE growth zones," says Mohd Suhairi. ●



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