



# TNB'S GREEN REVOLUTION

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## Page Location



The Kenyir Dam project adopts the Self-Consumption (SELCO) model, using solar energy directly for operations. This reduces grid reliance, boosts energy security, and enhances efficiency.

IMAGINE a Malaysia powered by intelligent, interconnected renewable energy sources – where sustainability and innovation go hand in hand.

That future is already taking shape, thanks to Tenaga Nasional Bhd (TNB) and its Hybrid Hydro-Floating Solar (HHFS) Project.

This groundbreaking initiative maximises energy efficiency by integrating hydropower with floating solar technology, setting a new standard for sustainable energy production.

By strategically reinvesting its revenue into advanced renewable energy solutions, TNB is not just generating electricity – it's driving national progress, strengthening energy security, and paving the way for a cleaner, more resilient future for the rakyat.

### Game-changer in clean energy

TNB is on a mission to reshape Malaysia's energy landscape by expanding its renewable energy capacity, ensuring long-term energy security and aligning with national sustainability goals.

The HHFS Project is at the heart of this transformation. In July 2023, Malaysia launched the National Energy Transition Roadmap (NETR), an ambitious plan to increase the nation's renewable energy (RE) mix to 70% by 2050.

To help achieve this target, TNB Power Generation Sdn Bhd (TNB Genco) is leading the charge by developing a potential 2.5 GW HHFS photovoltaic (PV) at Genco Hydro reservoirs.

The project takes hydroelectric reservoirs and transforms them into dual-energy powerhouses by adding floating solar panels.

During the day, these panels harness the sun's energy to generate electricity, while hydroelectric power compensates for periods of low sunlight, such as cloudy days or nighttime, ensuring a stable, continuous and reliable power supply.

By leveraging this hybrid approach, TNB is maximising energy efficiency, optimising existing infrastructure and accelerating Malaysia's transition to a more sustainable future.

### Building on proven success

TNB Genco's HHFS initiative builds on the success of two key pilot projects, which have laid the foundation for large-scale implementation.

The latest milestone in TNB

## TNB'S GREEN REVOLUTION

Changing the energy landscape with the hybrid hydro-floating solar project

Genco's journey is the 154kWp floating solar PV pilot project at Kenyir Dam, Malaysia's largest hydroelectric reservoir.

This innovative project generates 224.6MWh of electricity annually and reduces carbon emissions by 4,448 tonnes of carbon dioxide (CO<sub>2</sub>) per year.

Operating under the Self-Consumption (SELCO) concept, the generated solar energy is directly utilised within Kenyir Dam's operational system, reducing reliance on external power sources and enhancing overall energy efficiency.

The project is equipped with an advanced Environmental Monitoring System, which tracks wind speed, wind direction, rain-fall, solar irradiance, ambient temperature, humidity, barometric pressure, and back module temperature.

This ensures optimised system performance while providing valuable environmental data for future project designs and regulatory assessments.

By demonstrating a scalable and replicable renewable energy model, the Kenyir Dam project paves the way for large-scale floating solar expansions across Malaysia.

TNB Genco previously spearheaded one of Malaysia's first successful floating solar systems at Stesen Janakuaa Sultan Azlan Shah (SJSAS) in Manjung, Perak.

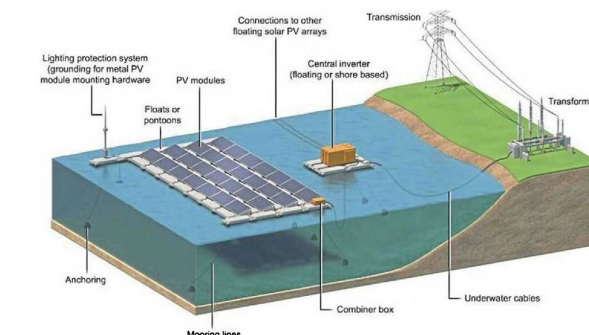
Since 2019, this 175ha floating PV system has been generating clean energy while serving as a model for future renewable energy projects.

To ensure maximum efficiency and environmental sustainability for the both pilot project, TNB Research Sdn Bhd, TNB's wholly owned research arm, conducted an in-depth ecological study during the development of the floating solar system.

Every component of the system was carefully selected and designed to ensure optimal performance while preserving the surrounding environment.

### Investing in the people

TNB's commitment to reinvesting its profits goes beyond energy – it's about empowering Malaysians.



The HHFS project integrates floating solar PV panels with hydroelectric stations, optimising reservoir use and ensuring continuous power generation.

Large-scale projects like HHFS create thousands of job opportunities in areas like engineering, construction and site maintenance, opening doors for local talent and fostering career growth.

Beyond employment, the project also drives small and medium enterprises (SMEs) growth within the renewable energy supply chain.

From solar panel manufacturing to maintenance services, these businesses play a vital role in propelling Malaysia's green economy forward, ensuring that sustainability and economic growth go together.

### Breaking new ground

The HHFS project is Malaysia's first of its kind, setting a new standard for renewable energy innovation.

Unlike traditional solar farms that rely solely on sunlight, this dual-energy system ensures continuous power generation – rain or shine.

By integrating solar and hydroelectric power, HHFS enhances grid stability, reduces dependence on fossil fuels, and strengthens Malaysia's energy resilience.

This hybrid approach not only supports a cleaner future but also shields the nation from global

energy price fluctuations and supply chain disruptions, paving the way for a more secure and sustainable energy landscape.

### Smarter use of resources

Land is a precious asset, and conventional solar farms demand vast tracts to operate.

The HHFS Project offers a smart solution by utilising existing hydro reservoirs for solar energy production – boosting Malaysia's clean energy capacity without sacrificing valuable land.

This innovative approach preserves space for agriculture, conservation, and community development, ensuring that sustainability extends beyond energy. Floating solar panels also provide key environmental advantages – they reduce water evaporation, helping conserve vital freshwater resources, and limit algae overgrowth, maintaining better water quality.

TNB's HHFS project not only aligns with Malaysia's broader clean energy ambitions under NETR but also the Government Renewable Energy Enhancement for Niche Sector (Greens Madani) initiative.

By fast-tracking renewable energy development, TNB is playing a pivotal role in helping the

country reach its 70% renewable energy target by 2050.

Moreover, through the Corporate Renewable Energy Supply Scheme (CRESS), businesses can now procure clean energy directly from TNB's grid, making sustainability more accessible for corporations looking to reduce their carbon footprint.

### Blueprint for a brighter tomorrow

TNB's investment in the HHFS project is more than just an energy solution – it's a vision for a greener, more prosperous Malaysia.

By reinvesting in renewable energy, TNB is not only cutting carbon emissions and strengthening energy security but also creating jobs and fostering economic growth.

As Malaysia moves toward a cleaner future, the HHFS project serves as a model for sustainable development.

Through bold investments and groundbreaking innovation, TNB is lighting the way for a future powered by renewable energy – one that benefits both the planet and the people.

Visit [www.tnb.com.my](http://www.tnb.com.my) for details.