

# LESTARI GEMS

Vol. 11

## National Energy Transition Roadmap

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### Featured Report

#### Energy Transition Off to a Sunny Start

#### ESG News Round-up

##### BNM gets 250k STRs in 2022

Bank Negara Malaysia's (BNM) Financial Intelligence Unit (FIU) received about 250,000 suspicious transaction reports (STRs) in 2022, representing a nearly 30% increase from the year before, deputy governor Marzunisham Omar said.

He said the top five risk crimes — fraud, corruption, smuggling, illicit drug trafficking and organised crimes — accounted for about 70% of FIU's disclosures to law enforcement agencies and foreign FIUs. — *The Star*

##### IMF sees drought causing Argentina of 2.5% contraction in 2023

The International Monetary Fund (IMF) said on Tuesday is now projecting Argentina's economy will contract 2.5% in 2023, with a year-end inflation rate of about 120%, largely due to a crippling drought that has curtailed agricultural production.

The forecast, a steep downgrade from April's 0.2% growth projection in 2023, stands in stark contrast to a slightly improved outlook for global growth in the IMF's latest *World Economic Outlook* projections. — *Reuters*

##### Octopus Energy to invest USD20b in offshore wind

UK-based Octopus Energy's generation arm, which manages USD7.7b worth of green energy projects globally, said it planned to deploy USD20b of investment into offshore wind by 2030. The investment will go towards the generation of 12 GW of renewable electricity capacity, enough power for 10m homes, Octopus said.

The global energy and technology group first entered the offshore wind farm market last year and has since made five offshore deals, amounting to a total of USD1b. — *Renewable Energy World*

##### EU Council adopts law to decarbonise maritime sector

The EU Council has approved new legislation, called the FuelEU maritime initiative, to reduce the carbon footprint of the shipping industry.

One of the key measures is the gradual reduction of greenhouse gas intensity in fuels used by the shipping sector, starting with a 2% decrease in 2025, and reaching 80% by 2050. The new rules will apply from 1 January 2025. — *ESG Investor*

##### Climate change role in July heatwaves 'overwhelming'

Human-induced climate change has played an "absolutely overwhelming" role in the extreme heatwaves that have swept across North America, Europe and China causing forest fires, water shortages and a rise in heat-related hospital admissions this month, according to an assessment by scientists published on Tuesday.

Without human-induced climate change, these events would have been "extremely rare", according to a study by World Weather Attribution, a global team of scientists that examines the role played by climate change in extreme weather. — *Reuters*

#### ESG CALENDAR

##### BIE — ESG Investing & Sustainability

Date: 8 Aug 2023, 9.30am–2.30pm  
Venue: Pavilion Hotel Kuala Lumpur  
Type: In Person (RM380, including lunch)  
Register [here](#)

##### International Conference on Sustainable Forest Finance 2023

Date: 16–17 Aug 2023  
Venue: Tokyo, Japan.  
Type: Virtual (EUR300)  
Register [here](#)

##### Executive Asian Energy Leadership Forum 2023

Date: 17–18 Aug 2023  
Venue: Centara Grand & Bangkok Convention Centre  
Type: In Person (THB18,000-34,200)  
Register [here](#)

##### World ESG Summit 2023

Date: 22–22 Aug 2023  
Venue: Sunway Putra Hotel, Kuala Lumpur  
Type: In Person  
Register [here](#)

##### Asia EV Technology Thailand 2023

Date: 24 Aug 2023  
Venue: Golden Tulip Sovereign Hotel, Bangkok  
Type: In Person, Paid  
Register [here](#)

##### The Energy Transition Conference

Date: 28–29 Aug 2023  
Venue: KL Convention Centre  
Type: In Person, Paid  
Register [here](#)

#### ESG Rating 4 stars

Company	F4GBM Index	Rating	TP (RM)
ABMB	Yes	OP	4.05
CIMB	Yes	OP	6.00
PBBANK	Yes	OP	4.40
KLK	Yes	OP	24.50
IOI CORP	Yes	MP	3.80
PPB	Yes	OP	19.30
MISC	Yes	MP	7.60
YINSON	Yes	OP	3.65
CTOS	Yes	OP	1.80
SUNCON		OP	2.13
GAMUDA		OP	5.15
SAMAIDEN		OP	1.24

#### ESG Rating 2 stars

Company	F4GBM Index	Rating	TP (RM)
TENAGA	Yes	OP	10.64
ARMADA	Yes	OP	0.62
TAANN		MP	3.40
KOSSAN		UP	1.28
SUPERMAX		MP	0.96



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## Energy Transition Off to a Sunny Start

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Phase 1 of the National Energy Transition Roadmap (NETR), announced by Economy Minister Rafizi Ramli, lays the foundation of sustainable pathways for Malaysia to transition to renewable energy as the country strives to be net zero by 2050. Solar energy is set to play a pivotal role and this is reaffirmed by a collaboration between Khazanah Nasional's wholly-owned UEM Group and local and foreign investors to develop a 1GW hybrid solar photovoltaic (PV) power plant integrated with a renewable energy (RE) industrial park in Malaysia. Also highlighted is the potential of hydrogen and carbon capture and storage (CCS) in opening up opportunities for an estimated RM637b investments needed for a successful transition.

The much-awaited NETR was finally unveiled, in which Phase 1 of the blueprint identified 10 flagship catalyst projects and initiatives (Exhibit 1) that are expected to generate more than RM25b investments, create 23,000 job opportunities and reduce greenhouse gas (GHG) emissions of over 10,000 Gg CO<sub>2</sub>e per year. These projects are set to kickstart a change in the economics of renewable energy (RE) brought about by the two important policy decisions by the government i.e. i) lifting the export ban on renewable energy, and ii) setting up a central electricity exchange operated by a single-market aggregator. These would enable the rapid scaling up of RE production in line with the government's revised target for RE to 70% (from 40% previously) of Malaysia's total energy mix by 2050. The higher target is expected to create new economic opportunities in addition to attracting multinational companies, especially RE100 to operate in Malaysia. According to the World Economic Forum's Energy Transition Index 2023, Malaysia is ranked as the best country in Southeast Asia in terms of readiness to transition to RE. We are second among emerging countries and 35th globally.

**Lifting RE export ban.** Centrally positioned within ASEAN, Malaysia's inception of an electricity market system for cross-border energy trade could potentially establish the nation as a regional hub for renewable energy generation. The recent lifting of RE export ban will boost demand, especially from Singapore due to the higher average regulated household electricity tariff, resulting in better margin. Currently, Singapore has a target of up to 4GW of low-carbon electricity imports capacity by 2035. Furthermore, Malaysia is one of the key members in the Lao PDR-Thailand-Malaysia-Singapore Power integration Project (LTMS-PIP) which seeks to advance cross-border power trade among ASEAN members, and the ASEAN power grid (APG) initiative in the long run.

**Single-market aggregator.** The establishment of the central electricity exchange operated by a single-market aggregator is aimed at ensuring a transparent pricing model that is ring-fenced as Malaysia transitions towards a more open and competitive utility sector. The single aggregator will also play the important role of matching RE demand to steady supply that involves multiple players, incentivising producers who may also be consumers and ensuring efficient allocation so that all users, including RE100 and cross-border companies get GW levels of energy.

**Solar to play a pivotal role.** The government has set an ambitious target of achieving 70% RE power capacity by 2050 (vs. 25% currently), from an initial target of 40% with an aspiration to achieving net zero by 2050. This is expected to involve a massive investment of RM637b in strengthening grid infrastructure, energy storage system (ESS) and grid system augmentation, among others. Based on projections in the Malaysia Renewable Energy Roadmap 2022–2035, at least 20GW of new RE requirements are needed from now until 2050 to achieve the 70% target, of which >90% is expected to come from solar – thus making solar the dominant driver of RE adoption in Malaysia.

Solar's key role is reaffirmed by the UEM's 1GW project that was announced during the launch of Phase 1 NETR. The project will be developed in collaboration with local investor ITRAMAS Corp Sdn Bhd, the largest vertically integrated solar plant developer. It also attracted renowned foreign strategic investors i.e. Macquarie Asset Management's Green Investment Group unit Blueleaf Energy and ITRAMAS's existing partners, Chinese contractor China Machinery Engineering Wuxi Co Ltd and Singapore-based RE firm HEXA Renewables.

**Opportunities abound for property developers.** Showcasing its value propositions for The City of Elmina (6,500 acres with 1,500 acres of industrial park and 35,000 landed homes upon completion in 2040), Sime Darby Property proposed solar power generation and offtake at scale for use within the development (Exhibit 2). Premised on a "willing seller-willing buyer" principle in a self-contained system, the property developer can offer the leasing of rooftop to be installed with solar panels. The solar power is then supplied to key offtakers that can include commercial and industrial users. Another option is to use its landbank for the development of utility-scale ground with virtual offtake by high-demand users (Exhibit 3).

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**Scaling up rooftop solar.** The government aims to scale up the installation of rooftop solar renewable energy capacity (i.e. government buildings, residential, shopping malls and office buildings) due to limited land availability for large-scale solar projects. Currently, the Net Energy Metering (NEM) programme, designed for rooftop solar installations, faces certain constraints. Utilising rooftops for solar installations in property development projects that deploy the self-contained system particularly in townships, could expand the solar energy market significantly. This is highly possible as there is no upfront cost involved from the homeowners while earning from the lease payment. We currently have 269 GW of solar PV potential, with 6% from rooftops, 78% from ground installations, and the remaining 16% from floating solar installations (Exhibit 4). We believe solar players such as **SAMAIDEN (OP; TP: RM1.24)**, **SLVEST (NOT RATED)** and **SUNVIEW (NOT RATED)** are poised to benefit from the potential solar EPCC projects.

**Hydrogen potential.** Rafizi sees the development of hydrogen capabilities as an opportunity for Malaysia to take the lead in the field of alternative fuel, much like the early days of liquefied natural gas (LNG) when Malaysia helped countries in the Middle East build the entire chain in the 1980s. Citing similarities with the situation then, the minister acknowledges the progress made in Sarawak, which is very much ahead in terms of expertise and implementation. Malaysia should also take advantage of Japan, an important trade partner with an extensive and proven experience in building hydrogen infrastructure. Sarawak is expected to see two major green hydrogen manufacturing projects, H2biscus and H2ornbill, operational in Bintulu Petchem Industrial Park in 2027.

Last month, Sarawak Premier Tan Sri Abang Johari Tun Openg said the final investment decision on H2biscus Train project is expected to be made in the first quarter of 2024 while the decision on H2ornbill Train project is expected in 2Q25. SEDC Energy Sdn Bhd is collaborating with Japan's Sumitomo Corp and Eneos on the H2ornbill project, and partnering South Korean multinationals Samsung Engineering, Posco and Lotte Chemicals in developing a green hydrogen derivative facility.

**Carbon capture and storage (CCS).** CCS can reduce CO<sub>2</sub> in the atmosphere directly when it is captured and stored permanently in geological formations. It is useful for hard to abate industries such as steel and cement manufacturing, power, petrochemical, oil & gas industries and, to a certain extent, the generation of blue hydrogen, blue ammonia and biomass energy. According to the International Energy Agency, CCUS is projected to contribute to a reduction of up to 20 gigatonnes of CO<sub>2</sub> in the years 2030–2050. In Malaysia, Petronas is developing its Kasawari Carbon Capture and Sequestration (CCS) project, off the coast of Sarawak, about 200km from Bintulu. Scheduled to start operations in end-2025 with injection of CO<sub>2</sub> in early 2026, the project is expected to contribute to reducing carbon dioxide emissions emitted via flaring by 3.3m tonnes per annum (mtpa), thereby making it one of the largest offshore CCS projects in the world.

Selected O&G players are expected to benefit from the implementation of CCS catalyst projects for Kasawari and Lang Lebah high-CO<sub>2</sub> gas fields gas fields by Petronas. They comprise upstream offshore service providers with local-centric operations whom are reliant on Petronas contracts for order book replenishment. They include, amongst others, **UZMA (OP; TP: RM0.90)**, **ALAM**, **MHB**, **PANTECH**, **SAPNRG**, **CARIMIN**, **PENERGY**. The said O&G contractors may participate in engineering works, fabrication or EPCIC (engineering, procurement, construction, installation and commissioning) activities for the projects. At the same time, offshore support vessel providers may also supply their vessels during the construction stage and maintenance operations thereafter.

Being the only integrated power utility in the country, **TENAGA (OP; TP: RM10.64)** is the main beneficiary of the NETR as: (i) it could play a bigger role in RE generation, benefiting from higher T&D (transmission and distribution) contributions as a result of transitioning to 70% RE generation-mix, hence improving its ESG scorecard, (ii) gains on wheeling charges due to energy exports, (iii) getting the power grid-ready and making the grid viable for the 11fold increase in RE capacity to achieve 70% gen-mix by 2050 (this should enhance its T&D earnings; (iv) repower projects to turn Paka and Kapar power plants into hydrogen-fired combustion capability eventually with gas being the immediate fuel source during the energy transition plan.

Meanwhile, **YTLPOWER (OP; TP: RM1.48)** should benefit from the energy export, especially to Singapore given its presence in Singapore via PowerSeraya as well as the ongoing solar farm and data centre projects in Johor.

Besides the co-firing initiative at the existing TBP power plant (burning biomass along with coal), we also expect **MAKALOF (OP; TP: RM0.80)** to participate in future LSS projects to replace the expiry of two IPPs, namely Prai power plant in 2024 and SEV power plant in 2027.

**IJM (MP; TP: RM1.67)** should also benefit from the T&D expansion given its impending completion of the acquisition of a 44.8% stake in **PESTECH (Not Rated)** as the latter which already had track records in EPCC for TENAGA's high-voltage transmission lines in the past.

Phase 2 of the NETR, expected to be announced in end-August 2023, will focus on establishing low-carbon initiatives, energy mix and emission reduction targets for the energy sector. It will also look into technology transfer, financing and investments, policies and regulatory frameworks as well as human capital development.

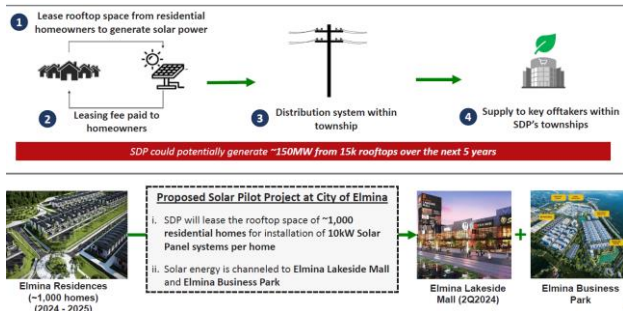
Exhibit 1: NETR Phase 1 – 10 Flagship Catalyst Projects and Modes of Implementation		
Project	Modes of Implementation	Champion
Efficient Switch	<p><b>Energy Efficient and Conservation Act</b> The bill to regulate energy-intensive users, buildings and products will be tabled in Parliament in 4Q 2023.</p> <p><b>Energy Audit for Rail Sector</b> Railway operators to perform energy audit to establish current energy consumption baseline, potential energy savings and lower utility costs.</p>	<p>Ministry of Natural Resources, Environment and Climate (NRECC)</p> <p>Ministry of Transport (MOT)</p>
Renewable Energy (RE) Zone	<p><b>Integrated RE Zone</b> Large-scale, integrated sustainable development from generation and energy storage to demand management and consumption. A pilot RE Zone will be established comprising an industrial park, zero-carbon city, residential development and data centre.</p> <p><b>Solar Park</b> Centralised large-scale solar parks co-developed by Tenaga Nasional in partnership with SMEs, cooperatives and state economic development corporations. Consist of 100MW development per site across 5 sites in several states</p> <p><b>Hybrid Hydro-Floating Solar PV (HHFS)</b> Development of 2,500MW HHFS potential at TNB hydro dam reservoirs. Reduce investment by utilising existing infrastructure compared to BESS + solar PV. Potential scaling up for green hydrogen feedstock with other players such as Gentari as the green electron offtaker.</p> <p><b>Residential Solar</b> Construction of 4.5MW solar capacity across 450 homes in City of Elmina and Bandar Bukit Raja. Up to 10kW solar capacity per house through rooftop leasing with offtake within the township.</p>	<p>Khazanah Nasional</p> <p>Tenaga Nasional</p> <p>Tenaga Nasional</p> <p>Sime Darby Property</p>
Energy Storage	<p><b>Energy Storage System (ESS)</b> Development of utility-scale ESS to enable higher penetration of variable RE.</p>	<p>NRECC</p> <p>Energy Commission</p>
Energy Secure	<p><b>Sabah Energy Security Initiative</b> To secure long-term energy supply. Development of large-scale solar and small hydropower plants; formulation of policy and regulatory framework on biowaste, and feasibility of geothermal.</p>	<p>Energy Commission of Sabah</p>
Green Hydrogen	<p><b>Sarawak Hydrogen Hub</b> Implementation of three integrated projects to produce green hydrogen i.e. green hydrogen plant in Kuching by 2025 for domestic use, two plants in Bintulu by 2027 mainly for export purposes.</p>	<p>SEDC Energy</p>

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<p><b>Hydrogen for Power</b></p>	<p><b>Co-firing of Hydrogen and Ammonia</b></p> <p>Green hydrogen and ammonia co-firing in collaboration with Petronas to decarbonise TNB generation plants.</p>	<p>Tenaga Nasional</p>
<p><b>Biomass Demand Creation</b></p>	<p><b>Biomass Clustering</b></p> <p>Development of potential biomass clusters with a centralised plant using aggregated feedstock from neighbouring mills.</p> <p><b>Biomass Co-firing</b></p> <p>Aimed at existing 2,100MW Tanjung Bin power plant by burning biomass along with coal. A pilot phase will commence in 2024 with a view to scale up to at least 15% biomass co-firing capacity by 2027.</p>	<p>NRECC, SEDA</p> <p>Malakoff</p>
<p><b>Future Mobility</b></p>	<p><b>EV Charging Stations</b></p> <p>Installation of 10,000 EV charging stations by 2025 along highways and elected commercial buildings in collaboration with partners such as TNB, PLUS, PNB, Gentari and Sunway Group.</p> <p><b>Mobile Hydrogen Refuelling Station</b></p> <p>Introduction of the first station for transportation in Peninsular Malaysia in collaboration with NanoMalaysia Bhd, Petronas, UMW and the MGTC.</p> <p><b>Public Transport Electrification</b></p> <p>First and last mile public transport, and upgrading infrastructure at bus depots for charging. Maintenance, repair and overhaul opportunities for SMEs.</p> <p><b>Solar PV Installation for Rail Operations</b></p> <p>Installation for solar PV systems for non-traction electricity usage in rail operations such as stations and depots.</p>	<p>MITI</p> <p>MOSTI</p> <p>MOT, Prasarana</p> <p>MOT</p>
<p><b>Future Fuel</b></p>	<p><b>Biofuels Hub</b></p> <p>Bio-refinery in Pengerang, Johor, for creating hubs to produce bio-based products, including sustainable aviation fuel (SAF), hydrotreated vegetable oil (HVO), advanced sustainable fuel (ASF) and biochemicals.</p>	<p>Petronas</p>
<p><b>CCS for Industry</b></p>	<p><b>Regulatory Framework</b></p> <p>To include transboundary carbon movement.</p> <p>Kasawari and Lang Lebah CCS</p> <p>CCS projects for Kasawari and Lang Lebah high-CO<sub>2</sub> gas fields expected to be in operation by 2026 and 2028.</p>	<p>Ministry of Economy</p> <p>Petronas</p>

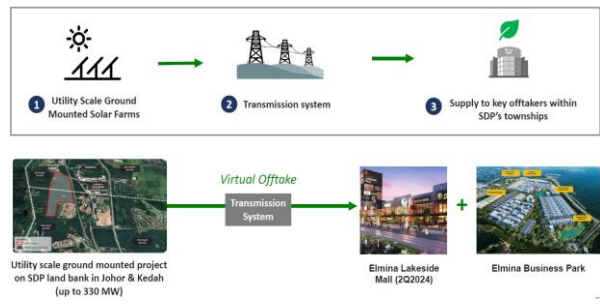
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## Exhibit 2: Solar Generated on Residential Rooftops

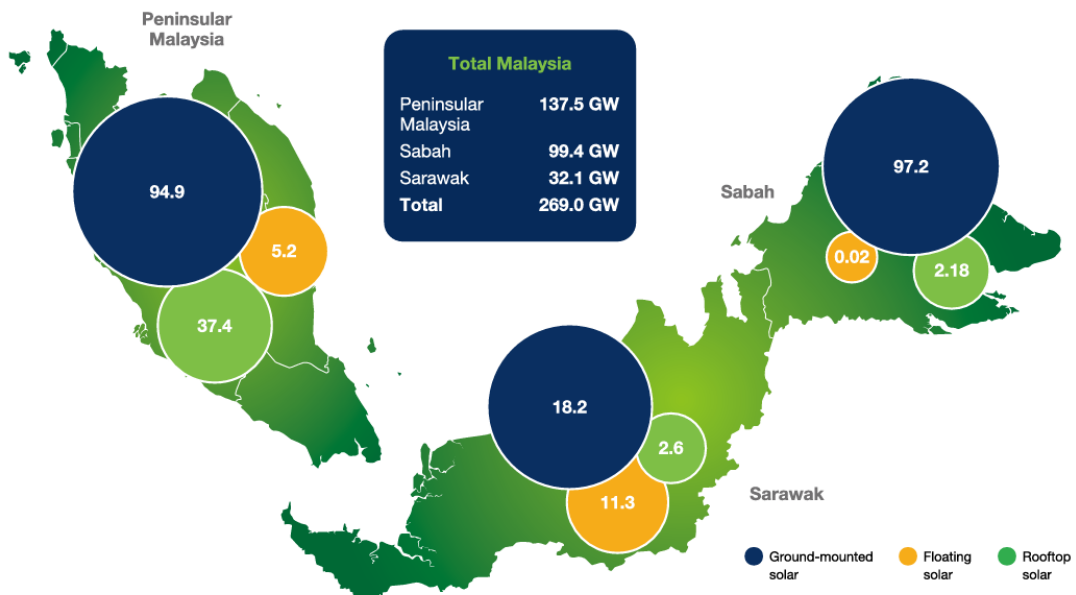


Source: Sime Darby Property

## Exhibit 3: Solar Generated from Utility-Scale Solar Farms



## Exhibit 4: Solar PV Resource Availability by Installation



Source: SEDA

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