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National Energy Transition Roadmap (NETR) Phase 1

The Ministry of Economy has recently launched the National Energy Transition Roadmap (“NETR”) Part 1 as a step towards reaching Malaysia’s net-zero emission target by transitioning the country into a more sustainable energy landscape. The NETR is being led by a steering and technical committee comprising of representatives from various ministries, agencies and private sector companies.

The first phase of the NETR has identified 10 flagship catalyst projects and initiatives based on 6 energy transition levers: (1) energy efficiency; (2) renewable energy; (3) hydrogen; (4) bioenergy; (5) green mobility; and (6) carbon capture, utilization, and storage. It is anticipated that these projects and initiatives will generate 23,000 high-impact jobs, RM25 billion in investments and reduce 10,000 gigagrams of CO2 annually.

By 2050, the NETR is anticipated to open up energy transition investment opportunities of between RM435 billion to RM1.85 trillion in value. Moreover, the second phase of the NETR is expected to be completed in the second half of 2023 and is aimed at establishing a low-carbon pathway, energy mix, and emission reduction target for the energy sector.

Guiding Principles and Policies

The NETR has 4 guiding principles in this transition towards sustainable energy. These principles are aimed at:

- aligning the energy sector with the country’s sustainable development goals and commitments;
- emphasising a just and inclusive transition that addresses challenges faced by low-income and vulnerable populations;

- underscoring effective governance and collaboration with state governments; and
- creating meaningful employment and economic opportunities, especially for small and medium enterprises.

Corresponding to the launch of the NETR, several policy decisions have been made, including:

- stretching the country’s installed renewable energy capacity from 40% in 2035 to 70% by 2050;
- utilising the concept of a self-contained system according to the “*willing buyer, willing seller*” principle to encourage investment in the value chain and diversify renewable energy programmes;
- increasing the installation of solar systems on government buildings; and
- allowing cross-border renewable energy trade through the establishment of a central electricity exchange system that will be operated by a single-market aggregator.

Flagship Catalyst Project and Initiatives

The 10 flagship catalyst projects and initiatives introduced under the NETR encompass diverse approaches in showcasing the range of technologies and solutions required for the energy transition. Consequently, distinct entities will lead each approach, highlighting their unique contributions to Malaysia’s energy transition advancements as outlined below:

Energy Transition Levers	Flagship	Projects and Initiatives
Energy Efficiency (EE)	Efficient Switch	<ul style="list-style-type: none"> ○ Regulation of energy-intensive users, buildings and products through the tabling of the Energy Efficiency and Conservation Bill ○ Performance of energy audit exercises by the rail sector
Renewable Energy (RE)	RE Zone	<ul style="list-style-type: none"> ○ Creation of a large-scale, integrated sustainable development encompassing an industrial park, zero-carbon city, residential development and data centre

		<ul style="list-style-type: none"> ○ Development of five 100MW large-scale solar parks by TNB ○ Development of hybrid hydro-floating solar PV at TNB's hydro dam reservoirs ○ Introduction of 'Residential Solar' by Sime Darby Property through the construction of 4.5MW solar capacity through rooftop leasing
	Energy Storage	<ul style="list-style-type: none"> ○ Development of utility-scale energy storage system
	Energy Secure	<ul style="list-style-type: none"> ○ Development of large-scale solar (LSS) and hydropower plants as part of the Sabah Energy Security Initiative ○ Feasibility study of geothermal for power generation ○ Formulation of policy and regulatory framework on biowaste to secure consistent supply of feedstock
Hydrogen	Green Hydrogen	<ul style="list-style-type: none"> ○ Creation of Sarawak as a regional green hydrogen hub ○ Development of hydrogen production plants in Kuching and Bintulu by 2025 and 2027 respectively
	Hydrogen for Power	<ul style="list-style-type: none"> ○ Decarbonization of TNB generation plants in collaboration with PETRONAS through green hydrogen and ammonia co-firing
Bioenergy	Biomass Demand Creation	<ul style="list-style-type: none"> ○ Development of biomass clusters with centralized plant using feedstock from neighbouring mills ○ Initiation of biomass co-firing at the existing 2100MW

		Tanjung Bin Power Plant. The pilot phase to commence in 2024, aimed at scaling up co-firing capacity up to 15% minimum by 2027
Green Mobility	Future Mobility	<ul style="list-style-type: none"> ○ Installation of 10,000 EW charging stations by 2025 along highways ○ Installation of a mobile hydrogen refuelling station in Peninsular Malaysia ○ Electrification of public transport and upgrading of bus depots for charging ○ Installation of PV systems for non-traction electricity usage in rail operations
	Future Fuel	<ul style="list-style-type: none"> ○ Development of a bio-refinery in Pengerang Johor by PETRONAS to produce bio-based products and biochemicals
Carbon Capture, Utilization and Storage (CCUS)	Carbon Capture and Storage (CCS) for Industry	<ul style="list-style-type: none"> ○ Development of a policy and regulatory structure to streamline the execution of CCUS projects ○ Implementation of CCS for Kasawari and Lang Lebah high-CO₂ gas fields by PETRONAS

The policy document makes clear that the projects and initiatives will be championed and implemented by designated public and private sectors. Furthermore, in relation to the envisioned RE Zone, Khazanah's UEM Group has signed an MoU with Itramas Corp. to develop a 1GW solar PV power plant to be integrated into the RE industrial park.¹ The power plant is expected to be the largest of its kind in the ASEAN region.²

¹ 'MIDA, Khazanah's UEM Group to partner local and foreign investors to develop 1GW solar plant – Asean's largest' (MIDA, 27 July 2023) <<https://www.mida.gov.my/mida-news/khazanahs-uem-group-to-partner-local-and-foreign-investors-to-develop-1gw-solar-plant-aseans-largest/>> accessed 10 August 2023

² Power Technology, 'UEM Group to build 1GW solar project in Malaysia' (Power Technology, 28 July 2023) <<https://www.power-technology.com/news/uem-build-1gw-solar-malaysia/>> accessed 10 August 2023

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Final Thoughts

The introduction of the NETR is a clear depiction of the Government's commitment to meeting the country's net-zero target. Albeit comprising interim measures, the projects and initiatives introduced hold the potential of transforming the country's existing renewable energy landscape, creating economic opportunities, improving livelihood and accelerating the country's energy transition on a large scale. Phase 2 of the NETR will likely provide further clarity on the Government's future plans and measures to implement the NETR.

Further details in relation to the NETR are described in the policy document "**National Energy Transition Roadmap Part 1: Flagship Catalyst Projects and Initiatives**", which can be viewed [here](#).

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