



الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يُونِيسَيتِي اِسْلَامُ اِنْتَارَايَغُسَا مِلْدِسِيَا

Garden of Knowledge and Virtue

POLICY BRIEF

Policy Options for Developing a Shariah-Compliant P2P Energy Trading Ecosystem in Malaysia

Author Name Dr. Muhammad Irwan Ariffin	Designation Associate Professor
	Affiliation Department of Economics, Kulliyah of Economics and Management Sciences, International Islamic University Malaysia
	Area of Expertise Islamic Economics, Islamic Social Finance, Public Economics and Policy, Development Economics, and Higher Education Quality Assurance and Knowledge Integration
	Contact Email irwan@iium.edu.my

Key Insights

- ❖ Malaysia already has a foundation for P2P energy trading through SEDA's 2019-2020 pilot and the expansion of NEM 3.0.
- ❖ P2P trading can support Malaysia's renewable energy transition by creating market incentives for distributed solar generation.
- ❖ A purely market-based P2P model may exclude low-income households unless affordability and access are built into the design.
- ❖ Maqasid al-Shariah provides a useful policy framework by linking energy innovation to justice, environmental stewardship and wealth protection.
- ❖ Islamic social finance instruments such as zakat and waqf can help subsidise participation for energy-vulnerable households.

Executive Summary

Malaysia's energy transition requires new market mechanisms that can accelerate

renewable energy adoption, improve consumer participation and protect vulnerable households. Peer-to-peer (P2P) energy trading allows prosumers to sell surplus electricity, particularly

from rooftop solar, directly to consumers through digital platforms. Malaysia has already tested this concept through the Sustainable Energy Development Authority (SEDA)'s P2P energy trading pilot, approved by the Energy Commission and implemented from November 2019 to June 2020. Malaysia has not yet moved from the 2019-2020 pilot to a nationwide commercial P2P trading framework.

This policy brief proposes that Malaysia develop a Shariah-compliant P2P energy trading ecosystem grounded in Maqasid al-Shariah. The framework should advance justice, environmental sustainability and economic empowerment while supporting national renewable energy targets. Malaysia's existing Net Energy Metering (NEM) 3.0 programme provides an important foundation. SEDA's NEM 3.0 quota dashboard lists total allocations of 700 MWac for NEM Rakyat, 100 MWac for NEM GoME and 1,700 MWac for NOVA for the 2021–2026 period. These figures indicate growing distributed solar capacity that could eventually support P2P trading.

Policy Context

Malaysia's National Energy Transition Roadmap (NETR) sets an ambition to achieve a 70% renewable energy installed capacity mix in the power sector by 2050. IRENA's Malaysia Energy Transition Outlook also highlights the need for renewable expansion, electrification, storage and system flexibility. P2P energy trading can complement these goals by creating a market for distributed renewable energy and encouraging households, businesses and communities to participate directly in the energy transition.

However, P2P energy trading may also create new inequalities if only wealthier households can afford solar panels, batteries and smart technologies. From an Islamic perspective, this raises concerns of distributive justice. A Shariah-compliant model must therefore ensure that P2P trading does not merely reward capital-rich prosumers but also supports low-income and energy-vulnerable households.

Comparison of Policy Options

Option 1: Maintain the current NEM-based approach

This is the least disruptive option. It allows Malaysia to continue expanding rooftop solar through existing NEM mechanisms without introducing complex P2P trading rules. However, it limits consumer choice, does not create a direct energy marketplace and may not fully unlock the value of distributed generation.

Option 2: Introduce conventional P2P energy trading through a regulatory sandbox

This option allows the Energy Commission, SEDA, TNB and platform providers to test market design, grid usage fees, smart contracts and settlement systems. It is practical and has lower risk, but it may focus mainly on technical and commercial feasibility without sufficient attention to Shariah governance, affordability and social inclusion.

Option 3: Develop a Shariah-compliant P2P energy trading ecosystem

This is the most comprehensive option. It combines regulatory reform, digital

infrastructure, Islamic finance, consumer protection and social finance. It would allow Malaysia to position itself as a leader in ethical energy innovation. The main limitation is implementation complexity, as it requires coordination between energy regulators, Islamic finance institutions, Shariah scholars, utilities and technology providers.

Mapping Policy Measures to Maqasid Objectives

A Shariah-compliant P2P ecosystem should explicitly connect policy design to Maqasid al-Shariah. Fair pricing rules, consumer protection and transparent contracts reflect the objective of justice. Renewable energy prioritisation and demand-side efficiency support environmental protection or *hifz al-bi'ah*. Affordable financing, prosumer participation and protection from exploitative pricing support *hifz al-mal*. Zakat and waqf-based community solar programmes can further advance public welfare by ensuring that low-income households are not excluded from the energy transition.

Stakeholder and Implementation Considerations

The Energy Commission should lead regulatory design, licensing and consumer protection. SEDA can coordinate renewable energy participation, building on its NEM and P2P pilot experience. TNB and distribution network operators must clarify grid access, technical

limits, wheeling charges and system reliability requirements. Islamic financial institutions can provide Shariah-compliant financing for rooftop solar, storage and community energy assets. State Islamic religious councils, zakat institutions and waqf authorities can support community-based energy access programmes. Platform providers should ensure transparent pricing, real-time monitoring, data protection and Shariah-compliant smart contract execution.

Implementation should proceed gradually. Malaysia may begin with a second regulatory sandbox focusing on Shariah-compliant P2P trading in selected residential, university or mosque-based communities. The sandbox should test pricing models, grid fees, consumer protection rules, Shariah contract structures and subsidy mechanisms for vulnerable households. Results from the sandbox should then inform national guidelines.

Conclusion

Malaysia has a timely opportunity to develop a P2P energy trading ecosystem that is not only technically viable but also socially just and ethically grounded. A Shariah-compliant model can strengthen renewable energy adoption while ensuring that low-income households are not left behind. By combining regulation, smart infrastructure, Islamic finance and social finance, Malaysia can position itself as a pioneer in inclusive and sustainable energy market innovation.

Policy Recommendations

- ❖ Establish a dedicated Shariah-compliant P2P energy trading sandbox involving the Energy Commission, SEDA, TNB, Islamic finance institutions and Shariah experts.
- ❖ Develop clear rules on grid access, grid usage fees, settlement, data sharing, consumer protection and dispute resolution.
- ❖ Introduce Islamic finance instruments such as *ijarah*, *wakalah* and *musharakah* to finance rooftop solar, storage and community renewable assets.
- ❖ Mobilise zakat and waqf institutions to support low-income and energy-vulnerable households through community solar or subsidised P2P participation.
- ❖ Require P2P platforms to provide transparent pricing, real-time consumption monitoring and clear disclosure of risks, fees and contractual terms.

References

Ariffin, M. I., & Mohamad Hanif, N. H. H. (2026). Toward ethical and sustainable peer-to-peer energy trading: Insights from Islamic finance principles. In H. Mohd Thas Thaker, Z. Z. Idris, S. N. Syed Salleh, S.N., & G. Mat Ghani (Eds.), *Islamic Finance, Energy Transition and Sustainability* (pp. 325-355). World Scientific. https://doi.org/10.1142/9789819822003_0011

Sustainable Energy Development Authority Malaysia (SEDA). (n.d.). Malaysia's 1st pilot run of peer-to-peer (P2P) energy trading. Retrieved June 19, 2026, from <https://www.seda.gov.my/malaysias-1st-pilot-run-of-peer-to-peer-p2p-energy-trading/>

Ministry of Economy Malaysia. (2023). National Energy Transition Roadmap: Energising the nation, powering our future. <https://ekonomi.gov.my/sites/default/files/2023-08/National%20Energy%20Transition%20Roadmap.pdf>

International Renewable Energy Agency. (2023). Malaysia energy transition outlook. International Renewable Energy Agency. <https://www.irena.org/Publications/2023/Mar/Malaysia-energy-transition-outlook>



For questions, feedback and comments, please contact

Assoc. Prof. Dr. Hassanudin Bin Mohd Thas Thaker
hassanudin@iium.edu.my

Assoc. Prof. Salman Ahmed Shaikh
salman@iium.edu.my

