

# Energy Thematic Report

## Watts at Stake: Power, Capital and New Energy Order

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Having attended two major energy events — ETCON 26 and Ecosperity Week — we came away with several macro takeaways on the energy sector. Geopolitical risk and supply-chain fragmentation have become central discussion points, particularly following the recent US-Iran conflict. In a changing global landscape that is increasingly domestically-focused and less anchored on the globalist, rules-based framework of the past, countries are placing greater emphasis on domestic energy resilience rather than relying fully on global supply chains. Within the energy trilemma, we believe energy security is currently taking precedence over affordability and sustainability, albeit still within reasonable economic limits. Separately, ASEAN is set to emerge as a key source of incremental power demand. Based on IEEJ projections, ASEAN and India could account for 80% of global energy demand growth if the current trajectory is sustained, implying a multi-year boom in regional energy-sector activity.

As an extension of the energy-security and supply-chain resilience themes, the electrical grid has also become a critical focus area. The rapid emergence of large-scale data centres is fundamentally altering utility grid-planning assumptions, given their concentrated, less predictable demand profiles and high uptime requirements. Malaysia's grid will require significant digitisation and, eventually, greater use of AI in operations as grid complexity rises, particularly with increasing distributed solar penetration. We therefore view grid ramp-up as a multi-year structural trend in the power sector. Nuclear power has also been raised as a potential long-term capacity option for Malaysia, with Korea offering a useful case study; however, the journey from planning to actual commencement could still take at least a decade. Overall, we believe the energy sector is structurally positioned to benefit from the energy-security theme over the coming years, mainly through an energy capex upcycle that favours upstream services providers, utilities exposed to power generation and T&D capex, and MEP players as proxies to TENAGA's capex boom. Overall, we believe different subsegments from the energy sector benefits from the energy security and capex upcycle theme (refer to exhibit 4 below). Within the oil & gas segment, we are bullish on service providers (DAYANG) as the picks & shovel play on expected capex ramp-up in upstream. Within power generation and T&D, TENAGA remains our top choice as its earnings base grows in proportion to higher growth trajectory of energy demand and demand on the grid. That aside, for TENAGA capex upcoming boom higher beta plays, we like MEP players (KEEMING & SCGBHD). Refer to Exhibit 4 for beneficiaries.

The Energy Transition Conference (ETCON 26) took place during 1<sup>st</sup> to 3<sup>rd</sup> June 2026 amid an inflection point for the global energy system. A week before, we also joined Temasek's Ecosperity Week 2026 in Singapore, which gathered 9,000 global participants to drive system-level solutions across transition finance, innovation, and decarbonisation and gained rich insights about energy transition as well. Against a backdrop of heightened geopolitical risk, structural shifts in capital markets, and accelerating demand surge driven by artificial intelligence and data centre proliferation, delegates representing governments, regulators, multilateral institutions, and the rest converged on a sobering consensus: the classical energy trilemma which balances between security, affordability and sustainability. This report distils the key themes, perspectives, and strategic implications emerging from our visits:

- 1) **The Evolving Energy Trilemma**
- 2) **Geopolitical Risk & Supply Chain Fragmentation**
- 3) **ASEAN Power Grid & Energy Demand**
- 4) **Renewable Updates (Virtual Third-party Access)**
- 5) **Grid Infrastructure: The Critical Bottleneck**
- 6) **Nuclear: Long-Duration Option Value**
- 7) **Sustainability Integration: Navigating the New Energy Order**

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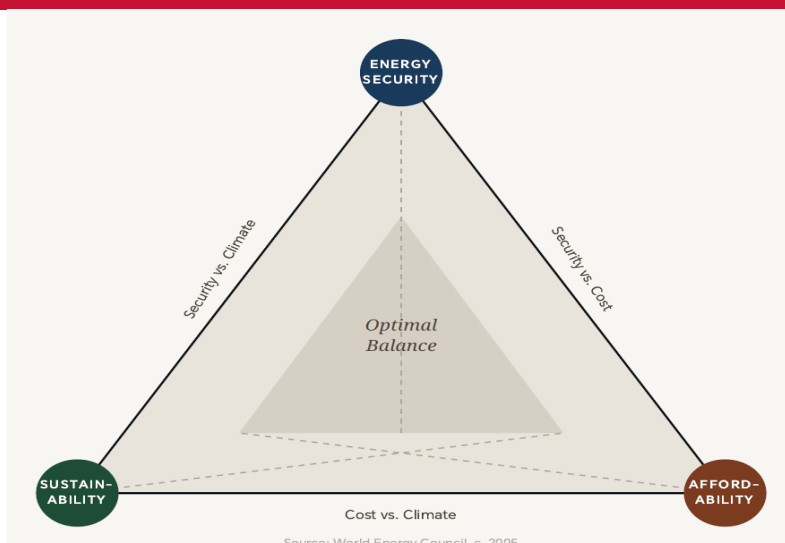
## The Evolving Energy Trilemma

Coined by World Energy Council c.20 years ago, the energy trilemma is the challenge of balancing three competing energy goals simultaneously:

- (i) Energy Security
- (ii) Energy Affordability
- (iii) Sustainability

**The trilemma framework is not dead.** In one of the sessions, voices from China, the World Energy Council, Sabah and a private developer MALAKOFF were discussing the topic. It is believed that the trilemma is still relevant and argument was made that the global environment has become more turbulent due to geopolitics, climate events and tech disruptions. Hence, the challenge is continuous rebalancing of the trilemma framework, not replacing the framework. Most panellists suggested prioritising energy security but also stressed that it will be meaningless without affordability as well, indicating to us that while energy security has emerged as the key theme amid volatile geopolitics worldwide, everyone in the region still looks at practicality of projects and will not blindly invest solely on the grounds of security.

### Exhibit 1: The Energy Trilemma



Source: World Energy Council

**China: the power role model.** China has been highlighted as a role model as it has not suffered major blackouts in 30 years, low tariffs (USD0.08-0.10/kwh), universal electricity access, and has invested USD500b in grid infrastructure (2021-2025), with another USD500b planned for the coming years. This shows us the importance of early investment in power and grid infrastructure as well as policy consistency to grow the country's energy capabilities in the longer run. Hence, while investment is crucial for the development of power capacity, the political will to push for investment in power sector is also key for sustainable growth in power capacity. That aside, we also believe that this case study shows that strong institutional capability and long-term planning of a country always outperform countries with weak institutional capabilities even with huge natural resource advantages (Latin America).

**Energy security could gain more importance within the trilemma.** In the current geopolitical climate (more tensions in Middle East and changing major power balance), we believe that the majority of the world will view energy security as the most important pillar within the trilemma, followed by sustainability and lastly affordability. While costs are still paramount to power or energy projects, we are of the view that countries in the changing global landscape are more willing to pay a premium to ensure energy security and reliability in the long run with an emphasis on renewable power generation. However, we are also seeing a trend of countries taking a more pragmatic approach of also still considering gas as feedstock for power generation as a transition fuel and recognise that at this stage it is still quite unrealistic to allow countries' power needs to be fully dependent on just renewables.

## Geopolitical Risk & Supply Chain Fragmentation

**The world trade structure is changing.** The pre-fragmentation model of free trade and global division of labour, where the US freely imported from China, and Europe depended on Russian energy, has collapsed. Nations can no longer just optimise for cost and comparative advantage, but now resilience and self-sufficiency now take a higher priority. This is evident in the recent Middle East crisis where the closure of the Straits of Hormuz have affected a large part of oil and gas trading routes and Asia appears to be the most exposed continent amid this crisis due to its high Middle East import dependence and limited strategic stockpiles. In addition, during the event, it is also mentioned that historically the world economy is mainly US-led and now there are two power blocs

competing with each other: China (manufacturing, batteries and rare earths) and US (AI and cyberspace and petro-dominance) and the ASEAN region sits in the middle of the two power blocs due to its location; hence, strategic navigation is essential moving forward.

**Supply resilience’s growing importance.** One of the major topics within the conference also involves supply chain resilience globally and regionally as it is regarded as fragile in light of unexpected shocks. For battery supply chain (for instance from critical mineral mining to cell manufacturing), it is heavily concentrated within China. That aside, rare earth concentration risk is also flagged as one of the key global supply chain risks. On nuclear, supply chains are also constrained with global small modular reactors (SMRs) is already under pressure, hence making new entrants to nuclear power generation more challenging (for instance Malaysia). Hence, we believe that aside from pure economics, major countries will also invest more in redundancies for supply chain in view of changing world landscape and now supply chain resiliency may overtake economics as the key consideration for investment by governments.

**Exhibit 2: Clean Energy Supply Concentration**

Stage	Description	Dominant Actor	Concentration	Risk Level
1	Critical Mineral Mining (lithium, cobalt, nickel)	China / DRC	~60% rare earths	CRITICAL
2	Mineral Processing & Refining	China	~80% of global refining capacity	CRITICAL
3	Battery Cell Manufacturing	China	~75% of global cell output	HIGH
4	Solar Panel Manufacturing	China	>80% of global solar modules	HIGH
5	Nuclear / SMR Supply Chain	US / Canada / South Korea	Already strained by early movers	MEDIUM

Source: IEEJ, other panelists

### ASEAN Power Grid & Energy Demand

**ASEAN power grid, one of the mitigation strategies for supply resilience.** To partially mitigate the supply chain risk amid the changing dynamics of world economy, ASEAN power grid (APG) has surfaced as one of the key measures to build the region’s power supply resilience in the longer run. Regional energy integration in ASEAN is structurally complex. Despite projecting unity, member states compete fiercely on financial and trade interests. The absence of a common regulatory market — unlike Europe’s integrated framework — means there is no shared foundation for region-wide interconnection agreements, with political and energy nationalism acting as persistent barriers.

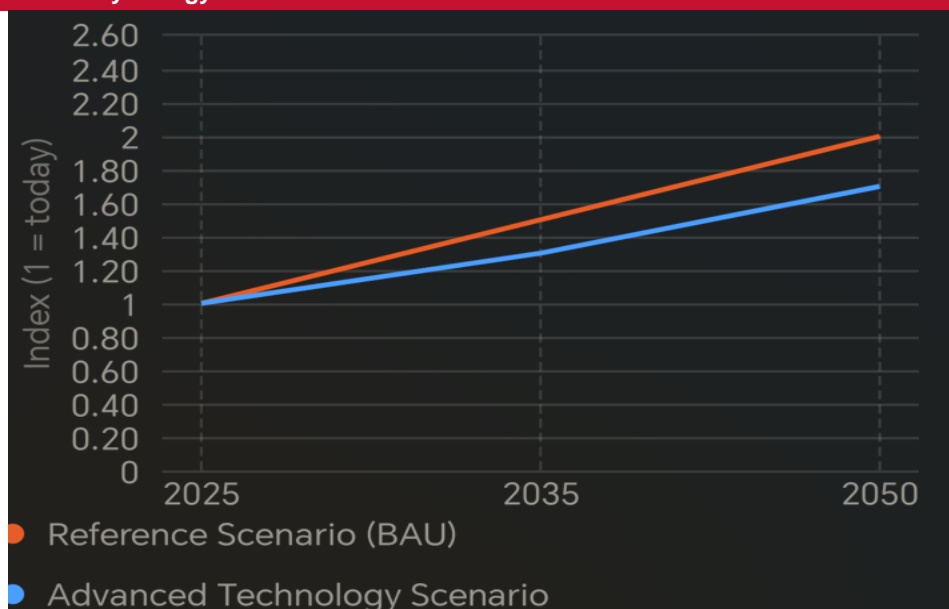
**A Phased, Bilateral Approach.** The preferred strategy is incremental: advancing interconnection through bilateral, business-to-business transactions rather than waiting for a comprehensive multilateral framework. This mirrors early European experience, where interconnectors were built between willing countries before full regulatory alignment existed. As advisors from ELIA Group cautioned, waiting for every detail to be resolved is effectively a path to inaction. We have identified a few key areas of development with regards to APG:-

- (i) **Sarawak and the Borneo Opportunity.** Sarawak is scaling generation capacity from 5.9 GW toward 10 GW by 2030, anchored by hydropower and floating solar. With ten years of cross-border supply to West Kalimantan and ongoing collaboration with Indonesia on a North Kalimantan hydropower plant, Borneo presents a credible case as ASEAN’s energy hub. Realising this potential, however, requires subsea connection to demand centres in Peninsular Malaysia, Java, and Singapore — an unavoidable and costly component of the APG architecture. So far, we think the plan is still under feasibility study and no concrete FDI plans have been announced on the subsea connection yet. As per the Star, it is mentioned that the submarine cable project linking Sarawak and Johor is awaiting Indonesian government approval as 60% to 70% of the route proposed was through Indonesian waters.
- (ii) **TENAGA’s Pipeline and the Feasibility Study Bottleneck.** TENAGA’s five critical APG projects are anchored by the Vietnam-Malaysia-Singapore (VMS) corridor, an 800-km Sarawak-to-Peninsula submarine cable, and a Second Link to Singapore. The feasibility study stage alone is a significant hurdle — seabed surveys run approximately RM200,000 per kilometre, putting the full VMS FS cost at RM200–300m (potentially shared by different countries and parties not just TENAGA), entirely at risk if the project proves commercially unviable. Three business models are under consideration: a regulated asset model (IBR), an apportionment model splitting capacity between system security and RE trading, and a cap-and-floor regime based on European precedent.

- (iii) **Bankability and the Financing Gap.** Singapore's free-market structure — where consumers contract on three-to-five-year terms — makes 25-year project financing structurally inaccessible. The proposed solution is a government-backed safety net covering the residual contract tail, giving lenders sufficient comfort. A cap-and-floor mechanism provides a second layer of protection, guaranteeing minimum revenue to service debt during outages or low-revenue periods — designed not to protect equity, but to keep the asset solvent.
- (iv) **Cost vs. Strategic Necessity.** Interconnection is materially more expensive than domestic generation — the proposed Singapore subsea cable cost is estimated at approximately USD6.5b. Yet the strategic case is compelling. ASEAN's island geography makes subsea cables unavoidable, generation is distant from demand centres, and the Middle East crisis has pushed energy security firmly to the top of the regional policy agenda. For most ASEAN nations, security now means domestic renewable generation, regional interconnection, or both.
- (v) **Near-Term Priorities and Existing Infrastructure.** Two interconnections are currently operational: the EGAT-TENAGA Thailand-Malaysia link (300 MW, commissioned 2000) and the Johor-Singapore interconnection (up to 1,100 MW). Both face near-term pressure — the SRA agreement expires June 2027 and the HVDC infrastructure is running to failure. The Second Link to Singapore (2,000 MW), being developed by TENAGA, SP Power, and SGEI, is the immediate priority, with a feasibility study targeted for completion by February/March 2027 and commissioning by 2029. Longer-horizon projects including the Sarawak cable and VMS corridor are targeted for 2034–2035.
- (vi) **Governance as the Decisive Factor.** Technical and commercial solutions alone are insufficient. Progress on APG requires empowered political architecture — a dedicated G2G governance platform with genuine cross-government authority. Strategic infrastructure must be protected by law and insulated from policy reversals across election cycles, as is done for ports, highways, and digital infrastructure in Europe. Without sustained commitment from governments, regulators, and utilities alike, even well-structured projects will stall.

**Governments still needed to drive APG.** Overall, we believe that the APG project still need a lot of work from multiple stakeholders and parties and aside from capital and technical capabilities, political will and alignment of the ASEAN countries are absolutely essential for the APG project to be effective and progressive as expected. With the changing world geopolitical environment, we believe that APG might garner more political support from member countries, but the more costly links (Sarawak-Peninsula for instance) may require more feasibility studies before the projects move forward. The positive thing about recent geopolitics is that project costs could be lesser of a concern in the coming years as energy security becomes more crucial in the face of increasing uncertainty of supply chain of crucial products in the world, making APG a more feasible project under the new economic environment.

Exhibit 3: ASEAN Primary Energy Demand Growth to 2050



Source: IEEJ

**ASEAN power needs will increase significantly.** According to Dr Koyama from Institute of Energy Economics (IEEJ), power demand might follow two scenarios: (i) ASEAN primary energy demand doubles by 2050 under business-as-usual scenario (existing policies in place with no major new interventions), and (ii) advanced technology scenario (aggressive roll-out of renewables, EVs, smart grids and efficiency improvements) demand still rises substantially but at a slower rate than the first scenario. By 2050, it is forecasted that ASEAN+India demand will account for 80% of global energy demand growth. ASEAN will also shift from net gas exporter to a net gas importer by the 2050s with total investment needed estimated at USD7t over the next 30 years. Hence, no matter the scenario, ASEAN power demand will not go down in the long term and fossil fuel is still needed during the transition, further exacerbated by needs from data centres.

## Renewable Updates (Virtual Third-party Access)

**Why battery makes sense for solar on DC projects?** Tier 4 data centres typically require 99.995% uptime, a standard that arguably makes them highly sensitive to grid disturbances. It is generally understood that solar power is unable to deliver continuous supply, largely due to the inherent intermittency of solar irradiation and the limitation of sunlight hours. That said, the incorporation of battery energy storage systems (BESS) addresses this limitation by storing excess solar energy for instantaneous discharge when required. Based on session insights, solar plus BESS achieves **millisecond-level response times**, significantly faster than conventional backup generators, which typically take seconds to minutes to start up. This rapid response is critical for AI data centres, where even microsecond-level disruptions have the potential to affect GPU operations.

**Solar power ramps up faster.** During the session, speakers noted that with Malaysia targeting 6GW of additional data centre demand by 2033-34, speed of connection is likely to be paramount. Solar farms can be developed within 12-24 months, far quicker than gas or coal plants. Furthermore, BESS can be deployed in **containerised, factory-assembled units**, which tend to require shorter deployment duration and are better aligned with the current landscape where time-to-market is increasingly a consideration.

**Our View.** We believe adoption of solar incorporating battery will increase for AI data centres and Tier 4 facilities, particularly to fulfil sustainability and green energy commitments. Based on data checks, the battery cost component currently hovers around USD 100/kWh, which is yet to be considered economical and could continue to hinder near-term growth. In our view, more meaningful uptake would require either government subsidies or further declines in battery costs. Once battery costs drop to more economical levels, meaningful project IRR improvements would likely accelerate adoption. Within this space, we see **PEKAT (OP; TP:RM1.91)** as a potential beneficiary, given its niche focus on off-grid solar solutions and a credible track record in solar PV system integration.

**CRESS:3-4GW in Sight.** The Corporate Renewable Energy Supply Scheme (CRESS) represents Malaysia's first virtual third-party access mechanism, enabling renewable developers to sign Power Purchase Agreements (PPAs) directly with corporate off takers. This moves Malaysia beyond the traditional utility-led model toward a liberalised, customer-driven electricity market. Based on session insights, the current potential pipeline stands at c.3-4GW, critical for closing the national RE mix gap toward the 2035 target of 40% and 2050 target of 70%.

**Operational friction limits near-term uptake.** The session revealed that CRESS adoption has lagged expectations due to: (i) **pricing mismatch**, where the 8 sen/kWh last resort tariff falls short to justify project financing; and (ii) **risk allocation mismatch**, where the current framework lacks clarity on which party bears the incremental risk from System Access Charges (SAC) adjustments, creating uncertainty and delaying project closures

**Proposed enhancements to improve bankability.** Several suggestions were put forward to address the identified frictions:

1. **Reduce the system access charge (SAC rate)** from 20 sen/kwh to 15 sen/kwh for HV users to stay competitive against the 44.5 sen/kwh prevailing tariff.
2. **Open CRESS to MV customers** at 12 sen/kwh to remain competitive against the 31.3 sen/kwh prevailing tariff.
3. Introduce **risk-sharing PPA structures** to allocate SAC hikes between developers and off-takers.
4. **Raise the 8 sen/kwh last resort tariff** to a bankable level for the initial launch phase.

**Our View.** We concur with speakers that CRESS will remain underutilised unless critical fixes are introduced to improve project IRRs. However, our channel checks indicate that government agencies have been actively gathering feedback from industry players, suggesting that policy action may be forthcoming. This presents strong job opportunities to tap into the 3-4GW solar pipeline, which would serve as a key catalyst for the RE sector.

Based on TENAGA's latest quarterly briefing, electricity supply agreement (ESAs) signed (under construction or still in the pipeline) currently stand at 3.8GW, suggesting ample potential opportunities for data centers to tap into green energy to meet sustainability targets. In addition, solar incorporating battery offers the fastest ramp-up, particularly suited for AI data centres and Tier 4 facilities, as highlighted in our earlier note further supporting our view. Within this space, **SAMAIDEN (OP; TP:RM1.94)** and **SLVEST (OP; TP:RM3.36)** are key beneficiaries, given their utility-scale focus in LSS and strong balance sheets to scale up capital-intensive projects.

## Grid Infrastructure: The Critical Bottleneck

**The Data Centre Disruption.** The rapid emergence of large-scale data centres is fundamentally altering grid planning assumptions. A single facility can introduce 100 MW of demand almost overnight — equivalent to a new city — leaving utilities and equipment manufacturers with limited visibility into what the grid will look like in five years. This unpredictability is straining conventional planning frameworks that were not designed for such sharp, concentrated demand spikes.

**The Policymaker's Blind Spot: Demand Forecasting Risk.** A structural tension exists between aggressive policy targets and realistic demand trajectories. In liberalised markets, price signals help calibrate investment; in single-buyer markets, everything depends on the central planner's judgment. If a tender is not launched, nothing gets built, and if it is launched on inflated assumptions, assets may sit idle. Compounding this is a transparency deficit across Southeast Asian power markets. Except for the Philippines (which publishes 30-year transmission plans and demand forecasts to 2050) most regional markets offer limited visibility into planning data, making it difficult for investors and developers to independently assess whether stated targets are credible or deliverable.

**Technologies for System Reliability.** Wide-area protection systems can collect real-time data across the grid and calculate where faults are likely to occur, but their effectiveness is constrained by a critical gap: inverter behaviour. Inverter control logic is proprietary to each manufacturer and obtaining the design and performance data needed to model inverters accurately is extremely difficult. Until inverters can be properly modelled, wide-area protection systems cannot fully estimate fault propagation, limiting the reliability gains these technologies can otherwise deliver.

**The Role of AI in Grid Operations.** As grid complexity grows, operators increasingly need a decision-support layer capable of evaluating multiple scenarios in real time. AI offers that capability but raises a fundamental trust question: how do operators rely on a system whose reasoning is opaque? The emerging answer is in-house AI development, where decision logic is fully documented and traceable, allowing operators to interrogate and validate outputs rather than accept them from a black box. We believe at this juncture we are still at the early days of AI adoption in grid management as the failure rate of the grid must be very low to maintain energy uptime for the country and the allowance for error is low. Hence, we expect Malaysia or even other countries to adopt AI in a more gradual approach in grid operations (possibly using AI with supervision of humans) and system security and reliability would be paramount for ultimate adoption of the ai technology.

**Clean Energy vs. Flexibility: A Strategic Sequencing Debate.** In one of the plenary sessions, panellists offered three distinct perspectives on how to sequence the energy transition. Japan's representative argued for digitisation and predictability first — that flexibility can only be unlocked once grid information is digitised and AI-enabled, allowing more precise operations. Belgium's perspective emphasised controllable interconnectors as the priority, noting that interconnection was the critical enabler of Europe's renewable energy expansion and that its multiplier effect on battery storage cannot be replicated without it. A third view cut through the sequencing debate entirely: with the global carbon budget running out, clean energy deployment cannot wait for perfect grid conditions.

These perspectives are not necessarily contradictory, but they reflect real trade-offs in how regulators, utilities, and investors prioritise near-term grid stability against the urgency of decarbonisation. Regardless, we believe that grid will need to be improved through more investments as AI data centres will drive higher long-term growth for power as our existing grid infrastructure will not be sufficient to handle the incoming load without upgrade.

### What is the future in grid technology?

**From Smart Grid to Adaptive Grid.** The evolution of grid architecture is entering a new phase. Higher penetration of solar and distributed energy resources (DERs) has introduced voltage risks and reverse power flow that conventional and even first-generation smart grids were not designed to handle. TENAGA's Ahmad Sazri framed the shift clearly: the industry must now move beyond the smart grid paradigm to an adaptive grid — one capable of anticipating, withstanding, and riding through rapid changes in real time, rather than simply monitoring and responding after the fact.

**TENAGA's Distribution Network Under Pressure.** TENAGA's distribution network is experiencing tangible stress as distributed energy resources (DER) penetration rises. Transformers and lines are at risk of overloading as power flows increasingly exceed original design parameters, driven by rooftop solar, EV charging, and other distributed loads pushing energy in directions the network was never built to accommodate. Human calculation alone cannot keep pace with the speed and complexity of these changes, making AI-assisted grid management not a future aspiration but an operational necessity. What is needed is an integrated network ecosystem that can anticipate conditions before they deteriorate, detect voltage violations early, and adapt dynamically to shifting load and generation patterns.

**Technology Enablers: From Meter Data to Grid Intelligence.** Advanced metering infrastructure (AMI) is emerging as a foundational data layer for distribution grid intelligence. Meter data alone can reveal a surprising depth of insight — detecting load profile shifts that indicate a customer has installed central air conditioning, purchased an EV, or added rooftop solar, without any direct customer notification. When combined with micro-PMU sensors and transformer monitoring systems, AMI data provides a powerful, granular picture of distribution grid behaviour in near real time.

Trilliant Networks, a grid technology specialist, demonstrated the practical value of this data fusion: their AI system can determine with 99% confidence that a tree branch has struck a power line, drawing on both grid and meter data simultaneously. This eliminates the need to dispatch a trouble man crew to investigate, with the system growing more accurate over time. The same platform detects DER activity, energy theft, and load piggybacking patterns (capabilities that historically required significant manual investigation).

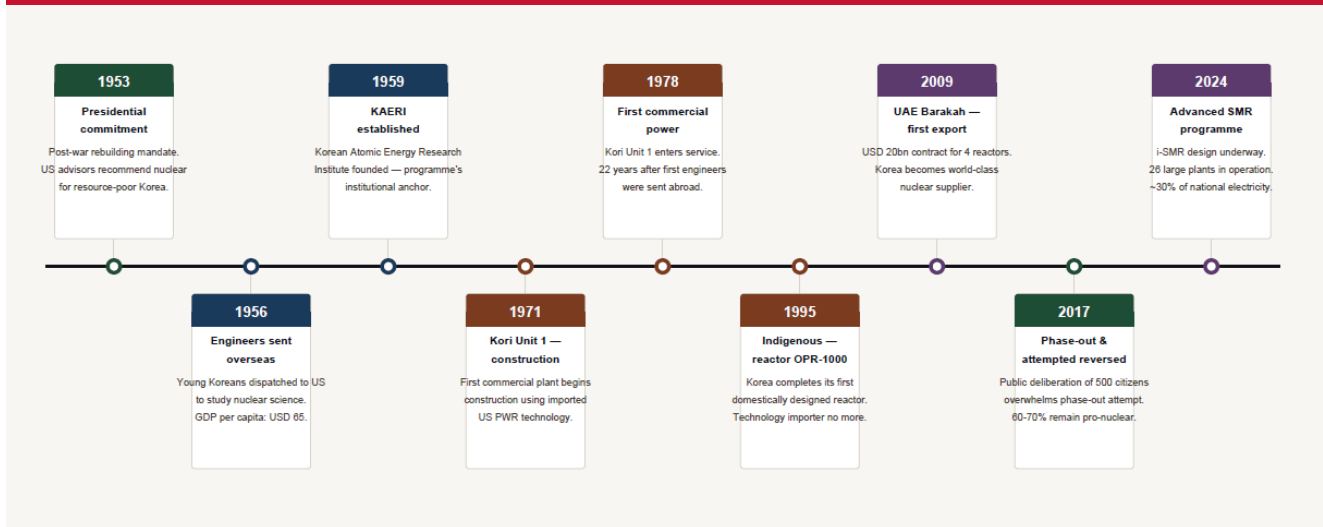
### Nuclear: Long-Duration Option Value

**The Demand Case Has Never Been Stronger.** Three forces have converged to put nuclear back at the centre of the energy conversation and unlike previous cycles, this one is not purely ideological. Climate commitments are setting the scale. The COP28 pledge to triple global nuclear capacity by 2050 requires an additional 800 GW (equivalent to 3,000 to 4,000 small modular reactors (SMRs)) against a current global build rate of just 6–7 GW per year. The math does not work without a dramatic acceleration. AI and data centres are making the problem urgent. In Malaysia alone, AI-related electricity demand is projected to reach nearly 50% of current installed capacity by 2035. This is not cyclical demand — it is structural, front-loaded, and compounding. Renewables cannot firm it. Gas can bridge it. Only nuclear can solve it at scale over the long term.

**Energy security has changed the dynamics.** The Middle East crisis has made import dependence a live risk, not a theoretical one. Nuclear — indigenous, uninterrupted, and carbon-free — sits at the intersection of all three pressures simultaneously. No other technology does. The world needs to increase its nuclear build rate fivefold to meet 2050 targets. In the West, the current rate is approximately 1 GW per year. The global supply chain (engineering capacity, specialised components, nuclear-grade materials) is already strained by demand from countries that are ahead in their programmes. A new entrant in Southeast Asia will join a queue, not jump it.

**South Korea is the canonical success story** with 26 large plants in operation, its own reactor designs exported globally, and an advanced SMR programme underway. What is less often acknowledged is how long it actually took. The programme began in the 1950s — not the 1970s. The first step was not a reactor. It was sending young engineers overseas to learn. The Korean Atomic Energy Research Institute came next. Then imported technology. Then localisation. Then original design. Then export. The full arc from presidential commitment to world-class nuclear exporter spans seven decades.

#### Exhibit 4: Korea's Timeline of Nuclear Development



Source: World Nuclear Association

**Pure private project finance for large conventional nuclear is not feasible.** The risks (construction, schedule, regulatory, technology) cannot be absorbed by private capital alone. This is not a market failure. It is a structural characteristic of the asset class. The Sizewell C project (a 3.2GW nuclear power station being built on the Suffolk coast in England to commission in 2030s) in the UK offers the most current financing template: a Regulated Asset Base (RAB) model where ratepayers co-fund construction costs, layered with government guarantees and partial private equity participation. Even with this structure, the project timeline runs to 25 years from inception to commercial operation. A 25-year return horizon is uninvestable for private capital in its conventional form. Nuclear is a sovereign infrastructure commitment first. Private capital participates in the structure around that commitment.

**SMRs: Real Thesis, Wrong Timeline for Southeast Asia**

Small modular reactors address the right problems (shorter build times, lower per-unit capital, modular scalability, greater siting flexibility). The investment thesis is structurally sound. The timing for Southeast Asia is not. Three barriers stand in the way right now. Regulatory infrastructure does not exist. Building a credible, technically capable, genuinely independent nuclear regulator is itself a multi-year exercise and it cannot be shortcut by relying on another country's approvals. International standards require original domestic licensing decisions.

**The supply chain is constrained.** Countries already building SMRs have first call on a limited global supply of specialised components and engineering capacity. The timeline still does not fit. Even under optimistic assumptions — regulatory approval, supply chain access, financing all in place — first power from an SMR in Malaysia might take multiple years or even a decade or longer. Against a coal retirement schedule targeting 50% of capacity by 2035, the gap is real. SMRs might be the right answer for Malaysia but we are also cognizant of the fact that the time to market could be too late to plug the gap.

**Fusion: Too Early to Invest, Too Important to Ignore.** Fusion has moved from theoretical to credible faster than most expected and AI is a significant reason why. The same technology driving electricity demand has materially accelerated reactor design feasibility. The near-term proof of concept is a commercial fusion plant being developed for the Tennessee Valley Authority (TVA) in the United States — one of the first of its kind. If it delivers, it resets the timeline for the entire asset class. For Malaysia specifically, fusion carries one underappreciated advantage: it is regulated like nuclear medicine facilities, not nuclear power plants. That regulatory framework already exists in Malaysia. The country is better positioned than most in the region to host fusion facilities when the technology matures. The investment horizon is 15 years minimum. But the trajectory has shifted, and the technology deserves a place on the long-duration watchlist.

**The Three Things Countries Consistently Get Wrong**

**They underestimate the time.** Regulatory and operational infrastructure cannot be fast-tracked beyond a minimum threshold. Countries that treat institutional readiness as a background task while focusing on the technology decision consistently fall behind schedule and over budget.

**They build the operating organisation too late.** The UAE's Barakah programme (the most successful recent nuclear entrant programme) stood up its operating organisation and began training local staff years before ground was broken. That sequencing is not optional. It is the difference between a programme that works and one that stalls at commissioning.

**They rely on political consensus that hasn't been built.** Consistent, multi-cycle government commitment is the single most important enabling condition for a national nuclear programme. Public support tends to follow government conviction, not precede it. Programmes fail when policy reverses mid-execution, not when technology underdelivers.

**What to Watch in Malaysia**

The technology decision is secondary to the institutional one. The leading indicators that matter are: (i) whether the nuclear regulatory body is established with genuine independence and technical depth and not just on paper, (ii) outcomes of the feasibility study under the Energy Transition and Water Transformation (PETRA), and (iii) bilateral nuclear cooperation agreements (technology transfer, fuel supply, and financing arrangements are the real signal of programme seriousness). First SMR deployments in Canada, the UK, and the US as proxies for supply chain readiness and commercial viability. Malaysia is the most active country in Southeast Asia at the planning stage. The foundations are being laid. The question for investors is whether the execution discipline will match the ambition and history suggests that is always the harder part.

## Sustainability Integration: Navigating the New Energy Order

**The structural shifts.** These shifts are not merely operational or geopolitical developments, but as a fundamental redefinition of environmental, social, and governance (ESG) risk and capital pricing. Navigating the modern energy landscape requires moving past legacy compliance-oriented ESG metrics toward a holistic investment framework where sustainability, national security, and grid flexibility are intrinsically linked.

**The Strategic Convergence of Energy Security and Decarbonisation.** The classical energy trilemma framework is not dead, but its internal dynamics have permanently shifted. Energy security is no longer treated as a competing trade-off with sustainability; rather, moving toward an electrified economy anchored by domestic renewable energy is now framed as an active strategy for energy sovereignty and geopolitical de-risking. However, capital deployment must remain pragmatic. Public and institutional support for climate ambition quickly evaporates if affordability or grid reliability is compromised. This dual mandate necessitates a managed, phased transition—utilizing gas as a vital transitional feedstock—rather than an immediate fossil fuel exit, a reality that heavily shapes our mid-term valuations for regional power producers and national oil companies.

**Supply Chain Resilience.** Geopolitical fragmentation has broken the historic, cost-optimized global trade model. From an ESG governance perspective, supply chain resilience has officially overtaken pure economics as a core investment consideration. Because clean energy manufacturing (PV modules, EV batteries) and critical mineral refining remain highly concentrated in a single dominant market, localized supply chain redundancies and protective pricing mechanisms (e.g., price floors) will alter traditional capital expenditure assumptions. Investors must evaluate energy holdings on their ability to secure resilient, politically insulated value chains to mitigate severe structural operational risks

**Accountability for the “Dual Transition” Demand Surge.** The exponential rise in regional energy demand driven by the twin forces of rapid AI adoption and low-carbon electrification presents an acute environmental paradox. The massive electricity load requirements of the data center pipeline—particularly along concentrated regional corridors—are a shift from being passive electricity consumers to becoming active partners in managing grid stability. Hyperscalers are increasingly acting as crucial “launch customers,” utilizing virtual third-party access (vTPA) and corporate schemes to make large-scale clean energy assets bankable. However, as grid capacity emerges as the definitive bottleneck to regional net-zero targets, the regulatory focus is shifting toward “Bring Your Own Power” (BYOP) mandates and co-located storage (BESS) integration.

**Our View: Impact to Subsectors in Energy Sector**

**Energy security is the dominant theme.** Overall, we concur that energy security will remain as a persisting secular theme for the whole energy sector in the foreseeable future amid increasing volatilities and uncertainty in geopolitics. Hence, multiple subsegments within the energy sector will benefit albeit to different extents and in different timelines.

Within the **oil and gas space**, we believe that the most attractive play will be in upstream services as oil prices while staying elevated, will not likely break to a new all-time high in the near to medium term. Upstream services companies will act as proxies in the medium to long term for the energy security theme as Petronas and other oil and gas producers are expected to increase their capex budget in 2027 and 2028 to boost production in order to buffer for supply resilience. We believe that the capex budget increase potential has yet to be priced in with PBV at 0.8-0.9x on average (with the exception of KEYFIELD as its fleet is much younger than industry average). Putting it into perspective, service providers generally are trading at -0.5 to -1x SD to their 5-year forward PBV averages.

**Exhibit 4: Sector Overview and Beneficiaries**

Subsector	Why It Benefits	Benefit Rating	Names to Watch
<b>Oil &amp; Gas Downstream (Refining &amp; petrochemicals)</b>	Recent geopolitical uncertainty has caused Brent prices to spike which resulted in higher feedstock costs for petrochemicals and refining facilities globally. However, a significant portion of high product prices has been priced in and assuming it's a one-year high, we believe that for the subsector, this is largely priced in.	★★★ Moderate	PCHEM
<b>Oil &amp; Gas Upstream (Services)</b>	Pick & Shovels play on the energy security theme as upstream capex is expected to increase in FY27 onwards by oil and gas producers amid stronger intention by countries to spend on ramping up production to ensure supply sufficiency.	★★★ Strong	DAYANG, KEYFIELD
<b>Power Generation, transmission &amp; Utilities</b>	Massive growth in power demand in the coming years will drive higher demand for power generation capacities albeit expansion is capped by supply chain constraints. Higher transmission capex needs benefit TENAGA in RP4.	★★★ Strong	TENAGA, MALAKOFF
<b>Renewables (Solar &amp; Wind)</b>	Elevated oil prices and AI-driven structural demand growth continue to support renewables scaling, with green energy in rising demand. Solar panel prices are expected to trend lower due to technological advancements and oversupply issues, which will further foster adoption. This suggests that solar EPCC activity should remain robust in the medium term. However, depressed PPA tariff rates remain the key factor to watch in assessing whether EPCC margins can be justified.	★★★ Moderate	SAMAIDEN, SLVST
<b>Mechanical, Electrical and Plumbing (MEP) players</b>	Upgrading energy transition requires unprecedented grid investment, which includes upgrading transmission lines, substations, and underground utilities solutions. This aligns with TENAGA's RM42b RP4 capex plan, with the majority of capex flowing into transmission and distribution categories.	★★★ Strong	KEEMING, SCGBHD, CHEEDING, and KENERGY

Source: Kenanga

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Within the **utilities space**, we break it down into several subcategories namely power generation & transmission, renewables and mechanical, electrical and plumbing (MEP) respectively. While overall, the energy security theme will benefit all subcategories, we believe that these categories will benefit from it to different extents due to the business nature as well as the progress of the cycle in energy spending. Massive increase in demand for power has benefited power generators like TENAGA and MALAKOFF with their share prices already going up by 30-50% since 2022, driven by the ChatGPT moment (which ultimately drives long-term demand for power). Currently, the next major capex cycle in the energy industry is in transmission & distribution (T&D) now which involves mainly TENAGA (monopoly in T&D) through RP4 as the grid need significant investment to keep up with upcoming power generation capacities in order to handle upcoming data centre buildouts in the nation. We believe that there is still leg in the cycle as power demand still outstrips supply in the coming years (2026 and beyond).

As for the **solar sector**, while demand is still expected to be structurally strong due to it being the most scalable renewable energy source, solar panel prices are still elevated (albeit recently, prices have eased) but PPA tariff rates remain depressed, hence EPCC margins could be under pressure if PPA tariff rates do not improve in the near to medium term for new LSS6 bids. We continue to prefer the **MEP subsector** as the demand for contractors still significantly exceed the supply of contractors with capability in building out the power transmission system in Malaysia in conjunction with TENAGA's RP4 capex. While cost of material remains a near-term concern for earnings (albeit its largely still manageable), for upcoming jobs we think that the contractors could secured better pricing from TENAGA (in FY27 onwards) and the MEP subsector remains as the sector with highest earnings leverage to TENAGA capex upcycle in the foreseeable future. KEEMING is well positioned to capture this upcycle, benefiting from direct solar sector exposure via its SLVEST associate relationship (24% stake) while actively pursuing TENAGA-related opportunities through JVs with existing panel contractors, having submitted five HV tenders averaging RM40m-50m each.

**Nuclear energy** remains at a nascent stage of development in Malaysia. However, should the technology achieve commercial viability over the coming years, **TENAGA** would be well positioned to participate, potentially through generation asset ownership and associated transmission and distribution connectivity. This would be supported by its scale, system relevance, and established execution track record in the domestic power sector. That said, project economics remain uncertain at this stage, and greater visibility on regulatory framework, funding structure, and tariff mechanism would be required before assessing whether nuclear development could be NPV-accretive for TENAGA.

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## Peer Table Comparison (Oil & Gas)

Name	Rating	Last Price (RM)	Target Price (RM)	Upside	Market Cap (RM m)	Shariah Compliant	Current FYE	Core EPS (sen)		Core EPS Growth		PER (x) - Core Earnings		PBV (x)	ROE	Net Div. (sen)	Net Div Yld
								1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	2-Yr. Fwd.				
<b>Stocks Under Coverage</b>																	
BUMI ARMADA BHD	MP	0.330	0.360	9.1%	1,956.2	Y	12/2026	4.0	3.6	-27.0%	-10.6%	8.3	9.3	0.4	5.2%	1.0	3.0%
DAYANG ENTERPRISE HLDGS BHD	OP	1.69	2.45	45.0%	1,956.6	Y	12/2026	16.1	18.8	7.8%	17.0%	10.5	9.0	1.0	9.8%	11.0	6.5%
DIALOG GROUP BHD	OP	1.86	2.63	41.4%	10,495.4	Y	06/2026	10.4	11.8	31.4%	12.8%	17.9	15.8	1.7	9.9%	5.0	2.7%
LIANSON FLEET GROUP BHG	OP	1.62	1.91	17.9%	1,875.8	Y	12/2026	20.6	27.3	142.4%	32.3%	7.9	5.9	1.0	13.2%	4.0	2.5%
KEYFIELD INTERNATIONAL	OP	1.52	2.00	31.6%	1,227.7	Y	12/2026	10.2	18.0	-25.6%	76.1%	14.9	8.5	1.5	10.5%	6.0	3.9%
MISC BHD	OP	8.10	9.00	11.1%	36,156.3	Y	12/2026	51.1	53.4	7.6%	4.5%	15.9	15.2	1.0	6.6%	36.0	4.4%
PETRONAS CHEMICALS GROUP	OP	4.06	5.40	33.0%	32,480.0	Y	12/2026	29.5	13.2	275.0%	-55.4%	13.7	30.8	0.9	6.5%	15.0	3.7%
PETRONAS DAGANGAN BHD	OP	18.72	21.20	13.2%	18,597.5	Y	12/2026	116.9	116.5	5.7%	-0.4%	16.0	16.1	3.0	19.1%	94.0	5.0%
UZMA BHD	OP	0.385	0.700	81.8%	233.8	Y	06/2026	14.8	15.9	6.9%	7.5%	2.6	2.4	0.2	8.5%	0.0	0.0%
VELESTO ENERGY BHD	MP	0.285	0.320	12.3%	2,355.2	Y	12/2026	1.7	2.1	-18.7%	19.3%	16.5	13.9	1.0	6.0%	3.0	10.5%
WASCO BHD	OP	0.750	1.32	76.0%	580.7	Y	12/2026	1.4	1.7	-37.5%	23.1%	54.9	44.6	4.7	9.0%	5.0	6.7%
YINSON HOLDINGS BHD	OP	1.94	2.84	46.4%	5,669.4	N	01/2027	16.6	20.4	20.3%	22.3%	11.7	9.5	1.1	10.1%	6.0	3.1%
<b>SECTOR AGGREGATE</b>					<b>113,584.8</b>					<b>71.7%</b>	<b>-11.0%</b>	<b>14.4</b>	<b>16.1</b>	<b>1.5</b>	<b>9.5%</b>		<b>4.3%</b>

Source: Kenanga Research

## Peer Table Comparison (Utilities & MEP)

Name	Rating	Last Price (RM)	Target Price (RM)	Upside	Market Cap (RM m)	Shariah Compliant	Current FYE	Core EPS (sen)		Core EPS Growth		PER (x) - Core Earnings		PBV (x)	ROE	Net Div. (sen)	Net Div Yld
								1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	2-Yr. Fwd.				
<b>Stocks Under Coverage</b>																	
CHEEDING HOLDINGS BHD	OP	0.655	0.790	20.6%	522.2	Y	03/2027	5.1	5.6	1.2%	8.8%	12.8	11.8	2.9	25.8%	1.3	1.9%
GAS MALAYSIA BHD	MP	5.30	5.23	-1.3%	6,805.2	Y	12/2026	31.7	32.1	5.6%	1.3%	16.7	16.5	4.1	25.4%	25.3	4.8%
KEEMING GROUP BHD	OP	1.52	1.80	18.4%	494.0	Y	03/2027	8.6	10.2	21.7%	17.9%	17.6	15.0	4.8	33.9%	0.0	0.0%
KAWAN RENERGY BHD	OP	0.500	0.730	46.0%	275.0	Y	10/2026	4.8	6.1	11.9%	27.8%	10.5	8.2	1.9	20.7%	1.4	2.8%
KJTS GROUP BHD	OP	0.755	1.34	77.5%	521.4	Y	12/2026	3.1	3.9	18.7%	25.9%	24.5	19.4	2.2	11.8%	61.7	81.7%
MALAKOFF CORP BHD	OP	0.870	1.00	14.9%	4,251.7	Y	12/2026	3.6	4.8	58.2%	32.9%	24.3	18.3	0.9	3.9%	2.9	3.3%
PEKAT GROUP BHD	OP	1.60	1.91	19.4%	1,133.5	Y	12/2026	8.7	10.0	24.4%	14.4%	18.4	16.1	2.7	18.6%	0.0	0.0%
PETRONAS GAS BHD	MP	17.40	18.80	8.0%	34,429.9	Y	12/2026	95.9	97.2	12.1%	1.4%	18.2	17.9	2.3	13.1%	72.0	4.1%
SAMAIDEN GROUP BHD	OP	1.33	1.94	45.9%	743.5	Y	06/2026	6.3	7.5	21.3%	18.8%	21.0	17.7	3.3	17.4%	1.1	0.8%
SOLARVEST HOLDINGS BHD	OP	2.93	3.36	14.7%	2,806.4	Y	03/2027	13.8	15.4	29.1%	11.6%	21.2	19.0	2.9	14.8%	0.0	0.0%
SWIFT ENERGY TECHNOLOGY BHD	OP	0.190	0.470	147.4%	190.2	Y	09/2026	1.3	2.0	-29.3%	53.8%	14.6	9.5	2.4	19.1%	0.0	0.0%
TENAGA NASIONAL BHD	OP	14.40	17.00	18.1%	83,939.6	Y	12/2026	85.6	88.1	2.9%	2.8%	16.8	16.4	1.3	7.8%	50.8	3.5%
YTL POWER INTERNATIONAL BHD	OP	4.12	4.55	10.4%	35,687.7	N	06/2026	24.5	24.1	-27.1%	-1.4%	16.8	17.1	1.6	9.6%	8.0	1.9%
<b>SECTOR AGGREGATE</b>					<b>171,800.3</b>					<b>-3.1%</b>	<b>2.6%</b>	<b>17.5</b>	<b>17.0</b>	<b>2.6</b>	<b>17.1%</b>		<b>8.1%</b>

Source: Kenanga Research

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