



LUCETIA
GROUP

GGI Website



Asia-Pacific High Voltage Transmission Supply Chain Project

10 June 2026

Report Findings & Next Steps

Who are we & what do we do?

We bring together and empower a global network of proactive, engaged and coordinated organisations to accelerate the development of grids globally.

GGI works collaboratively across a global network to coordinate and enable action on the biggest challenges that face grid development.



Global HVDC Supply Chain Landscape



Demand is accelerating

- ASEAN electricity demand is rising rapidly
- Singapore targets 6 GW of clean imports by 2035
- AIMS III identifies 18 priority interconnection projects



Global supply is constrained

- HVDC projects need cables, converters, transformers and specialist vessels
- European OEMs account for ~two-thirds of the global HVDC market
- Manufacturing slots are heavily booked through 2028–2030



ASEAN remains exposed

- No HVDC equipment factories in ASEAN
- New specialist factories take 3–4+ years and major capital to build
- Project-by-project procurement weakens bargaining power



Global demand pressure

Rising clean energy targets and cross-border interconnector pipelines



Scarce manufacturing slots / vessels / permitting capacity



Cables



Converters



Transformers



Specialist vessels



Permitting capacity



ASEAN interconnector delivery risk

Longer lead times, higher costs, and execution delays



Implications for ASEAN



ASEAN interconnector portfolio

- ASEAN has roughly 10.2 GW of installed cross-border transfer capacity
- Existing capacity is dominated by generation-to-grid arrangements
- Grid-to-grid links account for only around 2.8 GW
- AIMS III projects 17.8-33.5 GW interconnection capacity by 2040



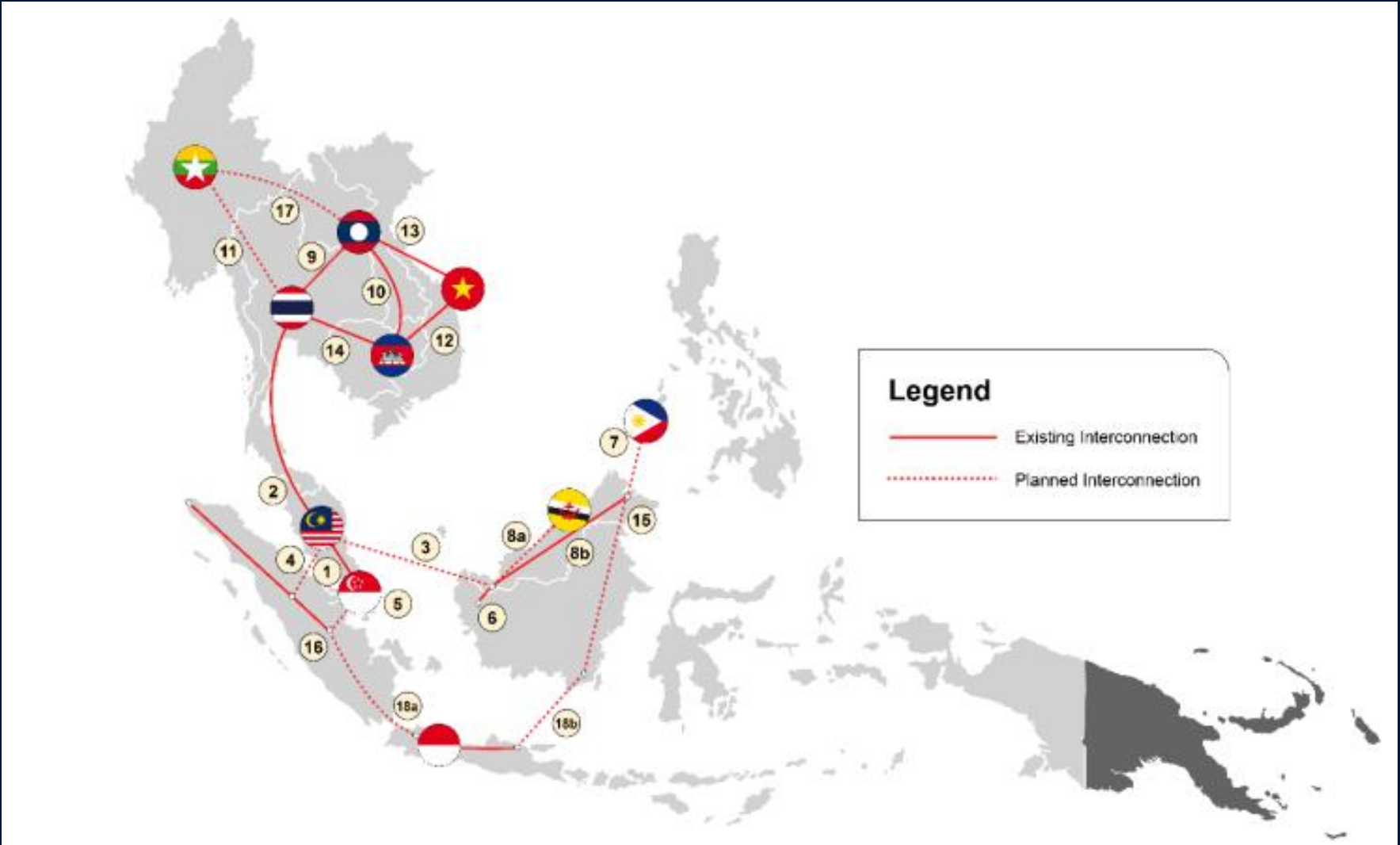
Subsea cables are critical for ASEAN

- 7 of 18 priority APG interconnection projects require submarine cable infrastructure
- 10 APG projects currently under development could add ~15 GW of subsea capacity
- A suitable enabling environment is critical to move them from concept to operation



Cross-border complexity remains high

- Some cable routes may cross multiple maritime jurisdictions, EEZs or transit waters
- Without common rules, projects risk fragmented approvals, delays and higher development costs
- A common Subsea Cable Framework can reduce uncertainty across permitting, surveys, installation etc



Source: ACE (2024)



Key takeaway for ASEAN

The Subsea Cable Framework is a critical policy and regulatory enabler for cross-border electricity trade

Scaling the APG toward wide-scale multilateral trading will also require parallel progress across the commercial, technical and governance pillars.

Project Recap

Journey to Today

- Oct 2025 — SIEW 2025 Roundtable: GGI, Lucetia Group, HSBC and Arup convened key stakeholders in Singapore
- Nov 2025 – Mar 2026 — Research phase across governments, developers, OEMs, banks and DFIs.
- April 2026— Second virtual roundtable: share findings, agree an intervention stack.
- June 2026 — Asia-Pacific Electrical Transmission Supply Chain Report published
- Q3 2026 - Phase 2 kick off

ASIA-PACIFIC ELECTRICAL TRANSMISSION SUPPLY CHAIN REPORT



This report is the result of the Transmission Supply Chain Roundtable hosted by HSBC, GGI, Lucetia Group and ARUP.



April 2026



ARUP



Key Findings



Chicken and Egg Dilemma

BUYERS ASK



“When will additional manufacturing capacity be built?”

**MANUFACTURERS
RESPOND**



“When will projects reach financial commitment?”

Both perspectives are rational, but the system remains stuck

Assessment



**The system will remain blocked in the near term
without external intervention**

The collective action failure



Governments

Need cross-border alignment before locking in commitments

There is a need for clarity on import/export licensing (ideally 25-30 year horizons), a single coordination point in each jurisdiction, and a clear Subsea Cable Framework



Developers

Need long-term offtake signals before reserving OEM slots

Large interconnector projects: ~10 years from concept to COD = mismatch between slot reservations and buyer commitments



Finance

Capital is available - but only where risks are clear and allocated

Banks look for transparent permitting and stable import/export license terms, clear trading frameworks and standard technicals specs



OEMs

Needs firm, aggregated demand before expanding supply

Idle or underutilised plants burn USD 40–50 M per year in depreciation. Need anchor projects, multi-year frames and staged payments beyond reservation fees.



Insurance

Need standardised surveys, cable-laying norms and repair protocols

Insurers flagged thin local capacity for complex subsea surveys across varied bathymetry and geotechnical conditions - raising premiums and timelines



Collective action deadlock

Each actor is waiting for certainty from another



Key takeaway

Each actor is rational on its own incentives. Without external stimulus - third-party intervention or shifts in global conditions - the system is unlikely to unblock itself in the short run.

Key Levers

Four key levers emerged during discussion

1

Regulatory Certainty

Governments can materially improve project bankability by codifying long-term electricity import/export license horizons (25–30 years), publishing clear subsea permitting and survey standards, and establishing single coordination points in each jurisdiction.

2

Demand Aggregation

SEA must move from fragmented, project-by-project signalling to visible, aggregated demand. Regional order books for priority APG projects and pooled or pre-emptive slot reservations would provide manufacturers with the multi-year confidence required to expand capacity.

3

Early-Stage Risk Sharing

MDB-backed guarantees for surveys, manufacturing slot reservations, and cancellation risks — alongside staged, milestone-based payments tied to production capacity — can bridge the gap between concept and Financial Close.

4

Standardisation

Applying existing international standards consistently, harmonising project specifications across regional interconnectors, and adopting modern HVDC technologies (e.g. 525 kV XLPE) can reduce bespoke engineering, streamline testing cycles, and lower insurance premiums.

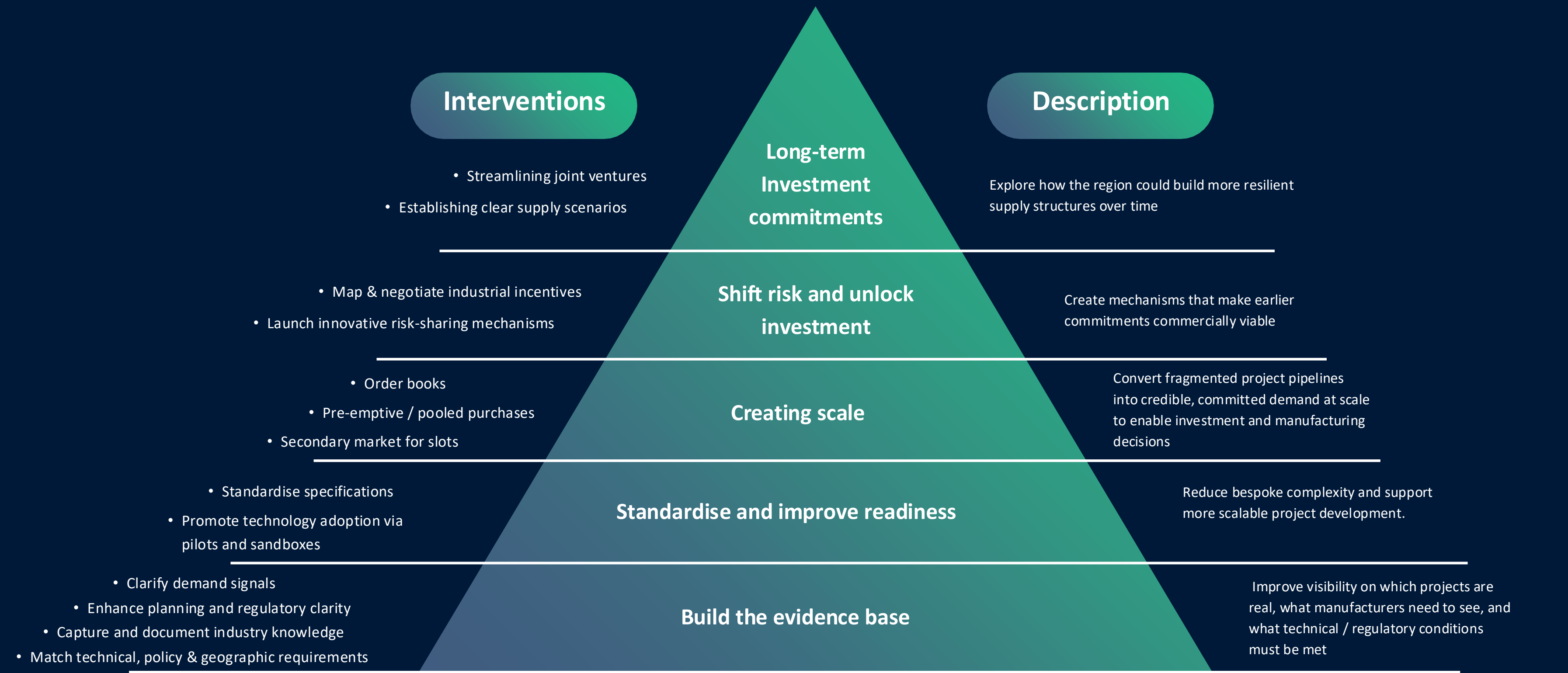


Potential Interventions



Potential Interventions

- 1 Clarify Demand Signals
- 2 Enhance planning & regulatory clarity
- 3 Capture and document industry knowledge about the business case for manufacturers to expand manufacturing facilities
- 4 Standardise Specifications
- 5 Match Technical, Policy, Planning Geographic Requirements
- 6 Order Books
- 7 Pre-Emptive/Pooled Purchases
- 8 Secondary Market
- 9 Launch innovative risk-sharing mechanisms
- 10 Map & Negotiate Industrial Incentives
- 1 Establishing Clear Supply Scenarios
- 12 Promote technology adoption via pilots and sandboxes
- 13 Streamline Joint Ventures



Implication: Not all layers need to be progressed simultaneously.

Key Question: which minimum combination of interventions can unlock near-term project delivery?



Action Plan & Next Steps



Project Going Forward

- This is a collective action challenge requiring coordinated commitments across the ecosystem
- The next 12–24 months are critical to align demand, unlock investment, and move from dialogue to delivery

COORDINATE & DESIGN

(Immediate → 6 months)

- Establish a regional supply chain task force
- Confirm participation
- Define governance structure
- Align on shared problem statement
- Co-design shared HVDC roadmap with stakeholders
- Gather the evidence base

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DECISION GATE

IMPLEMENTATION

(Near-term → 12 months)

- Map system interdependencies and identify key leverage points
- Launch targeted project sprints to deliver priority interventions
- Liaise with stakeholders to seek matched / de-risked contributions

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DECISION GATE

COMMITTMENT PHASE

(12 → 24 months)

- Produce sprint-level outputs such as (policy recommendations, investment models, pilots etc.)
- Facilitate negotiations to secure commitments across stakeholders

Building a Task Force - Seeking EOIs

- We are seeking active commitment to help shape and deliver the taskforce over the next 6–12 months
- Early leadership support and clear ownership will be critical to maintain pace and unlock wider participation
- We are working to align public-sector commitments with private-sector participation to accelerate delivery and de-risk investment



Point of Contact

Nominate the lead POC in your organisation



Leadership Sponsorship

Secure senior leadership sponsorship for participation and decision-making



Role & Organisation's Commitment

Confirm your organisation's role and potential contribution to the project. We want to know what's the largest commitment you could make if this process goes well.



Workstream Leadership

Identify opportunities to lead or support specific workstreams and strategic partnerships



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Thank You

The Asia-Pacific Electrical Transmission Supply Chain Report is available on the GGI website accessible through the QR code below:



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