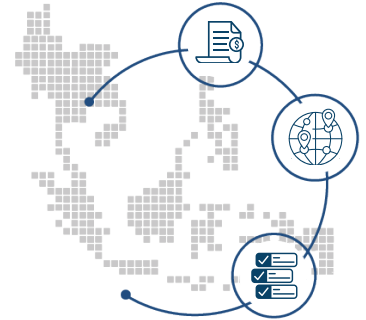




Addressing Financing Challenges for Cross-border Transmission Projects



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Highlights

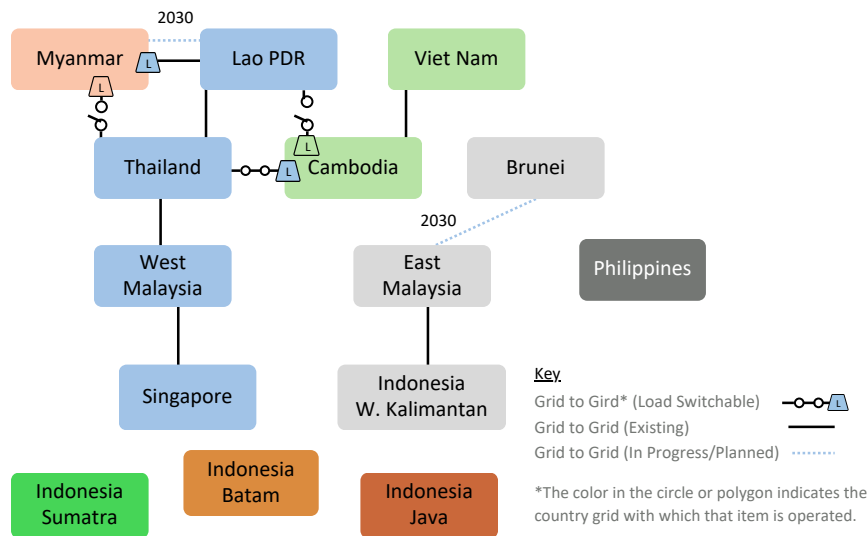
- Financing of cross-border grid-to-grid transmission projects in ASEAN is prone to three obstacles:
 - (i) National laws and regulations make it difficult to achieve regulatory approval for utilities to invest in cross-border grid-to-grid facilities given pressing domestic investment needs.
 - (ii) A significant barrier to support by multilateral development banks and others for the financing of cross-border grid-to-grid transmission projects is their restrictive “green taxonomies”, which are unfavourable to grid-to-grid transmission projects.
 - (iii) Some of the projects that are most obviously supportive of MPT in ASEAN, may be seen to be more beneficial to other states in the region than to the two countries sharing the interface.
- Steps that could improve financing options for cross-border grid-to-grid transmission projects in ASEAN include:
 - (i) A coherent regional approach to infrastructure planning and financing would be beneficial. The regional approach would undertake planning on an indicative basis, develop a framework to agree on which projects are most benefits and supported by ASEAN member states, and identify a financing approach for each project.
 - (ii) Consider developing a common-use asset financing approach for critically important projects that could provide the infrastructural backbone for multilateral power trade development in ASEAN.
 - (iii) Form a regional transmission investment facility, with backing from one or more development banks (as seen in other markets, which was recently developed for the Southern African Power Pool).

Various Financing Approach for Cross-border Transmission Project

Grid-to-grid transmission infrastructure, which provides the physical foundation for multilateral power trade (MPT) development in ASEAN, currently only links ASEAN member states (AMS) in three blocks: Lao PDR, Thailand, Peninsular Malaysia, and Singapore; Vietnam and Cambodia; and East Malaysia - Indonesia (Kalimantan) as illustrated in figure 1. Implementing and expanding MPT in ASEAN will require financing for multiple new cross-border grid-to-grid transmission facilities.

ASEAN utilities are likely to require debt financing for these projects, whose costs range up to USD hundreds of millions or even billions for individual projects. Given the magnitude of capital needs, donors and AMS are keen to leverage private sector financing, where possible.

Figure 1. Illustration of existing grid-to-grid interconnection in ASEAN

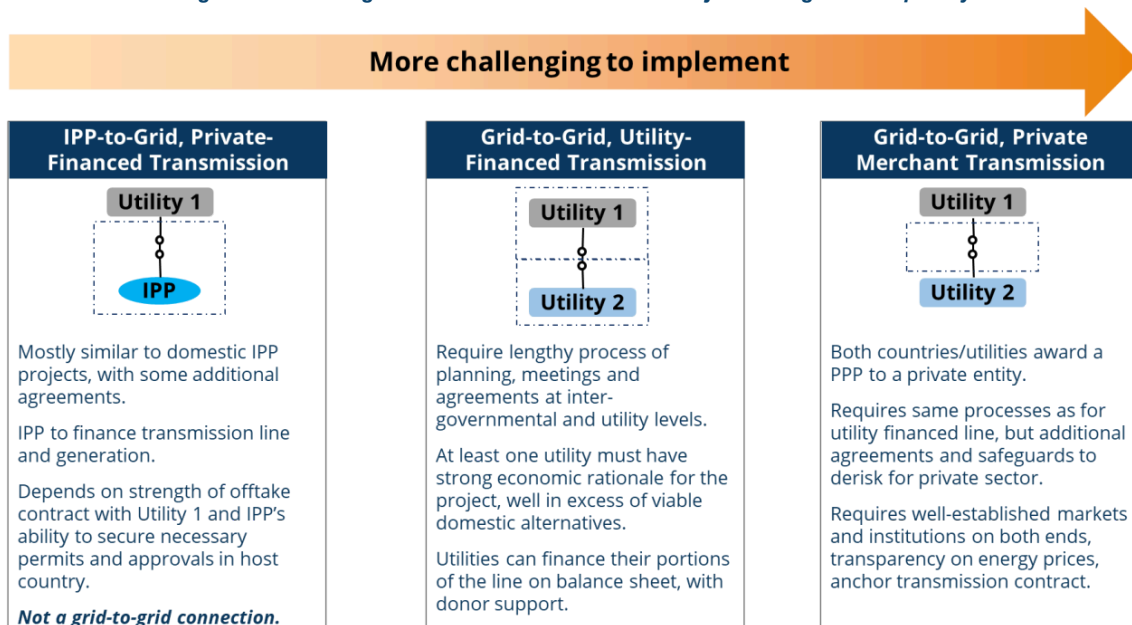


Cross-border transmission projects of all types are more complex to finance than infrastructure projects located wholly within a single country. The addition of one or more countries to a financing structure involves more counterparties, evaluation of regulatory issues in different jurisdictions, and often acceptance by the sovereign directly or indirectly of joint and several liability,

given that any country involved in the project may, through action or inaction, cause the entire project to fail.

There are different types of cross-border transmission project financing structures, some of which are shown in Figure 2 and discussed below the figure. These structures do not represent the universe of potential structures but rather an indicative range of common financing approaches.

Figure 2. Financing Structures for Cross-Border Projects Range in Complexity



Source: Delphos

An IPP-to-grid project, the graphic on the left on the figure above, is the simplest type of cross-border project to implement and mobilizes private sector financing. Several such examples exist in ASEAN already. However, these are not grid-to-grid connections and do not enable MPT market development on their own.

Utility-financed grid-to-grid projects require lengthy processes but the approach to financing is relatively simple. However, it may be challenging for utilities to raise the necessary capital on their balance sheets. Donors have also shown reluctance to providing support for pure utility-financed projects.

In any case, it is unlikely donors have the resources to support even a substantial fraction of the priority cross-border transmission projects that have been identified in ASEAN without mobilizing private capital. A significant barrier for many donors, especially multilateral development banks (MDBs), is their restrictive green taxonomies covering investments in grid-to-grid transmission projects, as discussed later in this Policy Brief.

Privately financed cross-border merchant transmission projects are extremely challenging, and rare. A “merchant” project generates a significant portion of its revenues directly from wholesale power markets rather than through long-term contracts.

While merchant transmission projects generally do involve anchor transmission contracts, project viability depends upon anticipated additional transmission fee revenues from other users or monetization by the transmission line owner of energy price differences in power markets at either end of the line. This approach is only viable in established multilateral power markets, making it infeasible for the near future in ASEAN.

Private financing structures tend to be inherently more complex relative to utility-finance structures, even for non-merchant projects. The figure below shows two types of non-merchant private finance structures and outlines the challenges with each, together with a utility-financed structure for comparison. A discussion of these options is provided after the figure.

Figure 3. Potential Financing Structures for Grid-to-Grid Projects in ASEAN

	Utility Financing (separately)	Bilateral PPP – Private Financing	Multilateral PPP – Private Financing
Structure	Each utility finances its line up to the border	Both utilities award concession to a PPP entity	PPP concession for regional common use asset (e.g., Thailand-Malaysia interconnector for Singapore to import hydro from Lao PDR)
Revenue Type	Multiple potential revenue streams (exports, wheeling charges, domestic retail, etc.)	Availability based fixed capacity payments from the utilities	Availability based fixed capacity payments from a market operator or the utilities
Financing Approach	Utility balance sheet financing (corporate bonds, green loans, on-lending from MDBs)	Project-financed debt and equity	Project-financed debt and equity
Capital Raise Challenges	Ability of utilities to raise capital, limited appetite at MDBs	Strength of agreements (inter-governmental, inter-utility, guarantees)	Strength of multilateral and common market agreements
APG Relevance	Doable. Supports grid-to-grid ties and MPT.	Potentially viable in certain interfaces (e.g., Indonesia – Malaysia).	Not viable currently in ASEAN. Need credible multilateral markets and regional institutions.

Source: Delphos

The utility-financed approach may involve private sector participation in specific circumstances, if the utility is able to issue corporate bonds or secure green infrastructure loans. Donors, particularly MDBs, may be able to facilitate such approaches by providing guarantees. Otherwise, this approach would entail on-lending for the project by MDBs such as the World Bank or Asian Development Bank to state-owned utilities via their governments

A bilateral PPP approach would allow the project to be implemented through project-financed debt and equity, provided the necessary agreements and commercial arrangements are robust and bankable. This approach might also entail participation by bilateral or multilateral development finance institutions (DFIs) in the financing arrangements,

in the form of a concessional debt tranche and potentially credit enhancements, but the financing would be raised by a private entity. This approach may be viable on interfaces with financially healthy utilities and governments on both ends. A multilateral PPP approach for a common-use asset could be used for projects whose main benefits extend to other countries besides those physically hosting the assets. Common-use transmission assets are a feature of regional power markets spanning multiple utility service areas and jurisdictions. Common-use transmission assets have been financed by MDBs during implementation of at least two MPT markets, the Southern African Power Pool (SAPP) and the Central American Power Market, known as SIEPAC.

Challenges for Cross-border Grid-to-Grid Transmission Financing

Financing of cross-border transmission projects faces three key obstacles, discussed below.

Key Obstacle # 1: National laws and regulations in some AMS make it difficult to achieve regulatory approval for utilities to invest in cross-border grid-to-grid facilities because standard technical-economic project assessment frameworks require documentation of clear benefit to electricity ratepayers when compared to domestic projects (e.g., new generation and/or transmission), whereas some of the value of the projects themselves may be conditional on the grid operating approach of the utility on the other side of the interface. Thus, harnessing political support for a project, while helpful, may be insufficient for a utility to achieve regulatory investment approval. An assessment of national regulations in this respect is recommended that would identify specific changes to facilitate utility investment in cross-border transmission projects.

Key Obstacle # 2: A significant barrier for many donors and MDBs is their restrictive green taxonomies covering investments in transmission projects. A green taxonomy (sometimes referred to as a “sustainability taxonomy”) is a set of criteria used to classify activities or investments based on their contribution to environmental objectives. Green taxonomies are useful to help prioritize capital deployment towards climate-friendly and sustainable projects. Many MDBs and other donors have their own green taxonomies, which are largely shaped by international best practices and the requirements of major shareholders. Currently, most MDBs’ green taxonomies involve stringent criteria that restrict which investments could qualify as green; these criteria are particularly challenging for many cross-border grid-to-grid transmission projects to meet. Hence, many MDBs and other likely donors find it challenging to obtain shareholder approval for financing cross-border grid-to-grid transmission projects, even if such projects would promote greater penetration of renewable energy resources.

In ASEAN, the ASEAN Taxonomy for Sustainable Finance developed by the ASEAN Taxonomy Board (ATB) fosters adoption of sustainable finance practices by AMS and caters to the needs of different ASEAN economies and financial systems [1]. The taxonomy developed by the ATB is robust and appropriate for economic activity carried out and financed by ASEAN entities. However, MDBs and DFIs are restricted from following the ATB’s taxonomy even for financing critical projects in ASEAN due to their formal or informal practices. In fact, the appendix on stakeholder consultations in the ATB’s taxonomy document notes that “international investors also expressed a wish to see the alignment of the ASEAN Taxonomy with international standards to make green investment easier in ASEAN.”

The “international standards” referenced is the EU Taxonomy Regulation, which is regarded internationally as the standard for sustainable finance taxonomy, and which influences the financing policies of the major DFIs able to finance cross-border transmission infrastructure. For instance, the World Bank Group aligns its financing policies with global best practices in sustainable finance, which includes elements of the EU’s green taxonomy. MDBs such as the World Bank and Asian Development Bank (ADB) have stated that the green taxonomies currently followed by their respective organisations are likely to create bottlenecks in their support in financing for cross-border transmission in ASEAN.

The EU Taxonomy Regulation is particularly restrictive for cross-border grid-to-grid projects. According to the EU Green Classification System, an investment would have to make a substantial positive contribution to at least one of six objectives: (i) climate change mitigation, (ii) climate change adaptation, (iii) sustainable use and protection of water and marine resources, (iv) transition to a circular economy, (v) pollution prevention and control, and (vi) protection and restoration of biodiversity and ecosystems [2]. Furthermore, any economic activity must also not do significant harm to any of the other five objectives. These criteria, while well-intentioned, are extremely challenging to meet for cross-border grid-to-grid transmission projects due to the nature of electric grid operations and markets.

World Bank Policy Paper in Addressing Bottleneck for Green Transmission Financing

The World Bank argues that transmission upgrades, expansions and modernization projects should be considered “green” as they are essential components of decarbonization plans, especially in the developing world where transmission networks tend to be owned by financially weak state-owned entities[3]. The World Bank’s policy research working paper on the topic states:

To assess if grid investments ‘should’ or ‘to what extent’ be attributable to Climate Finance (concessional type as such GCF, IDA PSW etc.), several criteria have been put forward in practice. These include the EU Taxonomy developed by the European Commission and the Common Principles approach developed by MDBs and DFIs. The EU considers transmission and network to be green only if two-thirds of the newly connected generation capacity has CO₂ emissions intensity below 100g CO₂e/kwh or if the average grid emissions factor is below 100g CO₂e/kwh over a rolling five-year average period (Pye, 2021). This is a somewhat restrictive, narrow and myopic view and if a more forward-looking view on transmission and critical scale-efficient transmission projects cannot be inculcated, energy transition will almost inevitably get stuck mid-way. Common Principles on the other hand uses a non-binary forward looking approach where it gives partial climate credit to grid investment based on the share of the very low carbon electricity in the grid over a time horizon such as 10 years (Pye, 2021) unless the grid lines are solely dedicated for evacuating very low carbon electricity generation in which case the total investment is fully attributable to climate finance.

Nonetheless based on a recent analysis presented in CoP26, it is estimated that less than 40% of the grid investments needed in EMDEs by 2030 would be climate finance attributable under the current eligibility criteria in use.

However, despite the position of the World Bank’s energy sector technical teams, there are clearly constraints on the World Bank’s ability to support transmission projects through concessional pools of capital designated for sustainable infrastructure due to the restrictive nature of their green taxonomy.

It is noted that the green taxonomy constraint is highly likely to apply not just for support of MDBs for projects through grants, loans, and other means, but also to investment instruments like Infrastructure Investment Trusts or Sustainable Bonds that are being adopted across different types of infrastructure. This is because approvals processes for these instruments are likely to require meeting the same green taxonomy requirements that MDBs face. Thus, engaging with MDBs to adopt a broader definition of green transmission as “green investments” is critical to allow MDBs and others to finance transmission infrastructure leveraging concessional climate finance pools of capital.

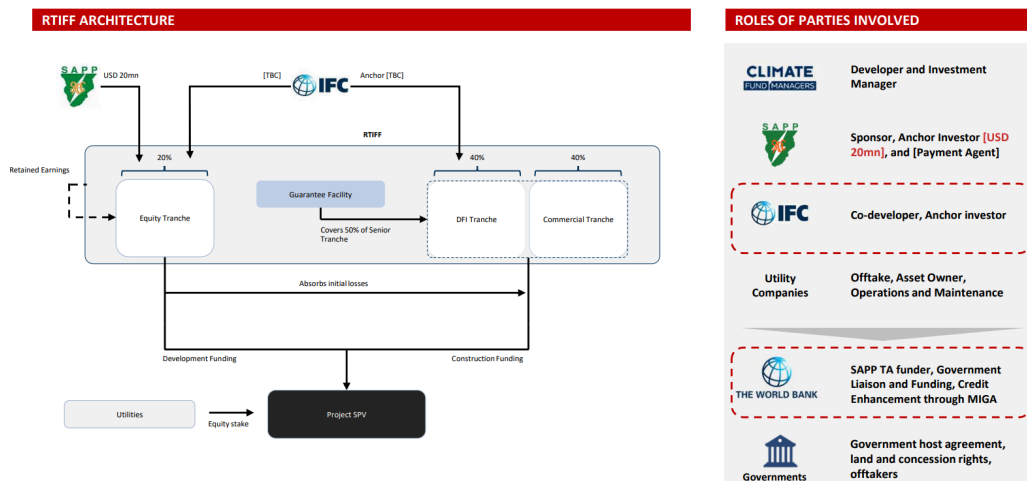
Key Obstacle # 3: Some of the projects that are most obviously supportive of MPT in ASEAN (for instance, expanding and upgrading the Thailand and Malaysia interface) may be more or equally beneficial, or may be seen as such, to other AMS in the region than to the two countries sharing the interface, although this assertion would need to be tested by in-depth regional analysis, in the absence of regional market structures in ASEAN. Other regional markets that have been examined (such as SAPP or SIEPAC) often involve a mechanism to finance projects of this sort, generally referred to as “common use” assets as previously noted, but such a mechanism does not yet exist in ASEAN. In the meantime, the perception that costs and benefits may be unbalanced impedes investment in such projects.

Potential Approaches to Cross-border Transmission Financing in ASEAN

As discussed above, removing or improving the green taxonomies used by MDBs/DFIs to assess transmission projects should be prioritised. A complementary endeavour would be creating a regional transmission investment facility, such as has been developed recently in SAPP. In 2019, SAPP commissioned consulting work to identify options for unlocking investment in cross-border transmission infrastructure through a dedicated facility known as the Regional Transmission Infrastructure Financing Facility (RTIFF).

In March 2024, SAPP, in partnership with the Southern African Development Community, announced it had appointed Climate Fund Managers to manage the RTIFF, envisioned to be a USD 1.3 billion target facility. The facility, with USD 20 million in commitments from SAPP, targets a first close of USD 500 million in 2025 to be raised from public and private sector investors locally and internationally and a final close of USD 1.3 billion by 2026. The facility, with a fund life of up to 25 years, will comprise a USD 100 million target “Development Fund” to provide concessional capital and development expertise, including support on viability studies, legal and financial structuring, planning and ESG compliance and a USD 1.2 billion target “Construction Fund” that will make direct investments through the provision of construction finance and value-add expertise for project builds [4]. Figure 4 shows which parties are involved in the RTIFF’s Development Fund and how investments might be structured. As can be seen, the Fund is expected to involve an incremental USD 40 million from development finance institutions (DFIs) including the IFC (which would act as the anchor investor), with the remaining USD 40 million coming from commercial investors. A “first loss” facility and likely other credit enhancements would be provided through World Bank/MIGA. Construction financing would include investments through the Construction Fund.

Figure 4. Indicative RTIFF Structure: Development Fund



Source: World Bank. “Regional Energy Transmission, Trade & Decarbonization Project - RETRADE EAST”. May 2024.

Key Takeaways for ASEAN in Addressing Cross-border Transmission Financing

The high costs and complex nature of cross-border interconnection infrastructure argue for a coherent regional approach to infrastructure planning and financing, especially in realising cross-border interconnection projects that have benefits across countries and the region as a whole. This is important in helping utilities initiating cross-border projects to secure government approval, as a first step in securing finance at a later stage. Understanding the benefits of specific interconnections, nationally and multilaterally, is therefore essential. This work could potentially be assigned as an evolving task under the current ASEAN Interconnection Masterplan Study, which serves as the technical reference in developing the APG over time, under the guidance of existing regional institutions (e.g., ACE and/or HAPUA). While some interconnection projects can be undertaken on a bilateral utility-finance basis, evidence suggests that on many occasions regional utilities do not prioritise such cross-border projects given other pressing domestic investment requirements and the above-noted regulatory approval challenges. Public-private partnership (PPP) structures for some projects could attract significant private financing, including under a regional mechanism to identify common-use projects. Coordination of investments, development of special investment facilities, and the involvement of development partners and commercial banks will be required.

To tackle the key barriers to cross-border interconnection financing, AMS might consider:


1. A coherent regional approach to infrastructure planning and financing. This would seek to add practicable financial options and solutions for individual interconnections to the extensive infrastructure planning exercises that are underway or have taken place recently.
2. Developing a common-use asset identification and financing approach for key projects that could provide the infrastructural backbone for multilateral power trade development in ASEAN.
3. Forming a regional transmission investment facility, with backing from one or more development banks, as has been seen recently in other markets, for example the Southern African Power Pool).


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