

ORIGINAL ARTICLE

Attracting private financing in cross-border infrastructure investments

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ABSTRACT

Cross-border infrastructure projects offer significant economic and social benefits for the Asia-Pacific region. If the required investment of \$8 trillion in pan-Asian connectivity was made in the region's infrastructure during 2010–2020, the total net income gains for developing Asia could reach about \$12.98 trillion (in 2008 US dollars) during 2010–2020 and beyond, of which more than \$4.43 trillion would be gained during 2010–2020 and nearly \$8.55 trillion after 2020. Indeed, infrastructure connectivity helps improve regional productivity and competitiveness by facilitating the movement of goods, services and human resources, producing economies of scale, promoting trade and foreign direct investments, creating new business opportunities, stimulating inclusive industrialization and narrowing development gaps between communities, countries or sub-regions. Unfortunately, due to limited financing, progress in the development of cross-border infrastructure in the region is low.

This paper examines the key challenges faced in financing cross-border projects and discusses the roles that different stakeholders—national governments, state-owned enterprises, private sector, regional entities, development financing institutions (DFIs), affected people and civil society organizations—can play in facilitating the development of cross-border infrastructure in the region. In particular, this paper highlights the major risks that deter private sector investments and FDIs and provides recommendations to address these risks.

Keywords: PPPs; regional cooperation; FDI; connectivity; large infrastructure; trade; DFI; joint venture; project finance; guarantees

1. Introduction

Cross-border infrastructure is defined as infrastructure that facilitates regional connectivity between two or more countries. Infrastructure comprises two dimensions: “hard” infrastructure (otherwise known as physical infrastructure) and “soft” infrastructure (also known as regulatory infrastructure) (Asian Development Bank (ADB) and United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2013). Soft infrastructure is intangible, relating to the overall business environment, management, transparency and other institutional and regulatory aspects (Portugal-Perez and Wilson, 2012). Both types of infrastructure work together to provide services or products. The effects of physical infrastructure without a supportive

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regulatory framework, or soft infrastructure upgrade without underlying physical facilities, are likely to be limited (ADB and UNESCAP, 2013). The linkages between “hard” and “soft” infrastructures are even stronger in cross-border projects. Cross-border “hard” infrastructure includes border-crossing points, railways, power transmission lines, telecommunication cables and water pipes that physically connect countries, and “soft” infrastructure includes inter-governmental institutions, policies, regulations, knowledge and capacity that facilitate the development and utilization of physical infrastructure. A well-designed cross-border infrastructure should benefit the populations of participating countries (including transit countries) and elevate the livelihoods of the affected local communities in the project area.

Regional connectivity comprises many dimensions. The ASEAN connectivity defines connectivity from three dimensions: physical connectivity (e.g., telecommunications cables, transport infrastructure), institutional connectivity (e.g., trade facilitation, investment, and services liberalization) and people-to-people connectivity (e.g., education, tourism exchange). According to the Master Plan on ASEAN Connectivity 2025, the long-term vision is to “achieve a seamlessly and comprehensively connected and integrated ASEAN that will promote competitiveness, inclusiveness and a greater sense of Community” (ASEAN, 2016, p. 7). Achieving this vision requires investments in both physical “hard” and “soft” infrastructures.

Strengthening regional connectivity through developing cross-border infrastructure network is imperative to promote inclusive and sustainable socio-economic development in the long run, according to the United Nation’s 2030 Agenda for Sustainable Development. Infrastructure connectivity can improve regional productivity and competitiveness by expanding regional production networks and facilitating the movement of goods, services and human resources, which produce economies of scale, and by promoting trade and foreign direct investments in the region, by creating new business opportunities and by stimulating inclusive industrialization in the region by offering universal access, which narrow the development gaps between communities, countries or sub-regions. A few studies based on the model simulation approach have quantified the benefits of building cross-border infrastructure. If the required investment of \$8 trillion in pan-Asian connectivity was made in the region’s infrastructure during 2010–2020, the total net income gains for developing Asia could reach about \$12.98 trillion (in 2008 US dollars) during 2010–2020 and beyond, of which more than \$4.43 trillion would be gained during 2010–2020 and nearly \$8.55 trillion after 2020 (Zhai, 2012). A study on Greater Mekong Subregion (GMS) countries estimates that cross-border transport infrastructure and trade

facilitation would generate strong gains for member countries, particularly for relatively low-income countries such as Lao People's Democratic Republic and Cambodia (Stone, Strutt and Hertel, 2012). A study on South Asia Subregional Economic Cooperation (SASEC) suggested that cross-border transport infrastructure would generate positive impacts on sub-regional GDP growth and trade, particularly for Nepal and Bangladesh (Gilbert and Banik, 2012).

Even with proven benefits from cross-border connectivity, financing remains a challenge. To begin with, national-level infrastructure investments generally take priority over cross-border infrastructure for budget apportionment. Amongst projects supported by the ADB and the World Bank loans, the number of national infrastructure projects¹ exceeds that of cross-border infrastructure projects. Bhattacharyay et al. (2012) estimated that cross-border infrastructure investment demand in the region would be about \$320 billion during 2010–2020, based on the data of 1,202 specific projects in energy, transport, trade facilitation and logistics sectors. Meeting the investment needs of cross-border infrastructure will be a great challenge.

The paper will examine challenges in financing cross-border investments and present some recommendations to mitigate such challenges. Some project examples are presented in various sectors to identify the distinctions among sectors and implications for private sector participation. The research is along the line of the following questions: What characteristics of cross-border infrastructure investments make them unique for financing, and which of the key risks faced in such projects prevent commercial financing? A set of guidelines based on trends observed in projects is presented to act as a roadmap for policymakers. These policy implications are important for all stakeholders who have a role in planning and implementing these investments.

2. Characteristics of cross-border infrastructure investments

Cross-border and national projects have an interlinked but complex relationship. While the benefits of a regional approach to share benefits are straightforward, the level of planning and preparation needed for a multi-country project is not. Governments constantly face the dilemma of whether to channel resources to national or cross-border development programs due to tradeoffs, especially when a project is dependent on both to reach a successful outcome.

2.1. Large capital needs

Compared with national infrastructure, cross-border infrastructure projects are usually larger in scale, thus requiring large upfront capital investments. For example, the Trans-Anatolian Natural Gas Pipeline Project cost a total of US\$8.6 billion and the 1075MW Nam Theun 2 Hydropower project cost \$1.4 billion. It is unlikely that many national projects are up to this scale in costs. The financing gap is further aggravated by competing demands for investments for national infrastructure projects (which are normally of a higher priority to governments). This is particularly an issue for physical cross-border infrastructure, which is often capital-intensive and usually financed by governments, even though bilateral/multilateral development agencies and private investors also act as key sources of funding. On the other hand, even though soft cross-border infrastructure is less capital-intensive, it requires significant inter-governmental negotiation and

1. More infrastructure project information can be found from the following links: <https://www.adb.org/projects> and <http://projects.worldbank.org>.

cooperation amongst governments of affected countries or bilateral/multilateral development banks and institutions, which typically undertake the development costs of soft-border infrastructure.

2.2. Long maturation cycle

Cross-border infrastructure projects have long-term horizons, especially when coordination between participating countries is difficult or when the projects have to undergo multiple political cycles. The implementation process is also time-consuming given the large scale of cross-border infrastructure. The planning and development of cross-border projects can take a long time and incur huge costs, which are undertaken mainly by the public sector and taxpayers, regardless of whether these projects eventually materialize. For instance, the Turkmenistan-Afghanistan-Pakistan-India (TAPI) natural gas pipeline project was idealized in the 1990s, but project construction only started in 2015 due to a long negotiation process.

2.3. Insufficient rationale for a cross-border project

Economic and commercial viability of national-level projects is generally more meticulous than the justification for cross-border projects. The main reason is that it is easier for authorities to quantify the viability of national projects than cross-border projects, as it is easier to determine the project scope and the benefits and service levels of national projects. For instance, it is easy to conduct revenue/costs projections of a traditional project due to the availability of information about user demand at the origin and the destination. However, it is more difficult to estimate the benefits of a cross-border project. This has led to cross-border investment analysis being done based on national-level benchmarks and costs, which is detrimental, as the benefits to all countries involved may be undermined. Economic viability also depends on the type of infrastructure sector. In the information and communication technology (ICT) sector or the electricity generation sector, it is feasible to recover costs through user charges, as telecommunications and electricity are primarily consumed by specific clients, e.g., a transmission line with a take-or-pay power purchase agreement (PPA). However, in highway projects or water and sanitation projects, infrastructure is a public good with high positive externality (e.g., poverty alleviation, health security), where the social benefits may not benefit transport users or water users directly nor contribute to private returns of investors.

2.4. Political considerations drive economic incentives

Commercial arrangements between governments are often dictated by political rather than economic considerations. This could complicate consensus-making, resulting in cost delay and sub-optimal decisions. Often, there is no regional ministry managing such multi-dimensional projects. For instance, the Central Asia Power System (CAPS), a regional electricity transmission network whose operation today is coordinated among Uzbekistan, Kazakhstan, Kyrgyzstan and Tajikistan, has been experiencing a progressive decline in power exchange in recent decades.² Nevertheless, the signing of a power trade agreement to restart the electricity trade between Tajikistan and Uzbekistan in 2018 signals a step forward towards a renewed regional energy network. In contrast, the Electricity Transmission and Trade Project for Central Asia and South Asia (CASA-1000) between Pakistan and Afghanistan in South Asia and Tajikistan and Kyrgyzstan in Central Asia has been successful. The project is heavily supported by development financial institutions (DFIs) and has attracted private sector investments. This underscores the importance of putting project analysis

2. <https://www.adb.org/news/adb-grant-help-tajikistan-reconnect-central-asian-power-system>.

in a proper institutional and political economy context and sequencing appropriate forms of interventions in stages.

2.5. Long-term foreign-currency-denominated liabilities

Capital intensity, as well as long pay-off periods, implies that cross-border projects involve high sunk costs, large direct and contingent liabilities from the take-or-pay power purchase agreement, guarantees on foreign exchange convertibility & transferability and early termination payments. These are generally contracted in foreign currency, lending susceptibility to currency mismatches. If the demand forecast is not robust enough, further revenue-cost currency mismatches will occur. For example, long-term guaranteed indexed off-take agreements covering extended maturities were necessary to make the Nam Theun 2 Hydropower project financially viable. Guarantees from the Multilateral Investment Guarantee Agency (MIGA), the International Development Association (IDA) and the ADB were very important for mitigating the project's risk profile, providing the needed assurance for investors to go ahead with the deal (MIGA, 2006). The project was covered by an IDA partial risk guarantee (PRG) with a 16.5-year maturity term.³ For the Trans-Anatolia Natural Gas Pipeline Project, the World Bank provides \$400 million for Southern Gas Corridor Closed Joint Stock Company (Azerbaijan) with a 30-year maturity term and 5-year grace term and US\$400 million for Boru Hatları İle Petrol Taşıma Anonim Şirketi (Turkey) with a 24-year maturity term and a 5-year grace term.⁴

2.6. Variance by sector in cross-border projects

This subsection further explores cross-border characteristics by sector based on examples of ongoing arrangements in current projects. As the ADB and the World Bank⁵ are the most active in regional cross-border projects, this subsection reviews literature and project data from these two institutions.

2.6.1 Energy

In the energy sector, physical facilities of cross-border infrastructure include power stations/plants, hydropower dams, electricity grids, transmission lines, converter stations and gas/oil pipelines. This physical infrastructure contributes to the energy/electricity trade between countries: electricity is generated in one country and then transmitted to another. In this seller/buyer arrangement, the benefits accruing to both countries are considered cross-border benefits as they arise as a result of cross-border transmission. For the selling country, benefits include additional sales revenue for the operating entity and additional tax revenues for the government. For the purchasing country, benefits are derived from additional consumer surplus from receiving lower-cost power.

In the Nam Theun 2 Hydropower project, where the electricity produced in Lao People's Democratic Republic is sold to Thailand (1000 MW), Lao PDR will earn \$1.9 billion over the 25-

3. Information can be found at <http://documents.worldbank.org/curated/en/941381468277467250/pdf/359040LAOp07641Theun21Note01PUBLIC1.pdf>.

4. Information can be found at <http://www.worldbank.org/en/news/loans-credits/2016/12/20/trans-anatolian-natural-gas-pipeline-project-tanap>.

5. More infrastructure project information can be found from the following links: <https://www.adb.org/projects> and <http://projects.worldbank.org>.

year operation period (Verougstraete, 2018). CASA-1000 enables the Central Asian countries of Tajikistan and Kyrgyz Republic to sell hydroelectricity to Afghanistan and Pakistan, which are electricity-deficient countries. The project comprises three components: 1) physical transmission infrastructure (e.g., transmission lines, converter stations) connecting the four countries, 2) technical assistance and project implementation support for enhancing technical, contract and safeguards management and 3) community-support programs during the construction period to share the benefits of the project with communities living along the CASA-1000 corridor. To advance project implementation, the participating countries established two institutions, the Inter-Governmental Council and the Joint Working Group, as platforms for progress-tracking and decision-making. Building a conducive political and regulatory environment is essential for the successful implementation of these projects.

As evidenced by these projects, “soft” infrastructure needs to be built together with “hard” infrastructure. The implementation of soft infrastructure requires certain institutional arrangements. For instance, the GMS Inter-Governmental Agreement (IGA) on regional power trade, signed by all GMS countries in 2002 in order to promote power trade and harmonize the development of power systems among member countries (ADB, 2012a), promoted the construction of cross-border transmission lines. Ten major high-voltage transmission lines have since been constructed and operated.

The ASEAN MOU on Trans-ASEAN Gas Pipeline (TAGP), which provides a framework for member countries to work together towards the TAGP Project and help ensure energy security and accessibility in the region (ASEAN, 2002a), requests member countries to conduct individual or joint studies on relevant issues including financing, technical specifications, access and use, security, safety, health and environmental impacts, transit rights, and taxation and tariff to encourage the production and distribution of natural gas across countries. To date, the project has completed 13 bilateral gas pipeline interconnections in ASEAN (Zamora, 2015).

These examples signify the need to link the sequencing of building an enabling environment and setting up institutional arrangements with project identification and preparation and risk mitigation. A regional power trade agreement is a start, but not enough. Energy projects face many risks, necessitating a comprehensive approach, especially for environment- and climate-related technical planning and design accommodations, regulatory on tariffs, and compliance with DFIs’ procedures. These agreements need to be followed by detailed feasibility studies to establish the needs of, and the benefits to, both countries and appropriate arrangements to implement the project. When done well, this sequencing can lead to foreign direct investments (FDIs), as in Nam Theun 2, and attract private sector participation, as in CASA-1000.

2.6.2 Transport

In the transport sector, physical facilities of the cross-border transport infrastructure include highways, railways, roads, airports or seaports, bridges and tunnels, and border-crossing facilities. The development of these infrastructures can ease the flows of goods, services and human resources crossing borders. In highway or railway cross-border links, benefits are derived by facilitating trade, movements, tourism and general connectivity. For example, the Phnom Penh–Ho Chi Minh City highway induced significant ribbon development in Cambodia, spurring the development of residences, buildings, hotels, shops and tourism and the establishment of new industrial areas,

offering job opportunities in Viet Nam (ADB, 2007). An emerging characteristic in the sector is that more and more transport projects are built as gateways or corridors with multiple interconnecting modes, i.e., highways with border posts and logistics centers, railway links, fiber-optics tunnels, transmission lines, etc. The Central Asia Regional Economic Cooperation (CAREC) envisages many crossings, such as the Nizhny Pyanz border between Tajikistan and Afghanistan, to be such a gateway. Airports and seaports are normally national-level infrastructures but they also bear a cross-border nature in terms of linking different countries.

However, soft infrastructure addressing connectivity and trade facilitation is essential to make the most out of physical transport infrastructure. For instance, the ADB's SASEC Trade Facilitation Program helped some SASEC countries boost cross-border trade by reducing institutional, administrative and technical barriers to trade (ADB, 2017a), which was crucial for identifying new opportunities for physical infrastructure projects. CAREC's Transport and Trade Facilitation Strategy (TTFS), endorsed by CAREC in 2007, aims to promote improvement in regional cooperation through upgrading, constructing and rehabilitating the physical infrastructure along the six CAREC corridors and through harmonizing the regulations of cross-border transport and trade (Zamora, 2015). It was estimated that TTFS comprises about 80 completed and ongoing projects, which cost about \$16 billion in total, with approximately 50 projects focusing on roads and railways along the economic corridors and 30 focusing on border-crossing points, logistics centers, airports and ports (Zamora, 2015).

In GMS, the Cross-Border Transport Agreement (CBTA) was established to facilitate the movement of goods and people via cross-border transport infrastructure; harmonize relevant regulations, procedures and requirements; and promote multimodal transport (ADB, 2011a). However, the implementation of the CBTA has been more difficult and slower than expected due to multiple issues, such as a lack of technical, legal, institutional and physical capacity and coordination (ADB, 2018). Sustained and concerted efforts need to be undertaken to accelerate the progress and effectiveness of the CBTA and to realize the full benefits of physical infrastructure (ADB, 2018).

The Pacific Aviation Safety Office (PASO) is an inter-governmental civil aviation authority responsible for aviation safety and security of ten island states of the Pacific Ocean. Headquartered in Vanuatu, it is the first regional organization that Pacific developing member countries have been willing to set up on a self-financing basis without donor grants. It is likely to serve as a model for future inter-governmental regional cooperation, particularly in transport and regulation on infrastructure and services⁶.

The private sector is more inclined to participate in cross-border transport projects where services can be ring-fenced with the certainty of an off-take agreement. Private concessions of freight railway services, container terminals and ports, logistics center operations and airports are common in the sector. Transport projects are more vulnerable to demand risks, where users are paying tolls, and social risks, such as involuntary resettlement due to the right of way. On the other hand, the sector also has a larger potential for FDIs; for example, Amazon has many logistics hubs and warehouses in China and India. In 2016, in Timor-Leste, the greenfield Tibar Bay Port⁷ was granted to Bolloré

6. <https://paso.aero/>

7. <https://www.mof.gov.tl/press-release-tibar-bay-port-ppp-project/?lang=en>

Group (private partner) with a 30-year concession to design, build, co-finance, operate and transfer (DBFOT). The project was facilitated by International Financial Corporation (IFC). This was the first time a government introduced global environmental and social standards for infrastructure and attracted a world-class investor to the country. Bolloré will invest \$150 million in the first stage of construction, with the government contributing \$129 million.

2.6.3 *ICT*

In the ICT sector, physical cross-border infrastructure includes submarine cables, terrestrial connections and telephone lines. ICT infrastructure facilitates the flow of information, increasing the speed at which society functions and benefits. For example, the Bay of Bengal Gateway (BBG) connects Oman, India, United Arab Emirates (UAE), Sri Lanka and Malaysia through an 8,100km-long submarine cable. The project was financed by a consortium comprising Omantel (Oman), Reliance Jio Infocomm Limited (India), Etisalat (UAE), Dialog Axiata (Sri Lanka), Telekom Malaysia Berhad (TM) (Malaysia) and Vodafone Group (UK).

In this sector, soft infrastructure, i.e., technology, is the most visible in terms of access to cell phones, internet, e-tolls, smart travel, remote access to services and many more. Technology transcends borders and should speak through common standards. The UNESCAP endorsed the Master Plan for the Asia-Pacific Information Superhighway (AP-IS) and the AP-IS Regional Cooperation Framework Document in 2016 in order to build a seamless regional information and communication network. The former aims to develop a dense web of open-access ICT infrastructure to enhance regional connectivity (UNESCAP, 2016a), while the latter seeks to identify potential cooperation areas between member countries to support the implementation of the Master Plan for the AP-IS (UNESCAP, 2016b). Relevant institutional arrangements involve the Working Group on the AP-IS and an AP-IS Steering Group, which drafted the two documents. The Master Plan for the AP-IS aims 1) to develop both terrestrial cross-border broadband infrastructure and submarine-cable landing stations to realize an efficient, effective and inclusive physical network in the region, particularly enhancing internet access for landlocked countries and small island developing states and 2) to ensure service quality through enhancing internet traffic and network management and harmonizing ICT-related regulations and policy frameworks.

These inter-linkages have implications on developing both physical and soft ICT infrastructures. To address the financial demand needs of the physical ICT infrastructure, the AP-IS Regional Cooperation Framework Document promotes private sector participation, and it proposes five financing models: 1) a project-financing or special-purpose-vehicle model to engage private investors; 2) a consortium model, where private operators and groups team up into consortiums to share capital costs; 3) a build-operate-transfer model or management contract with the public sector; 4) a donor-financing model; and 5) a vendor-financing model. Key risks in the sector are political agreements and regulation on competition and pricing, authorization, universal access, radio spectrum management, legal and institutional frameworks, understanding with incumbent telecom utility or company and cybersecurity, leading to political interference.

2.6.4 *Inland water transport*

Inland waterway transport (IWT) needs physical facilities, such as ports, bridges, vessels, navigational facilities and a network of waterways linking rivers, canals, lakes and creeks. Cross-

border inland waterway transport has the benefits of increasing water transport, socio-economic development and tourism development of the riparian countries. One of the future development directions of the GMS Transport Sector Strategy 2030 is to improve inland waterway infrastructure and increase their connections with other transport infrastructures, such as road and railway infrastructures (ADB, 2018). Connecting with other transport infrastructure improves the utilization of inland waterway infrastructure in the region/sub-region. To improve the development of cross-border inland waterways on the Lancang-Mekong River, four GMS countries, which are China, Myanmar, Thailand and Lao PDR, signed the quadrilateral Agreement on Commercial Navigation on Lancang-Mekong River.⁸ A Joint Committee on Coordination of Commercial Navigation (JCCCN) on the Lancang-Mekong River was also established to facilitate the implementation of the quadrilateral agreement. The four countries have conducted several projects to improve inland waterways: 1) the maintenance and improvement of the 331km inland waterway from China–Myanmar Boundary Landmark 243 to Houaysai in Lao PDR over 2002–2004 (financed by the Chinese government); 2) the maintenance of the 70km section from Jinghong Port (China) to China–Myanmar Boundary Landmark over 2004–2007 (financed by the Chinese government); 3) the construction project of the 84km section in China from Simao Port to Jinghong Port, which commenced in 2011; and 4) the maintenance project for the 31km section from China–Myanmar Boundary Landmark 243 to China–Lao PDR–Myanmar Boundary Landmark 244, which was financed by the government of China and commenced in 2013 (JCCCN, 2015). These projects on the Lancang-Mekong River benefit these four countries by improving regional water transport, boosting economic development and strengthening people-to-people exchanges. Since the projects involve the four countries, it is imperative for them to fundraise together via their respective ways to ensure a sustainable fund-raising institution for further navigation channel improvement (JCCCN, 2015).

IWT projects are prone to both environmental and social risks; for example, river dredging requires the land adjacent to the river, which may be inhabited or used as farmland. Resettlement of local communities becomes an issue. When these risks are cross-border, the same agreement and policies on resettlement need to be followed. Hydrology, geology and water-sharing rights make these projects unpredictable. Often, IWT long-term agreements are subject to political will and expropriation. The private sector would participate in standalone services in IWT, such as roll-on/roll-off (ro-ro), freight and ship locks operations, and major ports.

2.6.5 Social sectors

In the Asia-Pacific region, there are a few health, education and tourism projects that promote regional cooperation in building soft and physical cross-border infrastructures. For instance, the ASEAN Tourism Agreement, set up during the ASEAN Summit in November 2002 in Phnom Penh, aims to enhance cooperation in facilitating travel into and within ASEAN (ASEAN, 2002b). The agreement suggests creating favorable conditions to engage both the public and private sectors in the tourism industry and for investments in tourism services and physical infrastructure. The GMS Health Security Project aims to address weaknesses in the national-level health systems of Lao PDR, Cambodia, Myanmar and Viet Nam and to improve regional cooperation and communicable

8. The agreement can be found at <https://www.jcccn.org/index.php/rule-and-regulation/15-agreement-on-commercial-navigation-on-lancang-mekong-river-among-the-governments-of-the-people-s-republic-of-china-the-lao-people-s-democratic-republic-the-union-of-myanmar-and-the-kingdom-of-thailand>.

disease control in border districts through the harmonization of standard case definitions and reporting procedures for notifiable communicable diseases. The project received grants and loans from the ADB. In the education sector, the Improving the Quality of Basic Education in the North Pacific project strengthens the capacity and quality of basic education in the North Pacific through improved teaching quality, enhanced assessment metrics and so on. The project involves no physical infrastructure and is financed by the ADB (\$13 million), the Government of Australia (\$1.8 million) and the Governments of Marshall Islands and Federated States of Micronesia.⁹

The tourism industry is generally seen as a private-sector-led industry. Most FDIs come in the form of hotel chains, restaurant businesses, food supply and logistics. Customs and immigration functions are controlled by governments and are good starting points to facilitate cross-border cooperation. The health industry could attract private investors from Indian and Chinese health management companies. The social sector could also potentially generate much scope for private investments if combined and sequenced appropriately with both hard and soft infrastructures.

3. Modalities of private sector participation in cross-border projects

Cross-border infrastructure projects are politically significant and hold a strategic position. As a result, such projects are driven by governments and state-owned entities (SOEs), especially if they are resource-based, e.g., oil, gas, hydro or inland waterways. Most projects are publicly financed, and even if there is private sector involvement, it is highly likely that the government holds a significant stake. According to the ADB classification (ADB, 2017b), public sector financing sources comprise government investments funded by tax and non-tax revenues, public borrowing via bonds and loans, and borrowing/grants from bilateral development banks, multilateral development banks (MDBs) or other international financial institutions. Private sector financing sources comprise 1) debt through commercial banks and corporate and project bonds and 2) public and private equities. There are several modalities for private sector participation:

Special-purpose vehicle (SPV): A special-purpose vehicle (SPV) is usually set up by investors for a particular project. An SPV is an entity whose sole function is to construct and operate the project. There is no separate implementation by each investor and the SPV acts as the main vehicle for the project with its own balance sheet.

Nam Theun 2 (NT2) is implemented by an SPV, Nam Theun 2 Power Company (NTPC), formed by Électricité de France (EDF), Lao Holding State Enterprise (LHSE) from Lao PDR and Electricity Generating Public Company Limited (EGCO) from Thailand. The project is developed on a build-own-operate-transfer (BOOT) basis by NTPC. NTPC is responsible for designing, constructing and operating the project for a concession period of 25 years from the commercial operation date (COD), after which it will be transferred to the Government of Lao PDR or be continued for operation and maintenance.

Tibar Bay Port is also implemented by a Project Management Unit (PMU), which serves as the SPV to oversee the day-day management of the project. Through a competitive bidding process, the concession was awarded to private operator Bolloré Logistics on a 30-year contract on a build-own-

9. Information can be found at <https://www.adb.org/projects>.

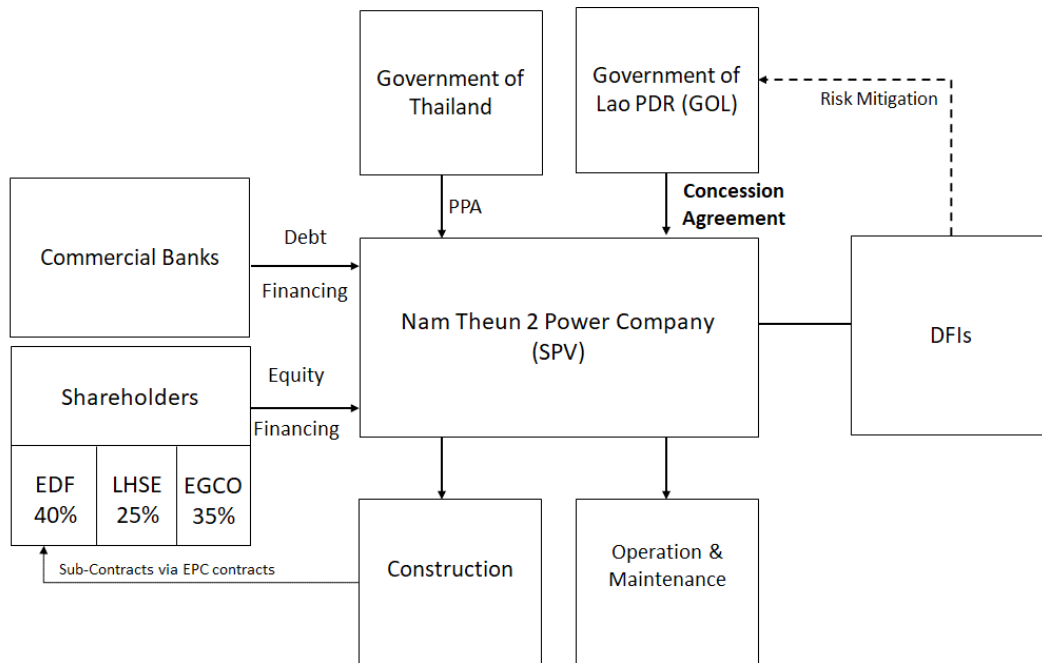


Figure 1. Nam Theun 2 contractual structure.

operate-transfer (BOOT) basis with a possibility of a 10-year extension. The PMU is responsible for supporting governmental efforts in the preparation, execution and monitoring of the project, whereas Bolloré Logistics, under the guidance of PMU, is in charge of aligning the design, financing, construction and operation of the facility with the government’s master plan.

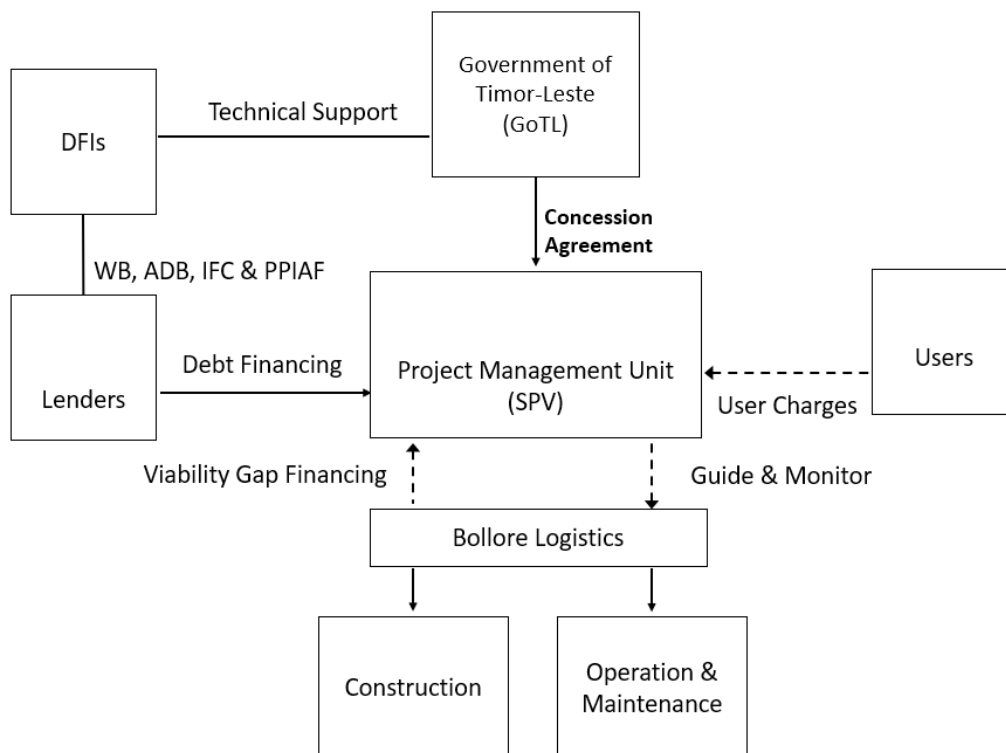


Figure 2. Tibar Bay Port contractual structure.

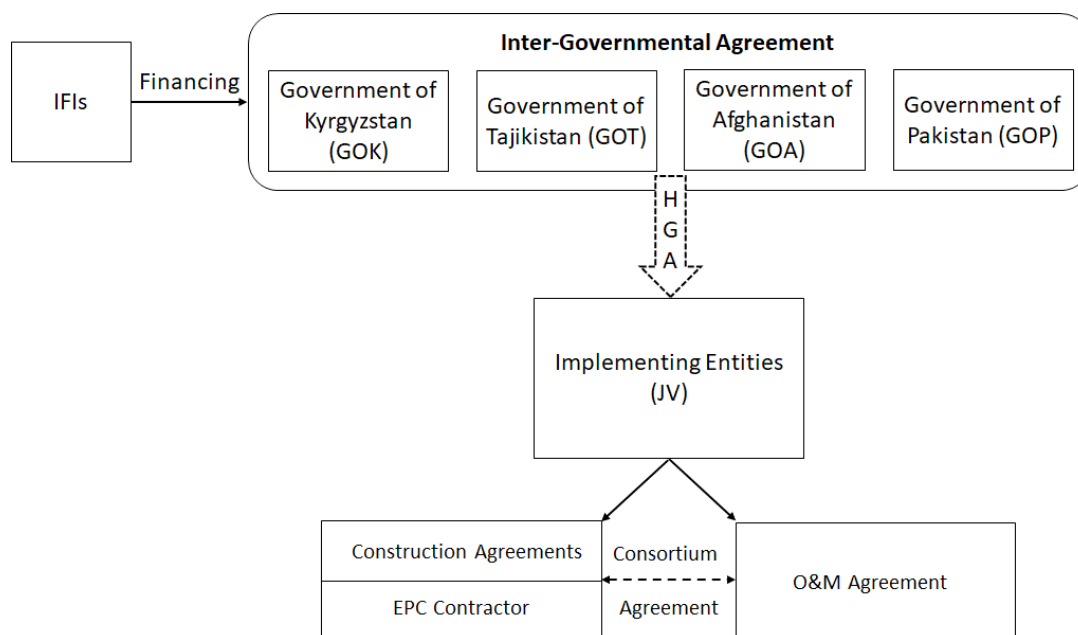


Figure 3. CASA-1000 contractual structure.

- **Joint venture (JV):** A joint venture is a business arrangement where parties come together for a specific task. In a multi-country environment, participating countries work together to implement a project with the help of state companies and relevant line ministries. CASA-1000 is a contractual joint venture where four countries are each responsible for managing their own sections of the transmission line and managing its own lending arrangements with international financial institutions (IFIs) (the project is financed entirely by IFIs/public finance). There is also private sector participation, with ABB, a Swiss company, providing construction services.
- **Direct contracting for services and products:** This approach, where a joint public company (SPV or JV) hires private companies for small contracts, e.g., managing logistics centers, suppliers of products, construction, and management of highway, is more common.

Ideally, the private sector can invest in cross-border infrastructure projects in various ways. Private investments can come from direct investments in a public SPV or FDIs. Alternatively, and more commonly, investments can come in the form of public-private partnerships (PPPs), where private companies provide a combination of design, construction, operation and maintenance expertise (Brown, 2007). Lastly, the private sector can also provide direct services as subcontractors by providing in-detail services, such as single-window technology in border-crossing points and fiber-optic technology in tunnel construction.

4. Attracting private investments in cross-border projects: Key challenges and risks

The evidence thus far suggests limited private sector participation in cross-border projects. Few projects have been able to attract private sector's interest. The successes of Nam Theun 2, CASA-

1000 and Tibar Bay Port can be attributed to the strategic planning of the overall regional power trade framework, substantial project preparation, a clear understanding of risks and mitigation measures and strong involvement of DFIs. Additionally, to mitigate potential counterparty risk and contractual breach, all these projects have strong risk-mitigation arrangements with multilateral development banks. These MDBs are also heavily involved in facilitating the soft infrastructure needed to support the governments in ensuring a proper regulatory environment and building institutional capacity. Furthermore, these governments have shown a strong commitment to mitigate long-term environmental and social risks by continuously engaging the stakeholders as part of compliance with MDBs' safeguards policies.

An optimal and well-balanced risk allocation is fundamental to the success of a PPP. A risk management plan lists all project risks that have been identified, measured and consequently allocated to one party or shared together, along with their mitigation strategy. This section elaborates on some major risks impeding private sector investments in physical cross-border infrastructure. The development of soft cross-border infrastructure is important for the development and operation of physical cross-border infrastructure. However, it is rather intangible and demands less capital, as costs are mostly borne by the public sector (e.g., in setting up institutions). Hence, the focus is on the physical cross-border infrastructure.

4.1. Complexity of cross-border projects

Cross-border infrastructure projects, particularly physical infrastructure, encounter additional complexities of transnational characteristics, which deter private investments. Not only do these projects tend to be capital-intensive, with long-term horizons and high risks, they are often highly political, involve huge transaction costs and demand additional levels of appropriate institutional arrangements. Compared with national infrastructure projects, cross-border infrastructure projects involve higher and more diverse risks, such as political risks, foreign exchange risks, inflation risks, counterparty risks and environmental and social risks. A private company would require a single counterpart for a concession agreement instead of multiple agencies. Multiple agencies mean that risks will be mitigated by different public entities, resulting in bureaucratic fatigue. Often, complete value chain analysis is not done with a comprehensive view on the linkages between cross-border investment and local investment. Both investors and lenders are reluctant to get involved and take on risks they cannot predict or manage.

4.2. Political

Compared with national infrastructure, the political risks of cross-border infrastructure projects are heightened given the involvement of multiple countries and geopolitical considerations. Considering the economic and social relevance of cross-border infrastructure, they often involve a high level of governmental regulation. Therefore, investors have concerns over political uncertainties and discrimination against foreign investors. Potential risks include multiple political cycles, socio-political situations (e.g., war and civil disturbances), leadership changes, breach of contract, default risks, unexpected government interference leading to expropriation, and integration risks due to coordination difficulties with multiple government entities. For the private sector, default risks (also known as counterparty risks) are high, as the government (or state-owned entity) may fail to perform contractual obligations, such as periodic or termination payments, agreed subsidies and minimum rate-of-return guarantees. Sometimes, public counterparties fail to implement the

input supply agreement or the off-take agreement. Political election cycles or leadership changes can result in ex-post renegotiations, as the new government leader may not follow the contracts granted by the previous government leader, which eventually distresses the project. For instance, the Kuala Lumpur–Singapore high-speed railway linking Kuala Lumpur (Malaysia) and Singapore through a 350km-long railway line was renegotiated after the Malaysia election in 2018, resulting in the postponement of the project. Oftentimes, political factors cannot be resolved, e.g., agreement on land use and allotment, and a third-party intervention is needed, such as from MDBs, and from regional institutions, such as ASEAN.

4.3. Regulatory

Regulatory risks of cross-border infrastructure are heightened due to the involvement of multiple regulatory systems. Participating firms may face regulatory restrictions in the host country, including adverse and abrupt changes of laws and regulations (e.g., environmental regulation, setting tariffs, royalty payments, tax waivers), restrictions on engineering activities, protectionism or lack of transparency in government procurement policies, land-acquisition-related risks, complicated construction legislative systems and cancellation of license and approvals. Some cross-border infrastructure, such as hydropower infrastructure, may have long-term sales contracts with a few customers (Sawant, 2010) namely Project Finance, to mitigate transaction costs arising from specific investments, the threat of opportunistic behavior and incomplete contracts. The use of project finance to mitigate underinvestment resulting from conflict between debt and equity holders within a firm is also examined. The paper examines the hypothesis that firms use the Project Finance structure when faced with a, which makes the project vulnerable to ex-post renegotiation issues. Also, as private investors and host governments diverge after the upfront investments are completed, host governments may act opportunistically by unilaterally making ex-post changes of laws and regulations which are in favor of the state (Jandhyala, 2016). Therefore, cross-border infrastructure projects must adopt appropriate dispute-settlement mechanisms. The development of soft infrastructure in the form of inter-governmental agreements or regulatory frameworks can harmonize the regulatory systems and lower regulatory risks.

4.4. Institutional coordination

Due to its complexity, the development of cross-border infrastructure puts high pressure on the governance capacity of participating countries. There is a potential risk of delay in project implementation due to the need for horizontal coordination amongst multiple government departments and vertical coordination between multiple levels of government entities. The involvement of the private sector relies on the clarity and transparency of rules, procedures and regulations. These issues are rampant in national-level projects but they are exponentiated in cross-border projects. Corruption issues or ambiguous rules in the host countries can hold back private investments in cross-border infrastructure. When a cross-border project is approved and initial investments are completed, governments' lack of procurement expertise and technical preparation, lack of transparent bidding procedures or lack of agreement on a prioritized program can impede progress. If the private sector is involved through PPP at the construction or operation stage, interference risks exist when the governments have insufficient contract management and monitoring skills. In situations where countries are not communicating with each other openly, a third party may be necessary to facilitate the process, e.g., MDBs.

4.5. Macroeconomic

Cross-border infrastructure projects face several macroeconomic risks which national infrastructure projects do not. Common risks include foreign exchange risks, inflation risks, commodity price risks, climate change risks, credit risks and demand risks. Appropriate risk management instruments, such as demand guarantees, exchange rate guarantees, commodity price-linked instruments and inflation-linked guarantees, are needed. Dominant risks differ by sector. For some cross-border infrastructure, such as transport infrastructure, demand risks can be salient. In some cross-border energy projects, investors may face price risks due to changes in the competitive energy markets. In less competitive markets, price risks may be lower. Projects are generally designed with some sort of currency indexation, especially when there is exposure to commodities price fluctuations, e.g., regional power market, oil and gas, tolls for commercial truck operators and freight fees in IWT projects. In the case of the Nam Theun 2 project, the foreign exchange risk was mitigated through structuring the currency profile of the financing to match that of project costs and revenues (pre- and post-project construction, respectively).¹⁰

4.6. Environmental and social

The environmental and social risks in some cross-border infrastructure projects are considerable. For instance, cross-border oil/gas pipeline projects or electricity transmission line projects face high environmental and social risks, as they usually cross diverse land uses and cover a long distance. For instance, the environmental and social risks of the CASA-1000 project was rated as “high” by the World Bank, with substantial social risks in Afghanistan.¹¹ The overall risks rely on the country with the least favorable contexts (Verougstraete, 2018), which means the project should consider the strictest environmental regulations and the worst social risks in the participating countries. Also, cross-border projects cannot be beneficial to the origin and destination countries only—there must be benefit-sharing with transit countries or the communities, which is often a challenge. In the case of the CASA-1000 project, the community-support programs intend to share the project benefits with the communities living along the way, with the aim of increasing local supports and decreasing the social risks. Cross-border hydropower projects may face high resettlement risks in the host country, incurring high resettlement costs or significant project delays. Cross-border projects also face cultural impediments such as language barriers, differences in labor productivity and differences in management philosophy, which may slow down the project progress in some cases (Chua, Wang and Tan, 2003).

4.7. Technical standards

Infrastructure needs to be built with one standard across borders. Furthermore, linked national infrastructure may or may not be built with the same technical standards. This becomes an issue for a private company which seeks one concession agreement irrespective of country context. For example, in an IWT project, the depth of dredging needs to be agreed upon by all countries, and consequently the types of ship locks technology (both at transnational and national levels) for river

10. Information can be found at

<https://www.github.org/blog/financing-cross-border-infrastructure-projects-currency-risk/>.

11. Information can be found at <http://documents.worldbank.org/curated/en/565831545491068302/pdf/Disclosable-Version-of-the-ISR-Central-Asia-South-Asia-Electricity-Transmission-and-Trade-Project-CASA-1000-P145054-Sequence-No-09.pdf>.

navigation, types of freight boats, customs clearance requirements, procedures for customs officials on both sides, and border security all need to be aligned. The variations in design specifications, construction codes or material standards can become a crucial problem, especially if the project is to be competitively bid. Most illicit practices occur during procurement and consequently in engineering contracts. A large-scale investment also requires ample availability of contractors, suppliers and manufacturers in the market for a full competition on who can comply with such demands.

4.8. Commercial

Raising commercial financing for a cross-border project is perhaps the most difficult. For governments, this relates to how they can make a case for the private sector to ensure “bankability”. Lenders need to conduct due diligence on all parties: 1) whether the private contractors are worthy and will perform according to the contract to repay the debt; 2) since the government will participate as an investor in the SPV, the lender will be cautious on how the government will fund its equity investment without having an adverse impact on the country’s fiscal balance; and 3) whether profits can be converted to a hard currency and transferred to an escrow account. Most projects with private investments are done on a corporate finance basis, where companies put their own credit risk to raise commercial loans, unlike a project financing, where a suitable collateral is given to the lenders by the SPV in return for a long-term loan. Generally, this collateral is the periodic payment or revenue from the off-take or concession agreement. In a cross-border project, a concession agreement as a collateral is uncertain due to multi-party credit risk in addition to the risks mentioned above. Therefore, having DFIs and private insurance companies in the mix can improve financial viability (e.g., guarantees, subordinated debt, equity insurance, liquidity facilities).

4.9. Optimal risk allocation

Key risks must be allocated between private and public sectors throughout various stages of the project. Efficient allocation of risk reduces uncertainties over the distribution of obligations when things do not work out as planned. A risk allocation matrix helps to identify accurate risk-mitigation measures to adopt. There is a strong correlation between proper risk identification and management and successful results of project outcomes. The risk matrix for NT2 shows that the role of the government remains strong. A private-sector-led project will require an effective public sector capacity to oversee, monitor, regulate and undertake its obligations for the whole contract. Often, procuring authorities try to manage the contract without considering the special skills needed for long-term project management. A Contract Management Authority must be established during tender at the earliest, or at commercial close at the latest.

In the case of NT2, the project’s risk allocation was majorly shared by the Lao PDR government, private participants and two multilateral guarantees by the IDA and the MIGA. The project follows the risk allocation form of the traditional BOOT model, where most of the key risks lie with the private participants from the pre-construction phase to the operation phase. The structure of the project allows risk allocation to various parties who are responsible for specific project activities. For example, as head contractor, EDF has full responsibility for the overall project management and delivery of the completed project, while the construction risk falls on subcontractors to whom EDF subcontracted the construction works through five principal subcontracts (three for civil works and two for electromechanical packages). Revenue risk was covered by the Thai utility, Electricity

Table 1. Key risk allocation of Nam Theun 2¹²

Allocation of Key Risks					
Phase	Risks/Obligation	Project Sponsors and Private Participants ¹³	Lao PDR	IDA Partial Risk Guarantee (PRG)	MIGA Guarantee
Pre-Construction	Project design	•			
	Pre-construction works	•			
	Financing	•			
Construction	Cost overruns	•			
	Construction delays ¹⁴	•			
Operation	Operation and maintenance	•			
	Tariffs	•			
	Transmission	•			
	Hydrological	•			
Concession Term	Thai Baht devaluation	•			
	Lao PDR political force majeure ¹⁵	•	•	•	•
	Changes in Lao PDR laws		•	•	•
	Natural force majeure ¹⁶	•	•	•	•
	Lao PDR – expropriation		•	•	•
	Thailand political force majeure	•			•
	Thailand – expropriation	•			•
	Thailand/Lao PDR transfer restrictions and inconvertibility			•	

12. Based on <http://documents.worldbank.org/curated/en/250731468277466031/pdf/317640corr.pdf>.

13. Including EGAT (as an off-taker); Engineering, Procurement and Construction (EPC) contractors; project lenders; and GOLthe Government of Laos, (as a shareholder in NTPC). Some risks may not affect all of the listed parties but only some.

14. Responsibility for the timely completion of the transmission line in Thailand rests with EGAT.

15. Political force majeure: political violence, war, national and regional strikes, coups d'état, etc.

16. Natural force majeure: acts of God, earthquakes, fires, typhoons, etc.

Generating Authority of Thailand (EGAT), as a take-or-pay power purchase agreement with NTPC.

5. Recommendations on how to undertake cross-border projects with private sector participation

5.1. Lessons learned from international examples on how to engage the private sector

5.1.1 Prioritize projects which are commercially viable for private sector participation

Priority sub-sectors, e.g., power generation, airports, logistics centers, fiber link cables and freight corridors, are where the private sector has a clear market advantage in technical capacity and risk management. Public financing is more appropriate for some sectors—highways with limited commercial traffic, social projects such as health, and projects which involve security—that are politically significant and susceptible to political interference.

5.1.2 Adoption of common policy framework strengthens stakeholder commitment

A lesson learned from the Bay of Bengal Gateway (BBG) is that common policy framework and standards improve common understanding in the market and encourage the establishment of regional infrastructures along these standards. The emerging issue in the project is the lack of peering agreements¹⁷ between carriers, which may add latency, causing network delays. When there is a lack of peering agreements between carriers from different countries, data traffic delivered by the submarine cable, such as the BBG, will be delayed, as it may go through a number of local nodes before reaching the other operator's network (Houpis et al., 2016). This process not only adds extra latency to traffic transmission but also discourages different parties from using newly established cables. Such behavior hinders competition in the network market and its benefits of higher coverage, higher take-up and greater innovation.

5.1.3 Supporting preparation of regional projects as a regional initiative is a more efficient and effective choice

Preparation activities for projects can be more efficiently implemented at the regional level than pursuing with scarcely available skills at the national level. The preparation at the regional level enables the building and dissemination of best practices, allowing each stakeholder to leverage the experiences of successful projects in the region. A regional approach better suits the implementation of cross-border projects especially when these involve 1) management of shared resources (such as river basins bordered by multiple countries), 2) the need for harmonization of policies/regulations among multiple countries (such as for interconnection of countries' power systems within a power pool) or 3) development objectives shared by multiple countries.¹⁸

5.1.4 Early engagement with all stakeholders is necessary

This holds for all parties: the public sector, the communities and the private sector. Early

17. Techopedia.com defines a peering agreement as an agreement between two network administrators to share data routing responsibilities across multiple networks. Peering is a mainstay of the global Internet and large data mobility systems.

18. Information available at <http://documents.worldbank.org/curated/en/988471468002999129/pdf/860760PAD0P126010Box385343B000UO090.pdf>.

engagement results in the sequencing of soft infrastructure with hard infrastructure, which could contribute to long-run success. Often, decisions are taken by governments without early consultations and site visits. If stakeholders are engaged early enough, the project design can accommodate the needs of each stakeholder. Similarly, if the plan is to attract the private sector, early market consultations will help in assessing whether the market possesses ample capacity. Procuring authorities should consider whether the private sector's interest is compromised by having the official development assistance (ODA), as it is generally cheaper but may crowd out much-needed FDIs. Perhaps ODA could be used as an incentive, e.g., guarantees instead of loans. The presence of the private sector should add to the project's value and not just the private company's profits. A more inclusive process results in an increased emphasis on impact investment, transparency and full disclosure in project preparation, procurement and implementation outcomes.

5.1.5 Building a consensus for equal distribution of benefits is important for successful implementation of projects

In cross-border projects which distinguish buyers and sellers, benefits arise from economies of scale, additional producer revenue and consumer surplus from low cost. The relationship is ideal as the benefits of sellers and buyers are complementary. For example, NT2 benefits Lao PDR economically by generating a revenue of \$1.9 billion, while Thailand enjoys a stable supply of electricity for over 25 years. Similarly, in the case of CASA-1000, energy-producing Central Asian countries of Tajikistan and Kyrgyz Republic sell their hydroelectricity to two energy-deficient countries in South Asia, Afghanistan and Pakistan. To protect the benefits and ensure fair treatment of the power exchange, especially when there are multiple buyers and sellers, harmonized policy guidelines and a common standard on the contractual agreement should be adopted for successful project implementation. Notable endeavors to adopt best practices for harmonized frameworks can be observed from the example of Southern African Power Pool (SAPP).

Box 1. Regional standards and best practices adopted in Africa: Southern African Development Community's (SADC) Southern African Power Pool (SAPP)

The ZIZABONA (Zimbabwe-Zambia-Botswana-Namibia) project of Southern African Power Pool (SAPP) is a transmission interconnector project, linking the power grids of four countries to each other. This interconnector, was completed and operational in 2019, is a joint development effort between four regional power utilities, namely NamPower of Namibia, ZESA of Zimbabwe, BPC of Botswana and ZESCO of Zambia.

It will promote and boost energy trading between all four countries and the region at large. The project follows the guiding frameworks established by SAPP as the standard—the Inter-Governmental Memorandum of Understanding (IGMOU) and the Inter-Utility Memorandum of Understanding (IUMOU)—which deals with the issue of ownership and rights among the participants. The following national-level guidelines, especially the IGMOU, outline governmental obligations that minimize country or political risk

by giving assurances through governmental supports upon the signature. Moreover, it facilitates the creation of the SPV, which helps to to minimize the completion risk of the precommercial operation date.

The guiding contractual frameworks to tie the responsibilities of the private sector are 1) the Wheeling Agreement (WA), which formalized the relationship between the two ZIZABONA project off-takers and the SPV, and 2) the Connection Agreement (CA), which formalize the commercial and technical integration relationship between the ZIZABONA project companies and the regional transmission networks of ZECO, ZESA and NamPower.

SAPP is in a unique position to facilitate regional energy projects. Its operations benefit from established procedures and criteria already agreed upon under the SADC Treaty and the related protocols. SAPP's strong day-to-day relationship with all the utilities in the region suggests more likely ownership at the national level, where projects will be implemented ultimately. Moreover, SAPP has strong convening authority among its members and can be envisaged to play a key catalytic role in bringing the regional stakeholders together. It has an established role in supporting the development of regional projects and especially the interconnections between its members' respective networks, being heavily involved in the regional power planning.

Source: ZIZABONA Project Implementation Manual (2012)

5.1.6 Independent regional institutions and standardized frameworks can speed up project preparation

For a more efficient preparation and implementation of projects, independent regional bodies that govern outside of national governments can be created to serve as regulatory and guiding vehicles. In Central America, SIEPAC (Central American Electrical Interconnection System) has established two independent regional institutions to undertake regional power projects: the Regional Operating Agency (EOR) and the Regional Regulatory Commission (CRIE) (for further details, please see Box 2).

Box 2. SIEPAC and the creation of the Central American Regional Electricity Market (MER)

For the purpose of developing a regional and competitive market for electricity, six Central American countries of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama signed the Framework of the Electric Market in Central America Treaty and initiated a project, namely SIEPAC (Central American Electrical Interconnection System), which is carried out through a transmission line connecting the national networks.

SIEPAC was designed to bring the benefits of integration to six countries and to improve their national power systems. Due to the relatively small size of the power system

in each country, the opening of a regional market was seen as a means for creating a larger market that would enhance competition among power producers.

The six Central American countries agreed to develop the Central American Regional Electricity Market (MER), which was completed and operational by 2013, with its own rules and supported by the SIEPAC interconnection project, which will increase the size of the electricity markets and facilitate competition and entry of new players into the market.

The MER was established as the seventh market, superimposed on the other six national markets, with regional regulations through the Regional Operating Agency (EOR) to abide the international transactions of electricity in the region, along with other organizations of the regional regulatory commission, the CRIE (Comisión Regional de Interconexión Eléctrica), and EPR (Empresa Propietaria de la Red), the company that owns the grid. The CRIE and the EOR are outside the jurisdiction of national courts because they were established as supranational entities governed by international laws through the Central American Court of Justice. The CRIE's legal status, which creates a potentially powerful institution at the regional level, represents a serious commitment on the part of the national governments that have ceded authority to it through the treaty.

The treaty also established the scheme of protocols for future treaty adjustments and clarifications through the initiation of the First Protocol, which was agreed upon in 1998, and the Second Protocol in 2007, which is facilitated to this day.

The coverage of the articles introduced through protocols sets the standards mainly for operational and contractual frameworks, such as transmissions and charges, regulatory harmonization, energy contracts and transmission rights.

Source: World Bank (2011)

5.1.7 Macroeconomic risks often occur unexpectedly and adoption of appropriate mitigation measures is necessary

Appropriate risk management measures not only strengthen the mutual confidence of governments but, to a further extent, encourage private sector involvement. Evidence from the Nam Theun 2 project shows how hedging can be adopted to mitigate foreign currency risk: tariff profile was structured in two tiers (local and US Dollar indexed) to match project financing. Regional projects can also involve more local financing from local development banks and domestic capital markets. In this way, there is a limited need for a derivative product or indexation to mitigate currency and cross-border risks.¹⁹ However, as illustrated by the examples, limited long-term financing is available in local markets at such a scale. Countries with incumbent legal tenders as US Dollars—Timor-Leste, Marshall Islands, Federal States of Micronesia and Palau—are exposed to risks of currency mismatches if they introduce their own domestic currencies during the

19. Information available at <https://blogs.worldbank.org/ppps/why-addressing-fx-risk-could-hold-key-infrastructure-investment>.

long concession periods. In this case, Timor-Leste's Tibar Bay Port is a precedent. The project's concession agreement establishes that, in event of a change of currency and if the concessionaire is required by the Government of Timor-Leste to start operations in the domestic currency, an automatic monthly tariff adjustment mechanism reflecting the exchange rate fluctuations would apply,²⁰ eliminating the foreign exchange risk.²¹

5.1.8 Political risks can be barriers to gain access to international financial markets

The higher perceived political risks correlate to lower opportunities in PPP projects, and this is especially so in Asia (Sachs, Tiong and Wang, 2007). Often, the region faces barriers in accessing international finances due to higher perceived political risks. For instance, Nam Theun 2 encountered difficulty in attracting international finances during its early phase. International lenders were unwilling to grant finance to the project unless mitigation measures, such as a political risk insurance to cover the Lao PDR and Thailand governments' obligations in the concession agreement (CA), were adopted. To support international lending, guarantees from multilateral agencies, such as the ADB, the IDA and the MIGA, were secured. Instruments such as the IDA partial risk guarantee

Box 3. Political risk guarantees provided from multilateral agencies

The World Bank's IDA partial risk guarantee

The IDA (part of the World Bank) partial risk guarantee (PRG) mitigates specific risks relating to political, regulatory and governmental performance of Lao PDR under the Project Agreements. Specifically, the PRG backs any debt service default resulting from activities and actions under the Government of Laos's control: expropriation; issuance and renewal of permits for construction and operation; changes in laws, taxes and duties; other specific obligations of a sovereign nature defined in the concession agreement (CA) and other related agreements and deemed critical for obtaining finance; and natural force majeure events that are beyond the control of NTPC and that cannot be insured in the public or private insurance market. The IDA-PRG only covers Lao sovereign risks as defined in the Project Agreements and does not cover any Thai sovereign risks (even though the project sells electricity to the Thai utility, EGAT, and is subject to the off-take risk arising out of the EGAT PPA).

MIGA insurance

The MIGA provides political risk guarantees to international US Dollar lenders to the project, covering their non-shareholder loans, including interest and interest rate hedging instruments, to NTPC. The MIGA mitigates the risks of expropriation, breach of

20. Information available at <http://documents.worldbank.org/curated/en/799571476252679973/pdf/108948-PJPR-P161201-PUBLIC-InitiationNoteandISDSVP.pdf>.

21. Information available at <http://documents.worldbank.org/curated/en/799571476252679973/pdf/108948-PJPR-P161201-PUBLIC-InitiationNoteandISDSVP.pdf>.

contract, transfer restriction and war and civil disturbance in Lao PDR. In Thailand, the MIGA covers initially the risks of breach of contract, transfer restriction and war and civil disturbance. If the off-taker, EGAT, is privatized, the MIGA intends to cancel the breach of contract coverage and replace it with the expropriation cover. Coverage is for a period of up to 20 years in both Thailand and Lao PDR. The MIGA has further provided EDF, a company incorporated under the laws of France, guarantees covering a small portion of its equity investment in the project against the risk of transfer restrictions in Lao PDR for up to 20 years. The MIGA has guaranteed up to 97.5 percent of the non-shareholder loans and up to 90 percent of the equity. These coverages translate into a gross exposure of up to US\$200 million for the project. After reinsurance, the MIGA's net exposure under this project is up to US\$100 million.

Source: World Bank (2005)

and the MIGA insurance played important roles in risk mitigation.

5.1.9 Sector-specific feasibility studies minimize stakeholder uncertainty and mitigate risk of delays in project implementation

A detailed feasibility study activity is often financed through the Project Preparation Grant (PPG) and it also explores the sustainability of the project after the contract. In the case of CASA-1000, an Afghanistan Reconstruction Trust Fund (ARTF) PPG of \$5 million was signed in October 2016.²² The PPG resources financed consulting services to support the preparation of technical feasibility studies, strategies, bidding documents, social and environmental safeguards documents and regulatory and policy advisory services to the Afghanistan Telecommunications Regulatory Authority (ATRA) and the MCIT (Ministry of Communications and Information Technology). For example, under the PPG, advisers were mobilized to ensure the ATRA had the capacity to prepare and issue appropriate downstream regulations during the early stages of project implementation. It also financed relevant capacity-building activities, training and workshops to prepare the project. For the Asia-Pacific region, project preparatory facilities, such as the ASEAN Infrastructure Fund and the multi-donor facility Public-Private Infrastructure Advisory Facility (PPIAF), which sits in the World Bank, as well as global organizations such as the Global Infrastructure Connectivity Alliance (GICA) and the Global Infrastructure Hub (GIH), support project preparation through the transfer of knowledge and best practices, helping governments to attract significant private sector investments.

In the Sub-Saharan African region, the NEPAD–IPPF (New Partnership for African Development—Infrastructure Project Preparatory Facility)²³ provides grants to NEPAD members of African countries through regional power pools such as SAPP to undertake feasibility, technical and engineering designs, environmental and social (E&S) impact assessment studies and preparation

22. More information available at <http://documents.worldbank.org/curated/en/760111522698319785/pdf/Afghanista-Digital-CASA-Project-PAD2021-03092018.pdf>.

23. More information available at http://nepadippf.org/?page_id=885.

of tender documents and transaction advisory services to make projects bankable for financing and implementation in support of Africa’s socio-economic transformation.

5.2. Guidelines

Based on the lessons learned, governments could use a systematic approach to undertake cross-border projects, bringing economic benefits to all stakeholders. It is important that countries benefit not just at the origin and destination of the projects but also during the transition. Host governments (origin of the project) should be clear in their investment frameworks for the investor government (destination of the project), under which conditions and criteria a cross-border project will be a good match. Availability of financing should not drive the reasons for investment. Basic principles of budget efficiency, value for money, economically beneficial, fiscal affordability and whole-life costing should be used to plan and select projects to ensure a good “investment decision”, followed by a specific financing strategy to attract private sector investments. Bringing the private sector to implement the project should be a “procurement decision” and should be done to achieve financing efficiency, for example, leveraging MDBs’ support to improve soft infrastructure and raise private financing instead of for a concessional loan.

Policymakers can adopt the following course of action to prepare for cross-border projects. The guidance is divided into three phases: 1) identification and planning, 2) preparation and procurement and 3) implementation.

5.2.1 Planning phase

The planning phase is when the governments map the needs and options for investments to service the population. This could be a medium-term development plan. Ideally, there would be a list of proposed national and cross-border investments needed to suffice the demand. The list



Figure 4. Cross-border projects’ lifecycle.

of projects needs close and coordinated agreement among the affected countries. Coordination between countries is crucial to achieving a coherent regional planning and how the projects fit together. In the regional master plan, governments need to identify and agree on projects which will bring economic benefits and value for money. For instance, a regional coordination authority responsible for planning and oversight can be established to help prioritize projects from a pipeline of well-identified projects. Within the cross-border prioritized list, governments should select which investment should go forward. This is called the “investment decision”. This authority would need to allocate a project preparation budget and develop a financing strategy collaboratively. If the strategy is to involve the private sector and needs to be commercially viable, even more planning is required. The governments would need to create an enabling environment and specific actions to catalyze private sector involvement and attract foreign direct investments. By the end of this phase, a joint coordination authority should be formed with an appropriate project preparation budget to prepare and procure the selected project.

5.2.2 Preparation and procurement phase

The next phase is to prepare the selected project. Ideally, project preparation should be done by a regional coordination authority, set up in Phase One. This entity should comprise relevant public agencies from both sides of the project and essential stakeholders, including the private sector. This phase involves defining the project scope and conducting feasibility studies to determine the project structure. Governments will need to form a joint implementation company, i.e., SPV, to undertake the project. This SPV should be different from the coordination authority. The coordination authority, or sometimes called the procuring authority, should make a “procurement decision” based on the best procurement strategy for the investment. A procurement decision could be between public procurement or PPP to determine which method is the best to deliver one, some or all the services in the project, i.e., design, build, finance, operation and maintenance. There needs to be a clear plan to connect cross-border projects to national-level infrastructure development plans to harness full economic value. Ensuring alignment of the regulatory framework (e.g., tariffs, permitting, E&S mitigation plan, authorization, land allocation, procurement, etc.) would help in creating an enabling environment to address issues of differences in tax regimes, insurance requirements and other national-level legislative-driven contractual arrangements. By the end of this phase, the project should have approval from all relevant authorities for procurement, governments’ participation and financial structuring.

Meanwhile, the procurement phase involves finalizing the project structure, tendering, and selection of the contractor. Preparing for tender and attracting qualified bids require proper risk allocation plans reflecting a balanced and market-acceptable distribution between both the governments and the private sector. Broad political consensus and commitment, such as the governments’ participation in the SPV, should be clarified before launching the tender. There needs to be an agreement on inter-governmental cooperation on project management and oversight of the SPV. This will help in resolving potential future disputes, claims and renegotiations, hence enhancing governance. If needed, MDBs can provide technical and financial interventions in the form of technical assistance, loans, grants or credit enhancement instruments. In the examples so far, the presence of MDBs and their credit enhancement measures have provided the comfort needed by the market for a successful bidding process. In order to ensure long-term revenue generation, bidders will look for a clear plan to connect the project to national-level infrastructure development

plans and projects so that the SPV can harness full economic value. The binding legal framework needs to cover key risks, such as regulations on tariffs, permits, tax regimes, insurance requirements, land allocation, currency convertibility and transferability. By the end of this phase, the contract would be awarded to the selected bidder. “Commercially closed” means that the SPV is established and fully functional with all underlying subcontracts for construction and operation awarded, while “financially closed” suggests that financing arrangements are complete, condition precedents are fulfilled and the project is ready to start.

5.2.3 *Implementation phase*

The implementation phase entails both the construction and the operation periods of a project. During implementation, risk management mechanisms should be put in place to ensure that risks are managed properly, guaranteeing returns to all parties and affected stakeholders. One of the most important risk mitigation actions is to set up a Contract Management Authority during tendering or at contract signing (at the latest). This authority could be formed from the Procuring Authority if the team is technically sound and possesses the right skills to manage the contract. The contract should be clear on the roles and responsibilities of each party and, at the same time, sufficiently flexible to allow for changes during the long contractual period. Performance measurement and tariff calculation must be simple and regulated transparently. Due to the politically sensitive nature of cross-border projects, governments should also attempt to maintain stable political stances to avoid possible impediments to the implementation of such projects. At the end of this long phase, the project benefits should complement the overall economic development of involved countries.

6. Roles of stakeholders in financing cross-border infrastructure

This section discusses the potential roles of various stakeholders in promoting cross-border infrastructure development through mitigating the challenges, addressing the roles of multilateral/bilateral institutions and multilateral development banks (MDBs), governments, the private sector and affected people and civil society organizations.

6.1. Role of regional entities/influence

Cross-border infrastructure projects involve two or more sovereign parties. This not only requires long-term planning and inter-governmental agreements but also a good quality of coordination in the implementation phase (if the projects can be carried forward to the implementation stage). Hence, formal or informal institutions are needed for governments to reduce negotiation costs and manage emerging conflicts (Kuroda, 2006). Institutional arrangements can exist at the international level, national level or project level. The institutions should at least provide a platform for stakeholder engagement, decision-making and dispute resolution. Effective institutional arrangements are important for promoting coordination among stakeholders and ensuring each party’s responsibility and accountability (Zhang, 2011). Improving the dialogues and coordination between governments is important as it may reduce the political risks of ongoing cross-border projects and increase opportunities for identifying future cross-border projects. To attract private sector investments or FDIs, engagement of the private sector and foreign investors should be institutionalized so that they can express their interests and concerns. GMS shows the way to successfully engage member countries, the private sector and development partners.

Table 2. Overview of policy guidelines to undertake cross-border projects by phases

	Planning	Preparation	Procurement	Implementation
<p>Physical Infrastructure</p>	<ol style="list-style-type: none"> Needs and option analyses: select project. Scoping the project and collecting information, e.g., a detailed description and requirements for the most important aspects of the project. Preliminary technical assessment and economic feasibility analysis, e.g., Cost-Benefit Analysis (CBA). Value-for-Money (VfM) assessment is conducted to estimate net economic benefits. Scoping private sector's interest and suitability. Readiness of the project: project management plan, e.g., institutional arrangement, staffing plan and identification of any potential needs for advisors to support the project. It should also include budget estimates and a funding plan. 	<ol style="list-style-type: none"> Projects are appraised in several dimensions to have technical, commercial, economic, environmental, social and legal feasibility. Developing resettlement plans, social development plans and environmental impact management plans. Project contract is pre-structured with financial model, Value-for-Money (VfM) and Fiscal Risk Management (FRM) assessments. Prepare for compliance on social and environmental safeguard requirements of MDBs if their loans or grants are needed. 	<ol style="list-style-type: none"> Defining and drafting contractual structure, e.g., roles, responsibilities, payments, events of default, etc. Drafting tender package, e.g., Request for Proposal (RFP), Request for Qualification (RFQ) and contract. Managing tender process, e.g., launching the tender, bid submission, evaluation of proposals, negotiation, contract award. Managing commercial and financial close with the SPV. Preparation for construction start date. 	<p><u>Construction phase</u></p> <ol style="list-style-type: none"> Ensuring all key activities during the construction phase are carried out well, e.g., project site set up and permits clearance, project design finalized, project construction delivered. Monitoring tasks during the construction phase, e.g., performance & risk monitoring, cost oversight, follow-up of the implementation of social and environmental impact management plans. Prepare schedule management and quality management. <p><u>Operational phase</u></p> <ol style="list-style-type: none"> Making sure contractual performance is in accordance with contractual requirements by providing continuous contract management. Supporting constant development, quality improvement and innovation throughout the life of the contract. Managing finances, e.g., payment mechanisms, budget, contingency planning. Variation management, e.g., government, private-partner-related changes, refinancing activities. Expiry, default and early termination management.

Table 2. (Continued).

	Planning	Preparation	Procurement	Implementation
Soft Infrastructure	<ol style="list-style-type: none"> 1. Establishing close relationships with governments involved. 2. Project identification based on whether all the relevant parties can benefit from the project. 3. Project prioritization, e.g., what criteria are considered for different countries according to centralization of planning and oversight. 4. Any benefits shared by national plans and cross-border projects? 	<ol style="list-style-type: none"> 1. Having a broad political consensus and commitment, e.g., a clear government participation plan to connect cross-border infrastructure plans to domestic projects. 2. Ensuring alignment of regulations to create the enabling environment to address issues of differences in tax regimes, insurance requirements, etc. 	<ol style="list-style-type: none"> 1. Stakeholder engagement plans. 2. Procurement and financing schemes. 3. Legal as well as governance frameworks should be established to harmonize policies, laws and regulatory practices. 	<ol style="list-style-type: none"> 1. Agreement on inter-governmental cooperation of project management and joint coordination on government oversight done by the SPVs need to be built to resolve potential future disputes, claims and renegotiations. 2. Standards should be adjusted according to various circumstances during project development ensure continuous VFM for all entities participating. 3. Governments should attempt to maintain political stability to avoid possible impediments to project development.
Output	<ol style="list-style-type: none"> 1. Preliminary report and project definition: <ol style="list-style-type: none"> (a) project scope, (b) how much budget/time needed, (c) clear benefits for stakeholders involved, e.g., MDBs. 2. Relevant strategies to develop the project. 3. Authorizing environment to proceed with the project: joint coordination authority set up. 	<ol style="list-style-type: none"> 1. A common framework for all parties to comply. 2. Legally binding contracts. 3. Compliance on environmental, social and governance (ESG) issues. 4. Joint project implementation company comprising two governments as SPV set up. 	<ol style="list-style-type: none"> 1. Projects are tendered and bidder is selected. 2. SPV set up: governments' participation in the SPV after conducting Fiscal Risk Management (FRM) assessment. 	<ol style="list-style-type: none"> 1. Overall economic development of the region from the project. 2. Establishing a common preparation and implementation framework. 3. Contract Management Authority set up at contract signing (if not set up during tendering).

Table 2. (Continued).

	Planning	Preparation	Procurement	Implementation
Who	<ol style="list-style-type: none"> 1. Bilateral/multilateral public entities involved in the project, e.g., Ministry of Energy, Ministry of Transport and MOF of governments, MDBs, etc. 2. Government legal staff. 3. Procuring /coordination authority. 4. Potential investors. 5. Service users. 6. Affected groups. 	<ol style="list-style-type: none"> 1. Bilateral/multilateral public entities involved in the project, e.g., governments, MDBs, etc. 2. Private sector, e.g., prospective bidders (procurement team, evaluation team, etc.). 3. SPVs. 4. Affected groups, i.e., local communities living in the project areas. 	<ol style="list-style-type: none"> 1. Bilateral/multilateral public entities involved in the project, e.g., governments, MDBs, etc. 2. Private sector, e.g., prospective bidders (procurement team, evaluation team, etc.). 3. SPVs. 4. Contractors (after the successful bidder signs the contract with the SPVs). 5. Affected groups, i.e., local communities living in the project areas. 	<ol style="list-style-type: none"> 1. Bilateral/multilateral public entities involved in the project, e.g., governments, MDBs, etc. 2. Construction companies (from the construction phase to the operations phase, their level of involvement will decrease). 3. Operators (level of involvement increases instead). 4. Affected groups, i.e., users who rely on the performance of the assets to derive the benefits.

Box 4. The GMS Program

The GMS Program sets a good example of the institutional framework of regional cooperation and has made significant progress in strengthening connectivity through cross-border infrastructure. The GMS Program is known as a flexible results-oriented project-delivering approach and it aims to promote regional cooperation, economic growth and poverty alleviation. The current institutional arrangement of the GMS Program is as shown in **Figure 4**. The GMS Summit, held every three years, provides the platform for leaders of GMS member countries to communicate and make decisions and is beneficial for increasing future political cooperation between member countries and improving the political support for the GMS Program and its projects. The GMS Summit, the Ministerial Conference and the Sector-Level Ministerial Conference together engage governors at different jurisdiction levels, which contributes to the success of the GMS Program. Working Groups and Forums function at the operational level. The Senior Officials' Meeting is a key coordination mechanism with both the policy aspects and operational aspects. It is where the proposals of policies are formulated and the sectoral projects are reviewed. Senior officials refer to the GMS National Coordinators, who are designated for each member country. The ADB played the supportive role through the Central Secretariat.

The annual Economic Corridors Forums, the Development Partners' Meetings and the GMS Business Forum/Council enhance the participation of development partners and private sector representatives. The Economic Corridors Forum was introduced in 2008, aiming to promote economic activities along the corridors. It involves ministerial-level participation, but as a discussion forum, it also facilitates knowledge-sharing between member countries and the private sector and development partners. The Development Partners' Meeting engages both bilateral and multilateral development partners. The Business Forum/Council was created to closely interact with the business community in the sub-region and to increase the voice of the private sector in the GMS Program.

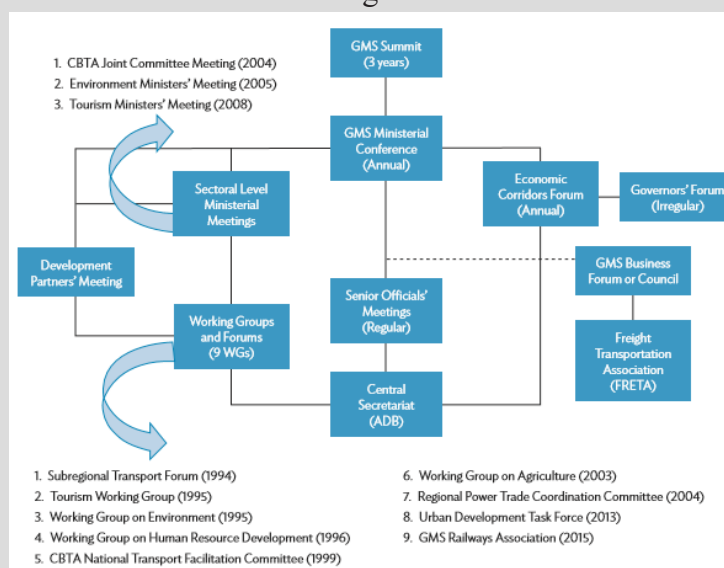


Figure 4. GMS institutional structure (2012–2022).

Source: ADB (2016b)

6.2. Role of DFIs

Development financing institutions (DFIs), such as the ADB, the AIIB and the World Bank, can stimulate cross-border infrastructure development from multiple aspects, including providing direct investments and encouraging private sector involvement. First, multilateral institutions, including MDBs, can encourage upstream inter-governmental dialogue and coordinate with governments to reduce policy- and procedure-related impediments to cross-border infrastructure development. Second, MDBs can provide downstream financial intervention instruments and project preparatory technical assistance. For instance, the World Bank has two lending arms, the IDA and the International Bank for Reconstruction and Development (IBRD). The IDA provides grants and loans (also called “credits”) on concessional terms for programs of the world’s least developed countries. The IBRD is the original lending arm of the World Bank and provides loans, guarantees, grants, risk management products and advisory services in order to help middle-income and creditworthy low-income countries reduce poverty and build shared prosperity. The ADB provides technical assistance in support of cross-border infrastructure projects in the region. The ADB’s technical assistance comprises two categories: transaction technical assistance and knowledge and support technical assistance. The former directly benefits a project, providing project-related policy advice and project preparation and implementation support and helping develop public-private partnerships in some cases. The latter provides all technical assistance other than transaction technical assistance, such as studies, general policy advice and capacity-building services. Third, MDBs can provide risk management instruments to attract private investments. Guarantees and insurance are important tools to stimulate private investments and they are particularly important for cross-border infrastructure projects, given the high-risk profile of these projects. Fourth, MDBs can help address the asymmetric distribution of costs and benefits across different countries or communities, with due diligence on environmental and social impacts. This is particularly important when governments lack the capacity or institutions to manage environmental and resettlement issues.

Box 5. Role of the ADB in the GMS Northern Economic Corridor project

In the case of the GMS Northern Economic Corridor project, which connects Thailand and China through a road link via Lao People’s Democratic Republic, the ADB offered US\$33.40 million concessional ordinary capital resources lending (ADB, 2014). The cost-sharing among the other parties is that China financed US\$38.90 million, Thailand financed US\$44.38 million and an additional repair cost of US\$11.32 million, and Lao People’s Democratic Republic financed US\$3.20 million. Second, the ADB contributed to project monitoring and coordination. The project aimed to upgrade the 226.28km road linking Thailand and China, comprising 66.43 km from Louang Namtha to Boten (financed by China), 75.85 km from Louang Namtha to Ban Sod (financed by the ADB) and 84 km from Houayxay to Ban Sod (financed by Thailand). The ADB fielded five special-project administration missions and ten regular review missions to monitor the process of the project and resolve emerging implementation issues. Third, the ADB took special care to secure a relatively fair distribution of costs and revenues across the three countries and assisted Lao People’s Democratic Republic in negotiating with the other two countries.

In addition, the ADB diligently followed up on the implementation of the resettlement and social action plans, addressing issues such as primary health care, non-formal education, income restoration, land zoning and titling, community rural access roads, community infrastructure, water and sanitation, and road safety awareness. As a result, the performance evaluation of the project suggested that the project had significant socio-economic impacts on local communities (ADB, 2014).

6.3. Role of national government and SOEs

For cross-border infrastructure projects, the role of national governments is important, as most cross-border projects are financed by the public sector. SOEs normally participate in the projects as implementers. First, the governments involved can provide upfront political support for creditworthy projects. Strong political commitment mitigates political risks. Second, they can work on providing credible and predictable regulatory regimes to reduce regulatory risks. Third, with the assistance of multilateral institutions, governments can work on the capacity- building of their government officials in the contexts of cross-border projects, especially when the private sector is involved. Fourth, they can work on establishing an enabling environment to attract foreign direct investments

Box 6. Government policy in GMS Power Trade Project (Cambodia section)

The Cambodia section of the GMS Power Trade Project was to bring affordable electricity to some provinces of Cambodia through power import from Viet Nam and Lao PDR. The project comprised the construction of two transmission lines: one 64km 115kV transmission line from Tan Bien (Viet Nam) to Kampong Cham (Cambodia) and one 56km 115kV transmission line from Veun Kham (Lao People's Democratic Republic) to Stung Treng (Cambodia). Before the project appraisal, the Cambodian government decided that a Procurement Agent contracted by the Ministry of Economy and Finance would carry out the procurement of the project. The Procurement Agent was Crown Agents, which was a private entity. The Procurement Agent would be responsible for the whole procurement process and appoint a Project Implementation Consultant that could offer technical inputs to the implementing agency. The project implementing agency was Electricité du Cambodge, the national electricity utility. The Procurement Agent, the Project Implementation Consultant and the implementing agency had a detailed division of responsibilities. The project was approved in May 2007, but little progress was achieved by May 2009 due to poor coordination among the three entities. The procurement delays because of the poor inter-agency integration became one of the reasons that made the project fail to be implemented. The other two main reasons were that Viet Nam decided not to export electricity to Cambodia anymore and the ADB decided to not extend the project duration per request by the Cambodian government.

and private investments. Fifth, the governments should improve inter-agency arrangements and coordination towards the realization of the cross-border projects. Sixth, they should identify the long-run opportunities of the cross-border infrastructure projects and ensure that the cross-border infrastructure aligns with domestic needs.

6.4. Role of affected people and civil society organizations

Cross-border infrastructure projects face more complex and rigorous social and environmental risks than domestic projects. Appropriate environmental and social risk management can reduce project risks and maximize the benefits that the project can bring to the users and affected communities. There is a tendency for new projects to underestimate the costs of resettlement needs or other environmental conflicts at the preparation stage. Consequently, project developers may frequently encounter conflicts with local communities during the project implementation, which can significantly delay the project's progress. Assessing and managing the environmental and social impacts of cross-border infrastructure projects can be complicated but must be well conducted. As cross-border infrastructure projects may cause negative social and environmental impacts, economic theories suggest that internalizing these negative externalities is important for a fair sharing of the social cost and benefits. As opposed to state-level projects, cross-border infrastructure projects involve no single jurisdiction and it is difficult to secure a fair system of compensations and procedures. While governments involved in cross-border infrastructure projects may enjoy economy-wide benefits, local people and communities are actually the ones who bear the negative social and environmental costs. Civil society organizations and multilateral institutions can significantly improve the overall outcome by ensuring that projects comply with good social and environmental safeguards and giving an effective voice to affected local communities who bear the costs of losing their livelihood, property and land (Kuroda, 2006). Public consultation and disclosure involving the affected people are effective in determining proper compensation practices. Apart from sharing concerns on the environmental and social impacts at the planning stage, it is also important to set up an adequate monitoring system or a compliant handling mechanism to follow the implementation of environmental mitigation measures or resettlement plans.

Box 7. Environmental and resettlement issues in Phnom Penh–Ho Chi Minh City Highway Project

The project was to rehabilitate an existing road connecting Phnom Penh and Ho Chi Minh City (see also Subsection 2.6.2).

- 1) Environmental issues: The environmental impacts were initially estimated to be limited. However, the civil works contractors did not fully comply with the environmental impact mitigation measures written in the contract documents, which caused more environmental issues than expected.
- 2) Resettlement issues: The resettlement issues hampered the completion of the whole project. Particularly in Cambodia, complaints were filed claiming that the compensation payments were not enough to restore the economic and social bases

of the people affected. To solve the problem, the ADB undertook resettlement audits to involve the project-affected people and communities, which were very helpful in enhancing the resettlement arrangements and determining the proper compensation.

Box 8. Insufficient environmental and social safeguards in the Ban Sok (Lao People’s Democratic Republic)–Pleiku (Viet Nam) Power Transmission Project

The project was proposed to export hydroelectricity from several new hydropower projects in the southern Lao People’s Democratic Republic to meet the electricity demand in central Viet Nam. In March 2008, the governments of Lao People’s Democratic Republic and Viet Nam signed an agreement on power trade between the two countries, indicating that Lao People’s Democratic Republic will export up to 5000 MW to Viet Nam by 2020 (ADB, 2008). The project consists of the construction of a 500kV double-circuit transmission line with 65 km in Lao People’s Democratic Republic and 100 km in Viet Nam. Two SOEs, Électricité du Laos and Electricity of Viet Nam, would own and operate the transmission facilities. The hydropower projects in Lao People’s Democratic Republic were defined as the associated facilities (ADB, 2008). The project received high political support from both governments at that time but the project has stalled lately. One important reason is that the financing sources for the transmission line cannot be secured. Both governments requested ADB loans to develop the transmission line but the safeguard systems of the associated facilities could not meet the ADB’s Safeguard Policy Statement (ADB, 2012b). The main issues concerned the environmental and social impact assessment, impact mitigation and the restoration of the livelihood for the affected people. Given the safeguard gaps of the associated facilities, the ADB could not commit the financing resources for the transmission facilities.

7. Conclusion

The paper reviews the status of cross-border infrastructure projects, pinpoints the challenges of attracting private investments and FDIs and discusses the roles of different stakeholders in creating an enabling environment for future cross-border infrastructure development. An examination of the records of cross-border infrastructure projects demonstrates limited private investments or FDIs over the last 20 years.

Often, cross-border infrastructure investment needs would compete with national infrastructure investment needs for the public sector, with a higher priority placed on financing national infrastructure. Governments need to direct more resources to cross-border infrastructure development, provided that the resultant benefits are substantial enough to justify the development costs. Given that there will be trade-offs with the national projects, linkages should be carefully mapped.

Government initiatives are important for the development of cross-border infrastructure projects, especially in building a conducive environment to attract private sector investments and involvement. These include establishing proper regional institutional arrangements and standardizing guidelines.

A stronger involvement of DFIs is also needed in order to facilitate the dialogue and cooperation between countries, as well as to mitigate the risks of such complex projects, further enhancing the attractiveness of these projects to private and foreign investors. Given the complexity of the stakeholders involved in cross-border infrastructure, the incentive compatibility is important and should be addressed with a long-term vision. The sharing of benefits and responsibilities among participating countries must be clear in order to ensure inter-governmental cooperation and optimization of project returns. All parties should benefit; otherwise, projects will not be successful in the long run.

In cases incurring significant environmental and social risks, the paper suggests giving early attention to environmental and social impact appraisals and planning mitigation actions in a participatory process involving affected people and communities.

Projects as complex as cross-border infrastructure projects need to be properly divided into phases to simplify their planning, costing and execution. Dividing the project into phases permits a more realistic prevision and the possibility of involving the private sector through PPPs. At the project construction and operation stage, most projects can be undertaken by SOEs with the involvement of the private sector as contractors, such as suppliers, construction companies, trucking companies and commercial operations.

Given the additional complexities of cross-border projects, governments need to consider the challenges of preparing and managing the contracts of PPPs. The private sector will need clear rules of engagement, which demands that contracts clarify the roles and responsibilities of multiple agencies.

References

- ASEAN (2002a). *ASEAN Memorandum of Understanding on the Trans-ASEAN Gas Pipeline Project*. Jakarta, Indonesia: ASEAN Secretariat. Available at https://asean.org/?static_post=the-asean-memorandum-of-understanding-mou-on-the-trans-asean-gas-pipeline-tagp.
- (2002b). *ASEAN Tourism Agreement*. Jakarta, Indonesia: ASEAN Secretariat. Available at https://asean.org/?static_post=asean-tourism-agreement.
- (2016). *Master Plan on ASEAN Connectivity 2025*. Jakarta, Indonesia: ASEAN Secretariat. Available at <https://asean.org/wp-content/uploads/2016/09/Master-Plan-on-ASEAN-Connectivity-20251.pdf>.
- Asian Development Bank (ADB) (2007). *Kingdom of Cambodia and Socialist Republic of Viet Nam: Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project. Completion Report*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/sites/default/files/project-document/65385/30316-vie-pcr.pdf>.
- (2008). *Preparing the Ban Sok–Pleiku Power Transmission Project in the Greater Mekong Subregion. Regional Technical Assistance Report*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/projects/documents/preparing-ban-sok-pleiku-power-transmission-project-greater-mekong-subregion-final-report-tacr>.

- (2011). *Greater Mekong Subregion Cross-Border Transport Facilitation Agreement Instruments and Drafting History*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/sites/default/files/publication/29294/gms-cbta-instruments-history.pdf>.
- (2012a). *Greater Mekong Subregion Power Trade and Interconnection: 2 Decades of Cooperation*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/sites/default/files/publication/29982/gms-power-trade-interconnection.pdf>.
- (2012b). *Ban Sok–Pleiku Power Transmission Project in the Greater Mekong Subregion. Regional Technical Assistance Completion Report*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/sites/default/files/project-document/154982/41450-012-tcr.pdf>.
- (2014). *Greater Mekong Subregion: Northern Economic Corridor Project in the Lao People’s Democratic Republic. Performance Evaluation Report*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/sites/default/files/in18-15.pdf>.
- (2017a). *Bangladesh, Bhutan, Nepal: South Asia Subregional Economic Cooperation (SASEC) Trade Facilitation Program. Completion Report*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/projects/45260-001/main>.
- (2017b). *Meeting Asia’s Infrastructure Needs*. Mandaluyong City, Philippines: ADB. <https://doi.org/10.22617/FLS168388-2>.
- (2018). *GMS Transport Sector Strategy 2030*. Mandaluyong City, Philippines: ADB. Available at <https://www.adb.org/sites/default/files/institutional-document/470536/gms-transport-sector-strategy-2030.pdf>.
- ADB and United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2013). *Designing and Implementing Trade Facilitation in Asia and the Pacific*. Mandaluyong City, Philippines. Available at <https://www.adb.org/sites/default/files/publication/27530/trade-facilitation-reference-book-2013.pdf>.
- Bhattacharyay BN, Kawai M and Nag RM (2012). “Introduction”. In: Bhattacharyay BN, Kawai M and Nag RM (Eds.), *Infrastructure for Asian Connectivity*, pp. 1–18. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing. <https://doi.org/10.4337/9781781003138>.
- Brown K (2007). “Are public–private transactions the future of infrastructure finance?” *Public Works Management & Policy*, 12(1): 320–324. <https://doi.org/10.1177/1087724X07303680>.
- Chua DKH, Wang Y and Tan WT (2003). “Impacts of obstacles in East Asian cross-border construction”. *Journal of Construction Engineering & Management*, 129(2): 131–141. [https://doi.org/10.1061/\(ASCE\)0733-9364\(2003\)129:2\(131\)](https://doi.org/10.1061/(ASCE)0733-9364(2003)129:2(131)).
- Gilbert J and Banik N (2012). “Socio-economic impacts of regional transport infrastructure”. In: Bhattacharyay BN, Kawai M and Nag RM (Eds.), *Infrastructure for Asian Connectivity*, pp. 139–163. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing. <https://doi.org/10.4337/9781781003138.00013>.
- Houpis G, Rodriguez JM, Serdarević G and Ovington T (2016). “The impact of network competition in the mobile industry”. *Competition and Regulation in Network Industries*, 17(1): 32–54. <https://doi.org/10.1177/178359171601700102>.
- Jandhyala S (2016). *International Organizations and Political Risk—The Case of Multilateral Development Banks in Infrastructure Projects*. Available at https://ppi.worldbank.org/content/dam/PPI/resources/ppi_publication/theme/The-case-of-multilateral-development-banks-by-Jandhyala2016.pdf.
- Joint Committee on Coordination of Commercial Navigation (2015). *Agreement on Commercial Navigation on Lancang-Mekong River*. Available at <https://www.jcccn.org/index.php/rule-and-regulation/15-agreement-on-commercial-navigation-on-lancang-mekong-river-among-the-governments-of-the-people-s-republic-of-china-the-lao-people-s-democratic-republic-the-union-of-myanmar-and-the-kingdom-of-thailand>.
- Kuroda H (2006). “Infrastructure and regional cooperation”. *Paper for Annual Bank Conference on Development Economics*, 1–30. Tokyo, 29–30 May. Washington, DC: World Bank. Available at http://siteresources.worldbank.org/DEC/Resources/84797-1251813753820/6415739-1251814084145/Haruhiko_Kuroda_Infrastructure.pdf.

- Multilateral Investment Guarantee Agency (MIGA) (2006). *Hydropower in Asia: The Nam Theun 2 Project. Nam Theun 2 Brief*. Washington, DC: World Bank. Available at <http://www.miga.org/sites/default/files/archive/Documents/NT206.pdf>.
- Portugal-Perez A and Wilson JS (2012). “Export performance and trade facilitation reform: Hard and soft infrastructure”. *World Development*, 40(7): 1295–1307. <https://doi.org/10.1016/j.worlddev.2011.12.002>.
- Sachs T, Tiong RLK and Wang SQ (2007). “Analysis of political risks and opportunities in public private partnerships (PPP) in China and selected Asian countries—Survey results”. *Chinese Management Studies*, 1(2): 126–148. <https://doi.org/10.1108/17506140710758026>.
- Sawant RJ (2010). “The economics of large-scale infrastructure FDI: The case of project finance”. *Journal of International Business Studies*, 41(6): 1036–1055. <https://doi.org/10.1057/jibs.2009.63>.
- Stone SF, Strutt A and Hertel T (2012). “Socio-economic impact of regional transport infrastructure in the Greater Mekong Subregion”. In: Bhattacharyay BN, Kawai M and Nag RM (Eds.), *Infrastructure for Asian Connectivity*, pp. 95–138. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing. <https://doi.org/10.4337/9781781003138.00012>.
- UNESCAP (2016a). *Master Plan for the Asia-Pacific Information Superhighway*. Bangkok, Thailand: UNESCAP. Available at <https://www.unescap.org/resources/master-plan-asia-pacific-information-superhighway>.
- _____ (2016b). *Asia-Pacific Information Superhighway Regional Cooperation Framework Document*. Bangkok, Thailand: UNESCAP. Available at <https://www.unescap.org/resources/asia-pacific-information-superhighway-regional-cooperation-framework-document>.
- Verougstraete M (2018). *Public-Private Partnerships for Cross-Border Infrastructure Development*. Bangkok, Thailand: UNESCAP.
- World Bank (2005). “Project appraisal document for the Nam Theun 2 hydroelectric project”. *Report No. 3 1764-LA*. Washington, DC, USA: World Bank.
- _____ (2011). “Regional power integration: Structural and regulatory challenges”. *Report No. 58934, Central America Regional Programmatic Study for the Energy Sector*. Washington, DC, USA: World Bank.
- Zamora CG (2015). *ASEAN Plan of Action for Energy Cooperation 2016–2025*. Jakarta, Indonesia: ASEAN Centre for Energy. Available at <http://www.aseanenergy.org/wp-content/uploads/2015/12/HighRes-APAEC-online-version-final.pdf>.
- ZIZABONA Project Implementation Manual (2012). *ZIZABONA Transmission Project: Information Memorandum*. NamPower, ZESCO, ZESA and BPC.
- Zhai F (2012). “Benefits of infrastructure investment: An empirical analysis” In: Bhattacharyay BN, Kawai M and Nag RM (Eds.), *Infrastructure for Asian Connectivity*, pp. 80–94. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing. <https://doi.org/10.4337/9781781003138.00011>.
- Zhang ZX (2011). “Policies and measures to mitigate potential environmental impacts of cross-border infrastructure projects in Asia”. *ADB Working Paper No. 261*. Tokyo, Japan: Asian Development Bank Institute. <https://doi.org/10.2139/ssrn.1738051>.