



4.3

**Optimising the
financial structure to
properly allocate risks
and benefits**

4.3 OPTIMISING THE FINANCIAL STRUCTURE TO PROPERLY ALLOCATE RISKS AND BENEFITS

Intertwined with planning, regulatory and stakeholder considerations is how a cross-border project is paid for. The financial structure of a project is key to its viability and ultimate success. The unique risks and challenges seen in cross-border projects can make them more expensive to finance and harder to fund. In addition, the requirement for financial structures that are agreeable for all countries and financial stakeholders involved makes cross-border projects more vulnerable to market or government failure.

This section illustrates global practice in developing financial structures for cross-border projects, including:

- identifying barriers to, and risks in, financing cross-border projects (Section 4.3.1)
- choosing a viable financial structure that properly allocates risks and benefits (Section 4.3.2).

Summary of key learnings for optimising the financial structure to properly allocate risks and benefits

The key learnings suggest that governments should consider the following:

- Given the unique risks that cross-border projects face in their financing, governments should be prepared to assume more risk than they would on comparable national projects.
- Financial structures for national projects can also be used on cross-border projects, with due consideration of the cross-border project's specific additional risks.

4.3.1 Identifying barriers and risks in financing cross-border projects

Infrastructure is a significant financial investment. To understand the barriers and risks to financing cross-border projects, it is important to fully appreciate how a project can be funded.

Infrastructure is funded by taxpayers or users. In other words, a project is funded by a government's tax base (the taxpayer) either through taxes, through user charges levied at the point of use or through a combination of both.

Financing is the money (capital) provided to a government or organisation to build and operate the infrastructure, in the form of:

- short- or long-term loans or liabilities, which must be repaid along with a certain percentage of interest
- any additional amount contributed by the project partners in equity, which carries an obligation to provide these partners with return on their equity.

Therefore, the cost of a project comprises the cost of the physical goods and resources required to deliver it, plus the interest on the loan financing and the required equity returns. The interest rate and equity returns are determined by the risk in the project. Hence, financing fundamentally involves pricing of risk. If risks are high, the cost of financing is high too. Mitigating risks, and funding the associated financing, are two of the key challenges governments face in the delivery of public assets and services.

Compared to national projects, cross-border projects face several unique barriers and risks to their financing as a result of their augmented risk profile. Despite all the efforts made to harmonise rules and regulations, align stakeholders, and align legal frameworks and planning processes, the financial structure of a cross-border project is still inherently susceptible to additional risks. These are outlined in Table 3.

The application of a viable financial structure to the project is essential to appropriately manage these risks (refer to Section 4.3.2 Choosing a viable financial structure).

Table 3: Overview of major risks to financing of cross-border projects

Risk type	Causes (factors giving rise to risk)	Effects (how risks may unfold in the project)
Geopolitical risks	Political changes or instability in one or both countries, such as war or natural, political or economic disasters	Uncertainty of project completion or operation, and/or uncertainty of financial sustainability of project Instigation of major changes to contract
Counterparty risk / domestic policy changes	The need for financial stability to be maintained in multiple governments, rather than only one The need for multiple governments, rather than only one, to meet obligations under the contract (e.g. obligations to provide connecting infrastructure) in order for the project to remain viable Changes in government or legislation/regulation after contract signing, which invalidate assumptions made in developing the financial and operational structure of the project	Counterparty risks affecting government payments required to recompense investors over the life of the project or to be made in specific circumstances, such as default Financial or operational risk
Fiscal uncertainty or disparity / demand risk	Over-optimistic or unbalanced demand forecasting External events or influences affecting the utility of, or demand for, the asset	Project financial constraint, insolvency or loan default
Foreign exchange movements / currency risk	Multiple currencies involved in project financing or funding Lack of sufficient hedging solutions Changes in economic conditions of countries involved	Capital losses arising from currency fluctuation or inability to convert local currency into another country's currency due to specific exchange restrictions

If left unaddressed, these risks can place a premium on the financing of the cross-border project and create other barriers, too. For example, countries with volatile economies and political environments can struggle to attract commercial financing for projects, as prospective financiers may deem the risk of lending money or investing equity to be too great. Similarly, countries with a lower GDP per capita may have difficulty accessing finance due to their debt sustainability levels, their credit ratings or other issues.

Fiscal uncertainty can emerge from several areas of a project, but one of the most prominent is demand risk. While demand risk can affect the viability of any project, having multiple countries involved often means multiple currencies and therefore multiple funding sources with different economies attached. An example of this risk arising is the scenario that played out on the N4 Toll Route (refer to Box 26: Traffic and demand risk mitigation in the N4 Toll Route project).

PROJECT

Box 26: Traffic and demand risk mitigation in the N4 Toll Route project

Trans African Concessions Pty Ltd (TRAC), the private concessionaire of the N4 Toll Route, responsible for traffic volume risks, came across an unexpected and considerable risk related to asymmetry of toll revenues on the two sides of the border. Lower-income communities in Mozambique were unable and unwilling to pay the relatively high toll fees.

To mitigate, TRAC agreed to cross-subsidise the Mozambican portion of the road with higher tolls from the South African side, providing substantial discounts to regular Mozambican users.

See the N4 Toll Route case study in Part B for further detail on this project.

Demand risk can also affect the delivery of cross-border projects when the project is delivered sequentially. As seen on the East Africa Standard Gauge Railway, when a project's overall commercial viability is misjudged, it can significantly affect the ability of other countries involved to gain financing and can prevent the completion of the project (refer to Box 27: Low feasibility of standard gauge railway project in East Africa).

PROJECT

Box 27: Low feasibility of Standard Gauge Railway project in East Africa

The 1,500 km East African Standard Gauge Railway (SGR) – linking Kenya, Rwanda and Uganda – was conceived at the first Northern Corridor Infrastructure Summit in Uganda in 2013. The railway was envisioned to transform the East and Central African economies, increasing the region's competitiveness and lowering the cost of doing business. The three countries agreed to complete the SGR by 2018.

Kenya completed the initial 487 km phase of the line from Mombasa to Nairobi at a cost of USD3.8 billion in May 2014, with 90% of the financing coming via a loan from the Exim Bank of China (Eximbank). Eximbank provided Kenya a further USD1.5 billion loan for the second 120 km phase from Nairobi to Naivasha. However, the project was unable to obtain a further loan of USD3.6 billion from Eximbank for the remaining

two phases extending from Naivasha to Malaba at the Ugandan border. This was because projected demand for the initial phase from Mombasa to Nairobi did not materialise, resulting in a USD100 million loss during the first year of operation and raising concerns that the SGR was not commercially viable. To try to inflate demand (and help the project pay its debts), the Kenyan Government directed that all imports through the Mombasa port use the SGR railway, while at the same time the SGR operator China Road and Bridge Corporation increased freight charges.

The lack of demand and finance for the project has resulted in the indefinite delay of the Ugandan section of the SGR. In fact, without the finance required to deliver its remaining SGR sections, the Kenyan Government has instead opted to revamp the 120-year-old metre gauge railway from Naivasha to Malaba at a cheaper cost of USD400 million.

Source: <https://www.theeastafrican.co.ke/business/SGR-future-in-doubt/2560-5163080-nhvaiaz/index.html>

Fiscal uncertainty can also arise due to changes in credit ratings. If, for example, a cross-border project is being financed through government debt and the government's credit rating is downgraded, this will potentially increase the debt burdens of not only the government in question, but other parties to the project as well (depending on the financial structure in place). If a party defaults on its debt, this could have dramatic ramifications for other parties. It is therefore important to consider fiscal risks and the debt sustainability of the parties involved when structuring how a project is financed. Countries that are fiscally constrained are particularly at risk of affordability challenges.

These concerns can be recognised and managed through processes such as a detailed business plan and scenario analysis and the appropriate use of a CBA (refer to Section 4.2.3 Assessing mutual costs and benefits).

4.3.1.1 Mitigating foreign exchange risk

Currency risk is one of the most challenging financial risks in cross-border projects where the countries involved do not share the same currency. The project's financial structure must be set up to manage multiple

currency fluctuations and the risks associated with currency convertibility and transferability.

Currency fluctuation risks depend on the asset type, project costs and project revenues. As an example, if project revenues are available in foreign currencies and debt finance is available in that same foreign currency, this provides a natural hedge against the currency exchange rate and convertibility risks – depending on the volatility of the foreign currency revenue. However, where project revenues are only available in a local currency and debt finance is only available in a foreign currency, the mismatch creates an exchange rate risk.

Hedging instruments may be a solution to currency risk in such circumstances, but in many markets, they tend not to be a cost-effective solution, due to the costs involved and the lack of long-term hedging options for many local currencies. The alternative is for lenders to settle for the maximum tenor the local market will offer and then renew the maturity of the hedge in due course. An example of a natural currency risk hedge is found on the Nam Theun 2 hydropower project in Laos (refer to Box 28: Mitigating currency risk on Nam Theun 2).

PROJECT

Box 28: Mitigating currency risk on Nam Theun 2

With a project cost of USD1.58 billion, the Nam Theun 2 hydropower project is the largest-ever privately financed hydropower scheme in the world and the largest economic asset of the Laos Government. Although it was constructed in Laos, the project involved the sale of 995 MW of generating capacity and electrical energy to the Electricity Generating Authority of Thailand (EGAT).

Currency risk was mitigated by structuring the currency profile of the financing to match that of the project costs (pre-completion of the project) and the revenues (post-completion of the project). This also provided a natural hedge against the tariff structure, which required half of the underlying long-term debt structure to be denominated in Thai baht and the other half in US dollars.

Sources: <http://documents.worldbank.org/curated/en/200041468044952974/pdf/584400PUB0ID161Better09780821369852.pdf> and <http://www.pfie.com/nam-theun-2-powers-ahead/21073485.fullarticle>

Government monetary policy can present challenges when accessing finance from abroad. Some governments impose restrictions and/or limits on investors that receive their revenue in a local currency when they seek to convert that revenue to a foreign currency or transfer it abroad. An effective way to avoid this risk is to avoid foreign exchange at all, as seen in the construction phase of the Gordie Howe International Bridge (refer to Box 29: Currency risk management in the Gordie Howe International Bridge project).

Identifying monetary policy or financial regulation misalignment during the planning phase of the project will ensure foreign exchange risks can be properly addressed through the financial structure chosen (refer to Section 4.2 Creating legal, regulatory and stakeholder alignment to enable cross-border delivery).

PROJECT

Box 29: Currency risk management in the Gordie Howe International Bridge project

Against the background of a fair risk allocation between the contractor and the public party, and in order to reduce financial risks for the contractor, a mechanism was put in place to share currency risks during the 30-year operation period of the Gordie Howe International Bridge. Payments between Windsor–Detroit Bridge Authority (WDBA) and Bridging North America (BNA) will be made in both currencies.

The tolls for both Canadian and US traffic will be collected on the Canadian side of the crossing and will be used to reimburse the Canadian Government for funds advanced by it in connection with the project.

See the Gordie Howe International Bridge case study in Part B for further detail on this project.

4.3.2 Choosing a viable financial structure

As discussed in the previous section, cross-border infrastructure has inherent risks that can make it expensive to finance. Therefore, along with appropriate allocation, reduction and mitigation of risks, cross-border projects have particular challenges developing viable and sustainable financing structures.

The optimal financial structure will strive to:

- reflect the respective national policy parameters, which may in some cases mean that different procurement and delivery models are used in the participating countries
- provide value for money
- reduce risk
- competitively determine financing requirements
- set limitations on the level of financing required to be obtained by each party
- avoid unknown contingent liabilities.

The financial structure chosen correlates directly with the procurement and delivery approach for a project, and thus has a direct impact on project governance (refer to Section 4.4 Establishing effective governance structures).

For example, some cross-border projects may be best delivered by splitting the project into sections based on country borders, making the cross-border project essentially two national projects that can be financed individually (refer to Box 30: Divided financing on the Singapore–Malaysia Second Link). However, as seen in Box 27: Low feasibility of the Standard Gauge Railway project in East Africa, the interrelation of project sections means financing of each section is not completely independent.

Structures used on national projects apply to cross-border projects too, as do sources of finance. Infrastructure finance options fall under two broad categories: public and private finance. The seven case studies chosen for this Reference Guide, which are all economic infrastructure, exemplify varied financial and contractual structures, with varying splits of public and private finance (refer to Table 4: Case study financial structures and sources).

The commercial viability, or bankability, of a project will determine the split of public and private finance engaged for the project. Public finance is more common than private finance across cross-border infrastructure. This is due to inherent risks typically

being too large to make many cross-border projects bankable (i.e. the cash flows generated by the project through revenues are not sufficient to cover the debt service).

PROJECT

Box 30: Divided financing on the Singapore–Malaysia Second Link

On the Singapore–Malaysia Second Link bridge project, the agreement between the two countries divided the responsibility for financing based on the infrastructure requirements on either side of the border line. Therefore, a different financing model was used in each country, with Singapore opting for public funding and Malaysia choosing a public-private partnership (PPP) model.

To manage demand risk on the Malaysia side, land development rights were included in the PPP to offset reliance on toll revenue.

Source: Ramboll

Table 4: Case study financial structures and sources

Project	Financial structure	Primary finance source	Government financial guarantee/support	Type of support
Addis Ababa–Djibouti Railway	Government-owned company	Public	Yes	Government-financed
Channel Tunnel	PPP	Private	No	-
Coral Sea Cable System	Government-owned special purpose vehicle (SPV)	Public	Yes	Government-funded
Gordie Howe International Bridge	PPP	Private	Yes	Some financial risks held by government
Itaipu Hydroelectric Dam	Government-owned company	Public	Yes	Government-financed
N4 Toll Route	PPP	Private	Yes	Government-guaranteed debt finance
Øresund Fixed Link	Government-owned SPV	Public*	Yes	Government-guaranteed state-owned enterprise (SOE) debt finance

*Bonds issued in the private market with a credit-rating guaranteed by the States

This does not mean, however, that cross-border projects cannot be bankable. Rather, it means these projects often require some form of public support. Public support can be provided in the form of grants or subsidies (lump-sum subsidies or volume-based subsidies), as well as debt guarantees, minimum revenues guarantees or concessional loans. Multilateral financial support can also support a project's bankability and is typically provided in the form of concessional loans, contingent support or guarantees, or other credit enhancement instruments.

An example of public support is the Øresund Fixed Link, where Sweden and Denmark provided state guarantees for the project consortium's loans, where the project consortium comprised binational public SOEs.¹⁶

Generally, however, cross-border projects are financed by multiple stakeholders, in various capacities, including:

- governments party to the project
- MDBs and international financial institutions
- government aid programs
- private investment.

The following subsections will focus on these different sources of finance in the cross-border project context. For further information on the different infrastructure finance options, please refer to:

- GI Hub Risk Allocation Tool
- PPP Knowledge Lab PPP Reference Guide
- APMG International Public-Private Partnerships Certification Program PPP Guide.

4.3.2.1 Governments party to the project

To finance cross-border infrastructure, governments commonly use the public budget through borrowing. This is often done by issuing bonds to the market, such as treasury bonds or – when the local capital market is sufficiently mature – infrastructure bonds (refer to the Channel Tunnel case study in Part B).

Governments can also look to finance projects through SOEs that invest public funds on behalf of the government, such as on the Øresund Fixed Link (see case study in Part B), or through national infrastructure banks.¹⁷

Where regional government authorities like the EU are established, financing for cross-border projects can also be sourced from them (refer to Box 31: Rail Baltica EU financial structure). Such financing can include non-repayable, interest-free funds such as direct grants or soft loans (a loan with a rate of interest below the market rate).

PROJECT

Box 31: Rail Baltica EU financial structure

Rail Baltica is a greenfield rail transport infrastructure project with a goal of integrating the Baltic States in the TEN-T. At 870 km long, the new railway is the largest railroad infrastructure project to be constructed in the Baltic States in the last 100 years. It is also currently one of the largest regional investments in improving mobility and travel opportunities and developing business, trade, tourism and the exchange of goods in the region.

The total estimated construction cost of the project is approximately EUR5.8 billion (USD6.8 billion). The project is funded by the national states – Estonia, Latvia and Lithuania – and co-funded by the EU up to 85% of the total eligible costs. The EU funding is via the CEF instrument.

Source: <https://www.railbaltica.org/about-rail-baltica/finances/>

¹⁶ https://www.itf-oecd.org/sites/default/files/docs/danish_state_guarantee_model4.pdf

¹⁷ For more information on national infrastructure banks, see GI Hub Guidance Note on National Infrastructure Banks and Similar Financing Facilities

4.3.2.2 MDBs and development finance institutions (DFIs)

For cross-border infrastructure, development finance institutions (DFIs) can offer dedicated products such as export credit insurances or loan guarantees to cover political, credit and currency risks in a project's early phases and to facilitate private sector involvement, as described in Box 32: Loan Guarantee Instrument for Trans-European Transport Network Projects (LGTT). For example, the CEF is the funding instrument to realise European transport infrastructure cross-border projects.

POLICY

Box 32: Loan Guarantee Instrument for Trans-European Transport Network Projects (LGTT)

The Loan Guarantee Instrument for Trans-European Transport Network Projects (LGTT) is an innovative financial instrument set up and developed jointly by the European Commission and the European Investment Bank (EIB).

LGTT aims to facilitate private sector involvement in core European transport infrastructure, which often faces difficulties in attracting private sector funding due to the relatively high levels of revenue risk in a project's early operating stages.

The LGTT, which is part of the EU's TEN-T program and the EIB's Action for Growth initiative, will partially cover these risks and consequently improve significantly the financial viability of a project. It aims to cover especially the ramp-up period.

LGTT will be financed with a capital contribution of EUR1 billion (EUR500 million each from the Commission and the EIB), which is intended to support up to EUR20 billion of senior loans.

Source: <https://www.eib.org/en/about/documents/lgtt-fact-sheet.htm>

DFIs also provide technical assistance to facilitate the preparation of cross-border infrastructure. This is often through multi-donor special funds, which provide grants to developing countries for regional

or cross-border projects in energy, trans-boundary water, transport and ICT to make them bankable, and therefore investment-ready. The grants are used to carry out pre-feasibility, feasibility, technical and engineering designs, as well as to obtain transaction advisory services such as that seen on Ruzizi III (refer to Box 33: Multi-donor special fund support for the Ruzizi III Hydroelectric Power Plant project).¹⁸

PROJECT

Box 33: Multi-donor special fund support for the Ruzizi III Hydroelectric Power Plant project

The Ruzizi III Hydropower Plant Project is a proposed greenfield hydropower station on the border between Rwanda and the Democratic Republic of Congo. It is the first regional power project in East Africa to be established as a PPP. The project's implementation has been entrusted to the Great Lakes Energy Organisation (EGL), a sub-regional body that coordinates energy development in East Africa.

The project is expected to be commissioned in 2025 at the total cost of USD625.19 million (2015 prices), of which USD138.88 million will be borne by the African Development Bank Group and the European Development Fund, and USD50.22 million by the private sector. Other funders include the KfW (Kreditanstalt für Wiederaufbau, a German Development Bank), Development Bank of South Africa, EIB and the World Bank, among others. The private sponsors can request political risk insurance from the World Bank's Multilateral Investment Guarantee Agency.

The Ruzizi III Hydropower Plant Project implementation was made possible following a grant awarded to EGL in 2011 by NEPAD Infrastructure Project Preparation Facility (NEPAD-IPPF) to finance transaction advisory services. The USD1.4 million NEPAD-IPPF grant helped provide key expertise for the project's development, as well as sound knowledge of the context and actors in the region, which led to the project's eventual financial close.

Source: <https://www.afdb.org>

¹⁸ Further information on Project Preparation Facilities can be found in GI Hub's Reference Tool on Governmental Processes Facilitating Infrastructure Project Preparation

4.3.2.3 Government aid

Another source of potential investment in cross-border projects is government aid programs. Depending on the country of origin, aid programs can provide grant funding or loans to projects deemed to meet established criteria. An example of this is the Coral Sea Cable System project. Australia funded two-thirds of the project's AUD200 million project cost, and Solomon Islands and Papua New Guinea covered the remaining third (for more information see the case study in Part B).

Through aid programs, project risks can be reduced, enabling better terms of finance for the countries delivering the project.

4.3.2.4 Private finance

The widely documented fiscal constraints that governments face in delivering and maintaining infrastructure have resulted in private finance becoming an important source of infrastructure finance. The application of private finance to infrastructure relies on the infrastructure being structured to generate a commercial return on investment for the private parties. Private finance can be provided through two general mechanisms: corporate finance or project finance.¹⁹

Corporate finance is essentially traditional finance on a full recourse basis. This mechanism is used where the entities investing control hold nearly all the risks, such as seen in regulated utilities.

Project finance is based on the project's asset being paid for through a future stream of revenue. It comprises the financing of a standalone project vehicle (SPV) established specifically for the project. The SPV is the contracting party with the asset owners to carry out the construction and/or operation of the project. SPVs are usually created for PPPs, as this allows financing to be on a limited recourse basis, meaning the liability of the investment only involves what is held by the SPV, excluding any other assets of the investing entities. Therefore, the exposure of the entities to the project's risks is limited. On the N4 Toll Route, the South African and Mozambican Governments decided to procure the toll route as a PPP, enabling a consortia of private investors to establish an SPV to deliver and operate the route (for more information see the case study in Part B).

Several global practices for private sector involvement in key infrastructure sectors have direct applicability to cross-border infrastructure. These practices are the subject of multiple dedicated guides, including one by the GI Hub²⁰ and one by the Asian Development Bank.²¹

A private partner may contribute to:

- reduced cost or improved value for money for the public sector (e.g. through innovative construction or design techniques, cost controls or risk allocation)
- improved revenue collection through better management of the asset
- removal of revenue or cost sharing complications between governments in cases where either the revenue generated or the costs incurred are asymmetric between the countries involved.

It is important to stress that not all risk can be transferred to the private sector. For an infrastructure project to be structured to generate a commercial return for private investors, governments need to assume key risks. Transferring too much risk (or the wrong risks) to the private sector can result in poor outcomes for government and taxpayers. Extreme cases can see the private sector entities enter insolvency, ultimately meaning the risks transferred to the private sector must be borne by the government.

Further guidance on risk allocation between public and private sector on projects can be found in the GI Hub's Risk Allocation Tool referenced above.

¹⁹ Note that governments can also structure their financing of projects through corporate or project finance

²⁰ <https://ppp-risk.gihub.org/>

²¹ <https://www.adb.org/publications/series/developing-best-practices-promoting-private-sector-investment-infrastructure>