Eurasian Development Bank

Cross-Border Public-Private Partnerships

Reports and Working Papers 23/3

Almaty — 2023

KEY CONCLUSIONS

WHAT IS CROSS-BORDER INFRASTRUCTURE, AND WHAT ARE CROSS-BORDER PPPs?

Cross-border infrastructure is located at the border between two or more countries and/or **crosses their borders,** and comprises multiple **technically interconnected** facilities.

Mandatory Criteria	Object	Cross-border infrastructure
	Multiple participants	Two or more states on the side of the public partner
	International legal framework	Intergovernmental agreement among the states involved in the project
Supplementary Criteria	Integration objectives and impact	Joint utilisation by the states of economic, transport, energy, and other potential, and increased integration impact
	Extended risk matrix	Additional legal, commercial, financial, and political risks

WHAT ARE THEIR ADVANTAGES?

- They enable coordination of activities related to the construction and operation of cross-border infrastructure
- They make it possible to resolve problems caused by differences between the laws of the two countries
- They give rise to synergies related to the pooling of material and financial resources of the countries acting as the public partners
- They facilitate coordinated discharge by the private partner of its obligations under the PPP agreement on both sides of the border

GLOBAL BEST PRACTICES

18
completed or ongoing projects

South and North America, and Eurasia — **1 CPPP project each.**
Asia-Pacific, Europe, and Africa — **5 CPPP projects each.**

14 Transport **3** Energy **1** Telecom

GUIDELINES FOR CROSS-BORDER PPPs

1. Ensure that political decisions are made, and cross-border PPPs are planned, in line with regional co-operation priorities
2. Maintain cohesion of national cross-border infrastructure development plans
3. Develop special international and national legal frameworks for cross-border PPPs
4. Establish bilateral and multilateral institutional mechanisms to support cross-border PPPs
5. Work in partnership with regional economic associations and multilateral development banks to improve the effectiveness of cross-border PPPs
6. Improve financial stability and reduce risk exposures of cross-border PPPs
7. Encourage and support cross-border PPPs that contribute the most to the Sustainable Development Goals (SDGs)

ROLE OF INTERNATIONAL DEVELOPMENT BANKS

They have the largest potential for promoting cross-border PPPs.

Their involvement helps to ensure success of cross-border PPP projects.

Eurasian Development Bank

Vinokurov, E. (Editor), Zaboev, A., Malakhov, A., Maslova, S. (2023) *Cross-Border Public-Private Partnerships*. Reports and Working Papers 23/3. Almaty: Eurasian Development Bank.

Evgeny Vinokurov, EDB Chief Economist, vinokurov_ey@eabr.org

Alexander Zaboev, Head, Centre for Integration Studies, Research Department, zaboev_ai@eabr.org

Anton Malakhov, Head of Projects, Centre for Integration Studies, Research Department, malakhov_aa@eabr.org

Svetlana Maslova, Director for PPP Projects, Department of Project Support, maslova_sv@eabr.org

Cross-border infrastructure comprises facilities that are spatially divided by the border between two or more countries. Due to the ongoing intensification of regional co-operation and economic integration, cross-border infrastructure projects acquire special significance, particularly for landlocked developing countries. These projects require massive investment capital and a coordinated approach, and cross-border public-private partnerships (CPPPs) may serve as a mechanism of such coordination with the participation of private capital. Several dozen cross-border PPP-based infrastructure development projects have already been completed around the world, while only the first steps are being taken in that direction in the Eurasian region. To a large extent, this is because cross-border PPP projects use sophisticated structuring and financing arrangements, and have relatively more extensive risk profiles. That is why the authors have designed a list of principles to govern the operation of cross-border PPPs. Their application will make it possible to accelerate and facilitate the setup and launch of cross-border PPP projects in Eurasia, to reduce related risks in their implementation, and thus contribute to the continued development of regional co-operation and regional economic integration.

Keywords: infrastructure, cross-border infrastructure, public-private partnership, PPP, cross-border PPP, CPPP, key investment mega-projects, EAEU, Central Asia, economic integration.

JEL: F15, F21, H54, L32, L92, L94, P33, R11.

The electronic version of the report is available at the Eurasian Development Bank website at https://eabr.org/en/analytics/special-reports/.

Cover: twitter.com/Pravitelstvo_RF

TABLE OF CONTENTS

INTRODUCTORY REMARKS BY NIKOLAI PODGUZOV

Nikolai Podguzov,
Chairman of the
Management Board,
Eurasian Development Bank

Infrastructural connectivity is a critical priority for the Eurasian countries due to their landlocked status and remoteness from global markets.

Accordingly, implementation of cross-border infrastructure projects becomes an important development driver for the countries of the region. Such projects encourage trade, promote investment and job creation, and, ultimately, become an essential factor of good-neighbourly relations, peace, and prosperity in Eurasia.

The public-private partnership (PPP) mechanism makes it possible to implement cross-border projects in the most effective fashion. That is why a number of large-scale international infrastructure projects are using the cross-border PPP format.

The report you are holding in your hands was prepared by the EDB to analyze global success stories related to cross-border PPP projects, and to offer a toolset that can be used to launch such projects in the countries of the region.

So far, only one cross-border PPP project has been completed in the region: the bridge connecting the Russian city of Blagoveshchensk and the Chinese city of Heihe. It is difficult to overestimate the impact that this project has had on the development of Sino-Russian trade in today's world!

There is also great potential for the cross-border PPP mechanism in other infrastructural domains in Eurasia, including ongoing projects for the construction of railways, toll roads, tunnels, hydro power plants, and telecommunication networks.

Involvement in cross-border PPP projects is a tour de force for international development banks. Not only do they facilitate rapid launch of such projects, but they also serve as an anchor for successful completion. Being a neutral venue for moderating negotiations between the participating countries, international development banks have a broad range of project competencies and time-tested risk management policies.

The Eurasian Development Bank welcomes cross-border PPP projects in Eurasia. Considering their long duration, we seek to become a "connecting link" for those projects. The EDB has an efficient mechanism to support co-operation with all EAEU member states and Central Asian countries, solid in-house PPP expertise, and special financial tools to assure the financial resilience of PPPs.

We hope to expand co-operation with the governments of the countries of the region, national PPP centres, other international financial institutions, and the expert community in order to create a high-quality and reliable cross-border infrastructure in Eurasia, improve transport connectivity, and ensure a more effective realisation of the region's water, energy, and telecommunication potential.

SUMMARY

As interstate and regional economic ties continue to expand and diversify, **development of cross-border infrastructure acquires special significance, primarily for landlocked developing countries (LLDCs)**. Cross-border infrastructure projects imply involvement of two or more countries, and require massive private investment and effective coordination of the activities of numerous stakeholders. One of the best mechanisms that can be employed to implement such projects is the **cross-border public-private partnership (CPPP).**

Several dozen CPPP-based infrastructure development projects have already been completed around the world in such sectors as Transport (railways, roads, pipelines), the Water and Energy Complex, and Telecom. **However, there are very few cross-border PPPs in the Eurasian region**, with the exception of the Russian–Chinese project for the construction and operation of a road bridge across the Amur. That is why the EDB attaches special significance to development of the principles governing the operation of cross-border PPPs. It is necessary to increase the awareness of governments and private investors regarding the opportunities offered by cross-border PPPs, which, in turn, will drive expansion of cross-border infrastructure in Eurasia, facilitate and accelerate the launch of cross-border PPP projects, and minimise risks in their implementation.

The **advantages of cross-border PPPs** are associated with the combined use of the resources available to governments and their private partners, which makes it possible to make up for the shortage of public funding required for the expansion of cross-border infrastructure, and to deal with problems arising from disparate investment potentials and dissimilar national legislative systems. Joint activities and the pooling of material and financial resources of the countries acting as public partners in cross-border PPPs produce **outcomes that could not have been achieved by individual countries through national PPP projects.** Involvement of a private partner (as a rule, one partner) ensures coherent and consistent discharge of obligations under the PPP contract on both sides of the border.

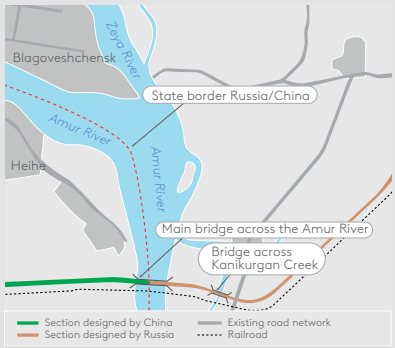
Cross-border PPPs are special in terms of their stakeholder setup. Most notably, there are **multiple public partners,** including the governments or authorised government bodies of two or more countries. **Cross-border PPP projects go beyond the boundaries of the national legal systems,** which requires the design of special norms and rules for all partners. Those norms are negotiated by the countries and fixed in an **international treaty,** which is then used as the legal framework for the preparation and implementation of cross-border PPPs.

This report reviews five of the most typical cases of cross-border PPPs in Transport and Energy (see Box A).

Box A. Examples of Cross-Border PPPs Reviewed in the Report

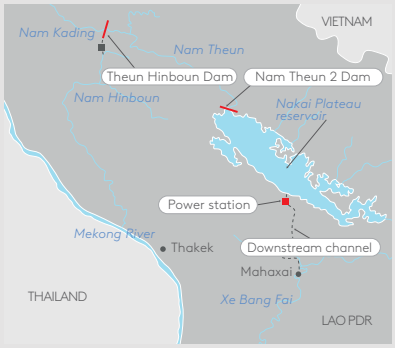
China–Laos High-Speed Rail Line.

Participating Countries:
Laos, China.



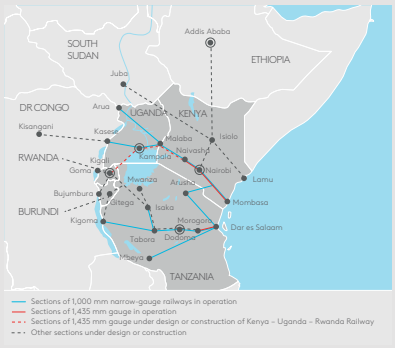
Road Bridge Across the Amur (Heilongjiang) between Blagoveshchensk and Heihe.

Participating Countries:
Russia, China.



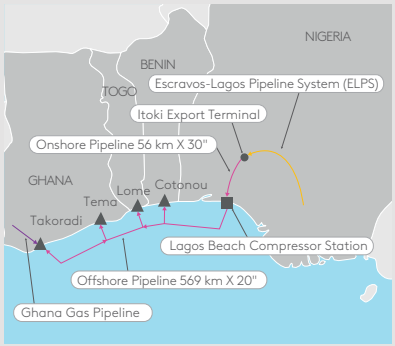
Nam Theun 2 Dam.

Participating Countries:
Laos, Thailand.



Kenya–Rwanda–Uganda East African Railway.

Participating Countries:
Kenya, Uganda, Rwanda.

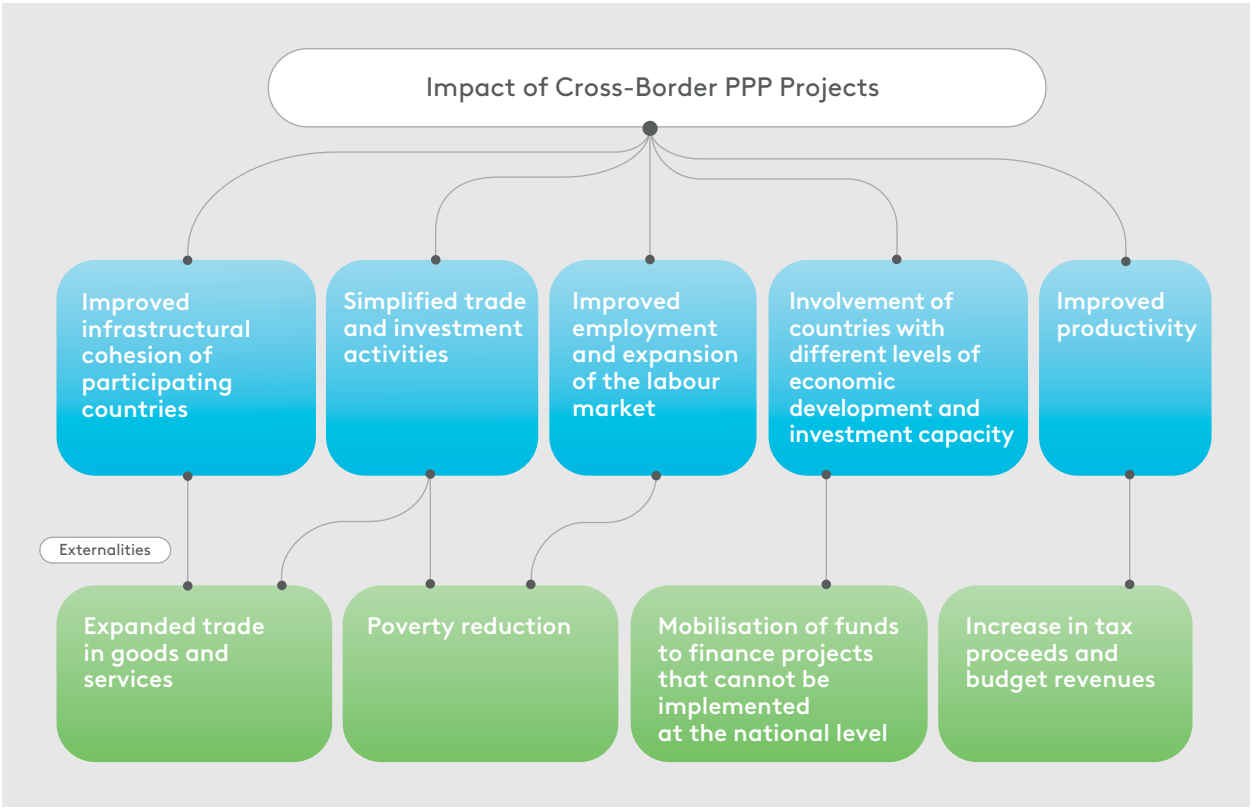


West African Gas Pipeline.

Participating Countries:
Nigeria, Benin, Togo, Ghana.

Two important criteria for cross-border PPPs are **the project initiation goals, normally linked to regional economic co-operation, and the outcomes achieved.** These are critical for the countries initiating cross-border PPP projects, especially for LLDCs, which are particularly dependent on physical and economic connectivity. Creation of cross-border infrastructure drives trade in goods and services, mutual investment, and workforce movement — the key components of economic integration. By the same token, there are important cumulative cross-border PPP effects in the countries engaged in the regional economic co-operation (see Figure A).

↓ **Figure A. Impact of Cross-Border PPP Projects**



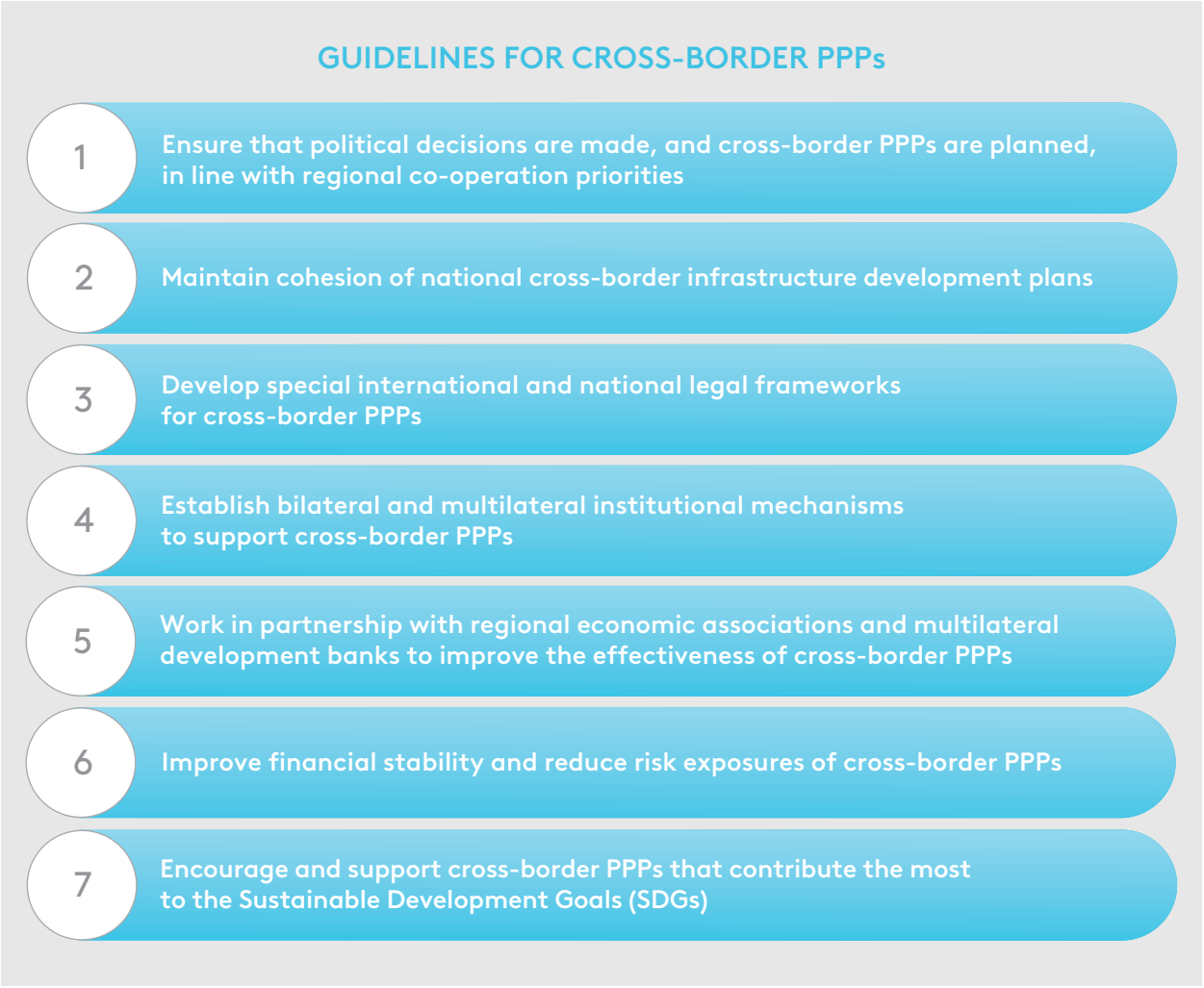
Source: EDB.

Infrastructural connectivity created by cross-border projects is an important argument in favour of their implementation by the EAEU member states, as well as by the countries of Central Asia and the South Caucasus, due to their geographic position, length of state borders, structure of economic and transport links, and the importance of the water and energy complex. Matters related to the continued improvement of infrastructural connectivity — primarily transport connectivity — are included in *Strategic Development Areas of the Eurasian Economic Integration until 2025*, *Coordinated Transport Policy Priorities*, and other policy documents adopted by the EAEU. For the Central Asia countries, development of non-transport cross-border infrastructure is particularly relevant for the water and energy complex.

Potential cross-border PPPs in the EAEU member states and Central Asia countries include the projects for the construction and subsequent operation of the China–Kyrgyzstan–Uzbekistan railway, the Kambarata-1 HPP, the alternative Almaty–Issyk-Kul road, the Russia–Southern Kazakhstan direct current transmission line, the railway crossing point at the Kazakhstan–China border, and others.

To ensure successful development of cross-border infrastructure and effective management of CPPP implementation in the EAEU member states and in the countries of Central Asia and the South Caucasus, the EDB developed a set of **guidelines based on the international best practices for cross-border projects** (see Figure B). The guidelines are designed to balance the aspiration to improve cross-border infrastructure and the need to consider the interests of each participating country; in addition, they can be employed as points of reference to ensure financial stability and attractiveness of those projects for investors and creditors, to assist in the identification of activities required to support uninterrupted and safe operation of cross-border infrastructure facilities on both sides of the border, and are necessary to adapt the CPPP legal framework with a view to maximise the benefits produced by the projects and their contribution to the SDGs achievement.

↓ **Figure B. Guidelines for Cross-Border PPPs**



Source: EDB.

Cross-border infrastructure development decisions always have a political dimension, and are determined by the foreign policy and foreign economy strategies of the stakeholder countries. Important political prerequisites include initiatives for regional economic co-operation, and expansion of trade and investment. After the political decision is made to go ahead with the project, the parties can proceed to develop the feasibility study and negotiate an intergovernmental cross-border PPP project agreement. It is particularly important that **national infrastructure development plans be aligned** over the medium and long term. Where two or more countries have well-aligned infrastructure development

plans, cross-border projects can be completed more quickly and with greater cumulative impact (example: China–Laos High-Speed Rail Line, see Section 2).

Cross-border PPPs require a special legal framework. **Intergovernmental agreements affirm an agreed-upon declaration of intent of the parties regarding the creation of the cross-border infrastructure using the cross-border PPP mechanism,** fill in regulatory lacunae, and establish the international legal framework underpinning the operation of cross-border PPPs. Such agreements make it possible to factor in the special features of each particular cross-border PPP facility, and the international relations arising among the stakeholder countries. **National PPP laws should provide detailed coverage of the operation of cross-border PPPs.** Certain problems arise in the course of cross-border PPP projects because national PPP laws of the Eurasian countries regulate domestic PPP projects, overlooking the possibility of joint implementation of PPP projects by several countries. Furthermore, many countries have different laws regulating PPP formats, procedures used to select the private partner, provision of government support, resolution of disputes, and selection of the applicable law, all of which hinder negotiation of uniform legal and financial PPP project parameters. It seems expedient **to apply international agreements rather than national PPP laws to the relations arising out of the operation of cross-border PPPs, and/or to incorporate a common (uniform) legal framework for cross-border PPPs in national PPP laws.**

Harmonisation of rules and procedures is necessary for successful cross-border PPP projects and effective operation of the cross-border infrastructure. This will ensure efficient interoperability of newly created cross-border infrastructure facilities and their compatibility with national infrastructure networks, and simplify access to the market for goods, machinery and other equipment, technologies and labour resources required for the project. It is important to **harmonise and standardise not only the rules and procedures applicable to cross-border PPPs, but also cross-border treaty practices.** Standardised terms and conditions using the most convenient wording, already tested and certified as effective, may be included by the participants of cross-border relations in PPP agreements and other project agreements in the form of complete ready-to-use blocks.

One of the key factors for the success of cross-border PPPs is the establishment of an institutional implementation mechanism: **joint work teams, committees and commissions created by the governments of the participating countries** to coordinate and monitor the implementation of the project at all stages. Such joint work teams should mostly consist of representatives of the ministries and agencies directly involved in the preparation and support of the cross-border infrastructure project, representatives of stakeholder entities, private businesses, research and public organisations, and civil society.

Integrative effects generated in the course of implementation, review, and assessment of cross-border infrastructure projects should be regarded as one of the key factors. It is important to take them into consideration when designing multilateral infrastructure development plans and programmes, as well as lists of "projects of common interest".

Cross-border PPPs regarded as a means of achieving the SDGs are a form of "sustainable" investment in the creation of "sustainable" infrastructure capable of generating not only the economic, but also the social and environmental impacts envisaged by the SDGs and the ESG standards, and contributing to the climate and social agenda.

Cross-border PPPs require dedicated resources and coordinated financial planning across stakeholder countries. This means that **multilateral development banks (MDBs) and their syndicates can play an important role in that process.** MDBs have multilateral membership, and are used as venues for the alignment of national positions, while the environmental

and social standards developed by them can be used to prepare cross-border project feasibility studies. Participating countries can jointly approach multilateral development banks to request technical assistance in the development of feasibility studies and preparation of the texts of intergovernmental agreements, and to obtain loans to finance the projects. Accordingly, the Eurasian Development Bank is becoming increasingly important as the "mediator" of cross-border PPP projects, as it has long-standing collaborative links to all member states, a tried-and-true risk management policy, extensive in-house PPP expertise, and special financial tools to ensure the financial viability of cross-border PPPs.

The EDB is promoting PPPs as a collaboration model based, on the one hand, on linking prospective infrastructure projects to the joint development of infrastructure facilities of interest to all EAEU member states and countries of Central Asia and the South Caucasus, and, on the other, on the multilateral partnership of the EAEU member states and countries of Central Asia with the EDB, private and institutional investors, and development institutions for the financing of such projects.

Relying on its earlier analyses and previously developed guidelines, the **EDB will prepare a draft model agreement to reflect the best cross-border PPP treaty practices for its member states.** Its use by the stakeholders will facilitate and accelerate the international negotiating process, adding certainty to the formation and alignment of positions of the contracting countries. The Bank can also act as a centre of expertise under its 2022–2026 Strategy envisaging provision of legal advisory services, by helping stakeholder governments to develop intergovernmental agreements on infrastructure projects using the cross-border PPP mechanism.

INTRODUCTION

Development of regional economic co-operation through better cross-border connectivity, creation of the infrastructure of the future, and expansion of private capital involvement are the critical components of sustainable development which correspond to SDGs 7, 8, 9, 10, and 17; they also contribute to realisation of the *Vienna Programme of Action for Landlocked Developing Countries for the Decade 2014–2024*.

To maintain strong international economic ties, it is necessary to have infrastructure linking countries and capable of meeting needs related to trade in goods and services, movement of labour, and transmission of energy and information. Cross-border infrastructure situated in two or more neighbouring countries is becoming particularly important.

The number of cross-border infrastructure projects following public-private partnership (PPP) principles is increasing due to the expansion of regional economic integration and the deepening of international trade and investment ties. Dozens of cross-border public-private partnership (CPPP) projects are being implemented all over the world. The Eurasian region is no exception: it has its own cross-border PPP track record, modest though it may be, and negotiations are under way for more projects, while several ongoing cross-border infrastructure projects may potentially be converted into the cross-border PPP format.

Cross-border PPPs have distinct parties and objectives. They always focus on cross-border infrastructure, defined as a complete set of technically (functionally) conjugate and interconnected facilities (their parts and elements) which are spatially separated by the state border between two or more countries. The public partner is represented not by one, but by two (or more) countries, which enter into an international treaty for the cross-border project. Cross-border PPPs pursue, first and foremost, regional economic co-operation purposes, and lead to outcomes that improve the infrastructural connectivity of the participating countries, simplify cross-border trade, facilitate foreign investment, etc. The nature of these projects makes them considerably more complex, especially if the countries involved have no previous experience in this area.

Accordingly, matters related to the development of cross-border infrastructure using the PPP mechanism are at the centre of attention of various intergovernmental and non-governmental international organisations, including the United Nations Commission on International Trade Law (UNCITRAL), the United Nations Economic Commission for Europe (UNECE), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the Global Infrastructure Hub (GIH), and others.

The Eurasian Development Bank (EDB) sees great potential in the cross-border PPP mechanism for infrastructure projects in the Eurasian Economic Union (EAEU), and in the countries of Central Asia and the South Caucasus, where cross-border connectivity is the key driver of trade, tourism, economic co-operation, and free movement of goods, services, capital, and labour. The countries of the region have extensive borders with their neighbours (which are also their transit countries), and intend to further improve their transport and water/energy infrastructure, including within the framework of the appropriate joint plans and programmes and Key Investment Megaprojects (KIMs). The use of the cross-border PPP mechanism to develop cross-border infrastructure facilities currently embedded in international transport corridors and routes, and to facilitate joint operation of hydropower stations and construction of new pipelines or telecommunication networks, would enable the countries of the Eurasian region to accelerate their social and economic development, resolve the problem of shortage of public funding to finance construction and operation

of infrastructure facilities, promote projects of common interest, employ international best practices, attract private capital to infrastructure projects, and improve risk management (UN, 2021).

This report was jointly prepared by the EDB Project Support Department and the EDB Research Department to define cross-border PPP project criteria and application areas, assess the potential of PPPs to further develop the cross-border infrastructure in the EAEU member states and Central Asian countries, including under the KIMs implemented by the Bank, and to provide guidelines for effective implementation of cross-border PPPs in the region.

Section 1 defines the terms "cross-border infrastructure" and "cross-border PPP", describes the criteria used to classify projects as cross-border projects, and lists the infrastructure development areas where application of the cross-border PPP model may prove to be beneficial. Section 2 deals with international cross-border PPP best practices using, as examples, five transport and energy projects (road bridge, railway, high-speed rail line with a cross-border tunnel, hydropower plant, and pipeline). Section 3 provides an assessment of possible cross-border PPP applications to implement infrastructure projects in the EAEU and Central Asia, subject to Eurasian economic integration priorities. Finally, Section 4 presents the EDB cross-border PPP guidelines, including a draft structure of the model agreement for a cross-border infrastructure development project on the basis of the principles of public-private partnership.

1. CROSS-BORDER PUBLIC-PRIVATE PARTNERSHIP: DEFINITION, CRITERIA, AREAS OF IMPLEMENTATION

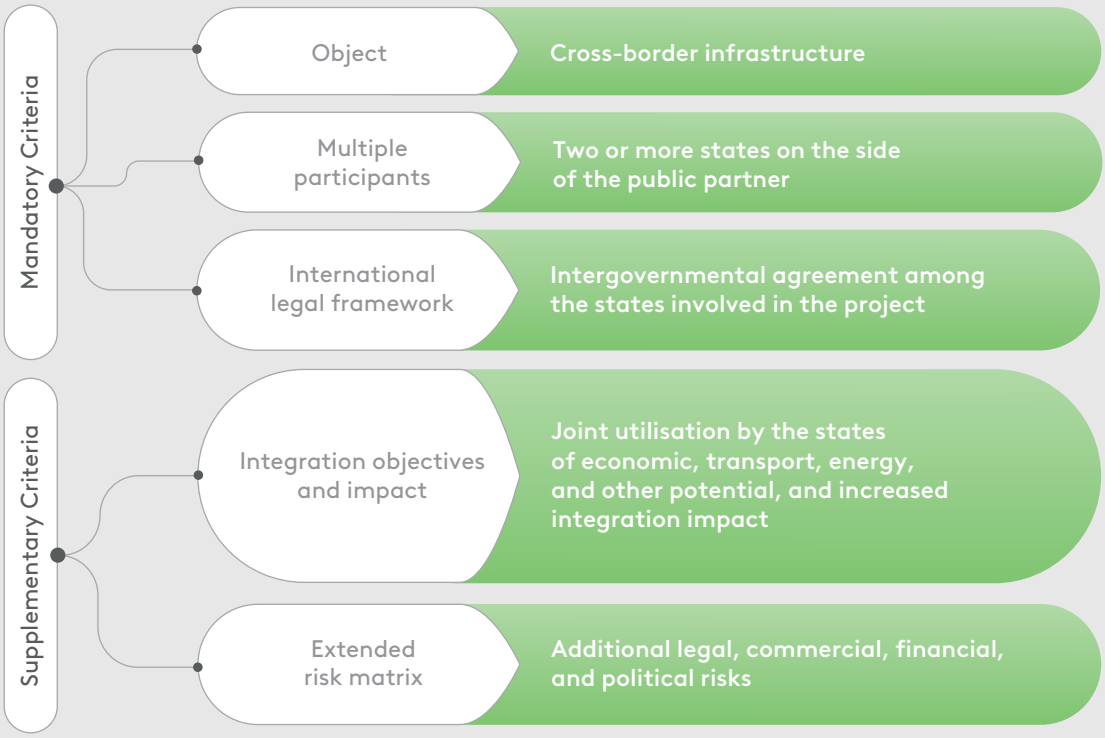
There is no universal definition of the term "cross-border PPP". GIH regards the universe of PPP projects as a continuum, where physical infrastructure facilities located in more than one country are at one end, and facilities that are physically located in only one country but have a strong impact on another country at the other end; the middle part of the continuum is populated with PPP projects that are potentially interdependent, and have a cross-border element (Global Infrastructure Hub, Ramboll, 2021). The Asian Development Bank Institute defines cross-border PPPs as infrastructure projects operating across two or more countries, or national infrastructure projects with significant cross-border impact (Asian Development Bank Institute, 2010). UNCITRAL describes cross-border PPPs as transnational PPPs with two or more participating countries (UNCITRAL, 2020).

This EDB report relies on the approaches proposed by the above international organisations and described in previous research, but places a more prominent emphasis on the unique features of cross-border PPPs (see Figure 1), and on the aspects of their operation that are important for understanding their strengths and weaknesses.

The key cross-border PPP criterion is the objective of the project: **cross-border infrastructure** (see Box 1).

Cross-border infrastructure facilities have certain territorial and spatial characteristics: they are located at the border between two or more countries and/or cross their borders. The cross-border infrastructure also frequently comprises multiple technically (functionally) interconnected facilities and/or components (e.g., road and toll stations, generating facility, and transmission lines). Therefore, the cross-border infrastructure includes individual facilities or a complete set of technically (functionally) conjugated and interconnected facilities (their parts and elements) which are spatially divided by the state border between two or more countries (Maslova, 2022).

↓ Figure 1. Cross-Border PPP Criteria



Sources: Maslova, Sokolov, 2020; EDB analysts.

Box 1. Cross-Border Infrastructure as the Objective of Cross-Border PPPs

- Perpignan–Figueres High-Speed Rail Line (45 km) linking the Spanish and French railway networks, railway service facilities, and a tunnel (8.3 km) under the Pyrenees.
- Bridge border crossing across the Amur linking Blagoveshchensk (Russia) and Heihe (China), consisting of the Russian portion of the road bridge across the main channel of the Amur River and the road bridge across Kanikurgan Creek, including the approach roads, and the Chinese portion of the road bridge across the main channel of the Amur River, including the approach roads (see Section 2, Case 2).
- Nam Theun 2 Dam jointly operated by Laos and Thailand, an example of realisation of the cross-border potential of the water and energy complex (see Section 2, Case 3).
- West African Gas Pipeline laid on the seabed and connecting Nigeria, Benin, Togo, and Ghana; it plays an important role in the development of the regional energy market of West Africa (see Section 2, Case 4).

Another key criterion for cross-border PPPs is the composition of their participants and, in particular, the fact that the **public partner is represented by more than one governmental body.**

Two or more countries act concurrently as the public partner in cross-border PPPs. Joint activities and the pooling of material and financial resources of the countries acting as public partners in cross-border PPPs produce outcomes that could not have been achieved by individual countries in national PPP projects.

It is possible for cross-border PPPs to have two private partners. However, more commonly there is only one private partner acting under the PPP agreement on both sides of the border (see Box 2).

Box 2. Cross-Border PPP Participants

- The Government of France and the Government of Spain jointly act as the public partner of the Perpignan–Figueres High-Speed Rail Line construction project, and TF Ferro Consortium is the private partner selected in a two-stage tender conducted by the authorised bodies of France and Spain.
- The Government of Amur Region (in the Concession Agreement, "Russia" or the "Russian Concession Grantor") and the People's Government of the Heilongjiang Province ("PRC", the "Chinese Concession Grantor"), and Russian-Chinese Joint Limited Liability Company for the Development and Construction of the Amur (Heilongjiang) Bridge (the "Concessionaire") (see Section 2, Case 2).
- The Government of Laos and the Government of Thailand as the public partner, and Nam Theun 2 Power Company Limited as the private partner established under the Intergovernmental Agreement (see Section 2, Case 3).
- The Governments of Nigeria, Benin, Togo, and Ghana as the public partner, and the West African Gas Pipeline Company (WAPCo) as the private partner; the list of shareholders includes major transnational energy market players, such as Chevron and Shell, as well as national state-owned and private gas companies (see Section 2, Case 5).

PPP projects implemented in only one country acting as the public partner are regulated by national PPP laws. Cross-border PPP projects go beyond the boundaries of national legal systems, which gives rise to the need for special norms and rules for all cross-border PPP partners. Those norms are negotiated by the countries, and fixed in an **international treaty,** which is then used as the legal framework for the preparation and implementation of cross-border PPPs (see Box 3).

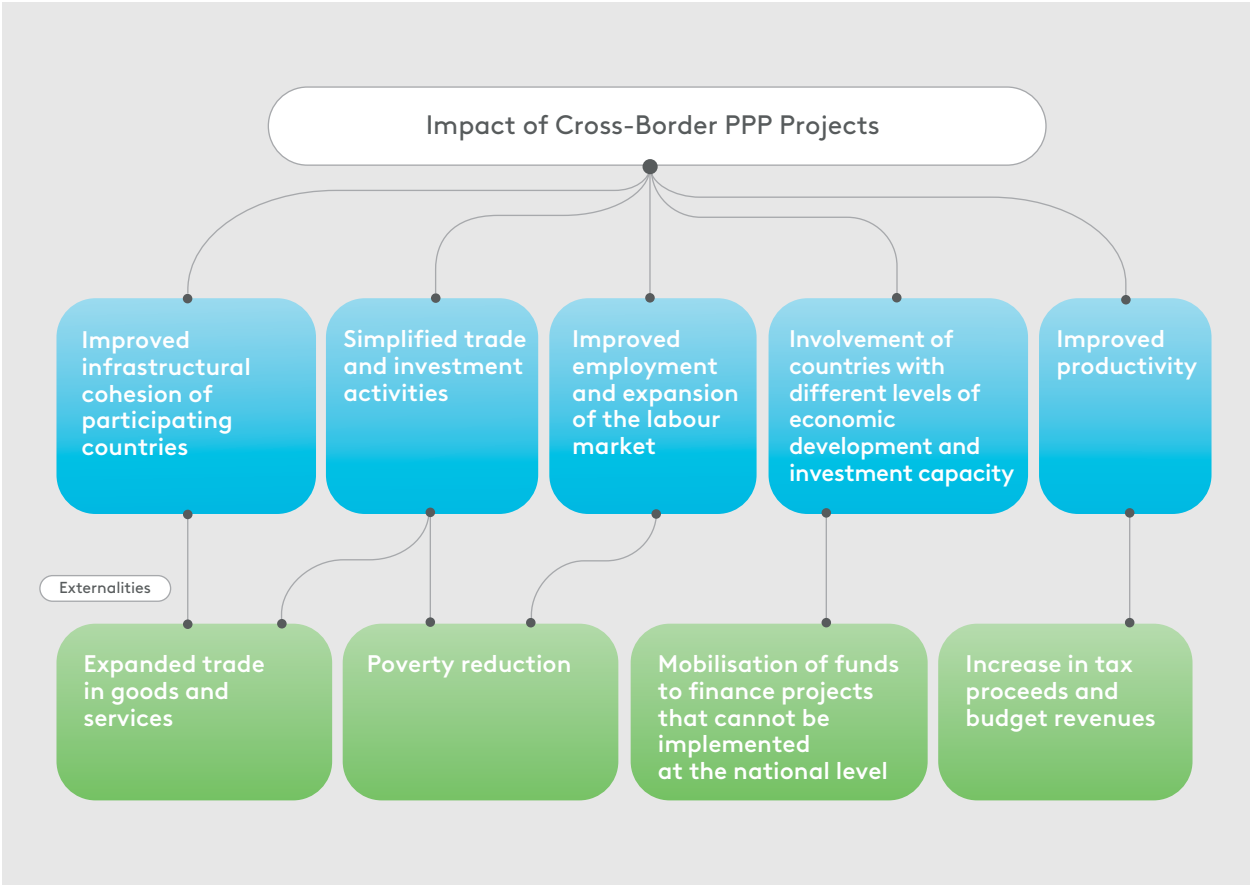
Box 3. International Bilateral Treaties as the Legal Framework for Cross-Border PPPs

- *Intergovernmental Agreement between Denmark and the Government of Sweden on the Construction and Subsequent Operation of the Fixed Link Across the Øresund Strait (the Sound)*, dated 23 March 1991.
- *Crossing Agreement between Canada, State of Michigan and Crossing Authority on the Design, Construction, Funding, Operation, and Maintenance of new International Crossing between Canada and Michigan*, dated 15 June 2012.
- *Treaty between the United Kingdom of Great Britain and Northern Ireland and the French Republic Concerning the Construction and Operation by Private Concessionaires of a Channel Fixed Link*, dated 12 February 1986 *(Tunnel under the English Channel/La Manche)*.
- *Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the Joint Construction of the Bridge Across the Amur (Heilongjiang) River*, dated 26 June 1995 (as amended by *Supplementary Protocol*, dated 29 August 2015).

An important criterion for cross-border PPPs is the **project initiation goals, normally linked to the expansion of economic co-operation, and the outcomes being achieved.** These are critical for the countries initiating cross-border PPP projects, especially for landlocked developing countries, which are considerably more dependent on physical and economic connectivity. Creation of cross-border infrastructure ensures physical and economic connectivity of two or more countries, drives trade in goods and services, mutual investment, workforce migration — in other words, the key components of economic integration.

By the same token, there are important cumulative cross-border PPP effects for the countries engaged in regional economic co-operation (see Figure 2).

↓ Figure 2. Impact of Cross-Border PPP Projects



Source: EDB.

Cross-border PPPs have greater impact, but they are also exposed to **higher risks** due to their larger scale, larger number of participants, complicated legal framework comprising international acts and laws of two or more countries, more complex sources of financing, use of multiple national currencies, construction and operation of facilities in the jurisdictions of two or more countries, etc. (see Table 1).

↓ Table 1. Cross-Border PPP Risks

Risk Type	Risk Description
Legal	Changes in the legislation of one of the countries that impose prohibitions and restrictions on the private partner, putting it in a more disadvantageous position than before their effective date, so that the private partner loses benefits it was entitled to expect at the time of execution of the cross-border PPP agreement Inconsistency of the legislative norms binding on the private partner, preventing proper discharge by it of its obligations under the cross-border PPP agreement
Commercial	Decrease in demand for the services offered by the cross-border PPP facility due to the emergence of infrastructure facilities under alternative (competing) PPP projects in one of the participating countries and/or under co-operation arrangements with a third country Suspension of operation of the cross-border PPP facility on one side of the border
Financial	Financial losses caused by adverse currency exchange rate changes in one of the countries Inability of one of the countries to provide (continue) financing

Risk Type	Risk Description
Political	Changes in the political situation resulting in a negative attitude to the PPP, and provoking an early termination of the PPP agreement at the initiative of one of the countries Military hostilities and civil disturbances in one of the countries
Environmental	Actual or threatened infliction of harm on the local ecosystems in one or several participating countries as a result of construction and/or operation of the cross-border PPP facility Activity by eco-activists in one of the countries blocking the operation of the cross-border PPP facility

Source: EDB.

Cross-border PPPs are extremely complex in terms of their launch procedures and implementation parameters, but there is an alternative, namely, investment megaprojects which can be divided into national segments, and implemented with the participation of several countries within the framework of international initiatives designed to develop international transport corridors and routes.

It is not always possible or, for that matter, necessary to meet the infrastructural needs of a particular country by creating cross-border facilities that are physically located in, or cross the border between, two neighbouring countries. Infrastructure facilities of interest to the stakeholder countries could also evolve concurrently with international transport corridors or other international initiatives. In such situations, **inter-country PPPs** (which also produce a multiplier effect on trade and economic co-operation) may offer a more suitable co-operation mechanism than **cross-border PPPs.** Examples of inter-country PPPs include transport infrastructure development projects initiated and implemented within the framework of the Europe–Western China International Transport Route (E-WC ITR).

The E-WC ITR is developing on the basis of the *Memorandum between the Republic of Kazakhstan and the Russian Federation on Co-operation and Development of Roads Along the Saint Petersburg–Kazan–Orenburg–Aktobe–Almaty–Chinese Border Route*, dated 22 September 2008, the *Memorandum between the Ministry of Transport of the Republic of Kazakhstan and the Ministry of Communications of the PRC on Mutual Understanding Regarding the Creation of the Western China–Western Europe Road Transport Corridor*, dated 16 April 2009, and the *Agreement between the Governments of the Member States of the Shanghai Co-operation Organisation on Creating Favourable Conditions for International Road Transportation*, dated 12 September 2014.

The E-WC ITR is a combination of roads, border crossing points, customs stations, terminals (both existing and newly created) that connect Russia, Kazakhstan, and China, and support international freight traffic along the most heavily used routes. The length of the corridor is 8,445 km; route: Saint Petersburg–Moscow–Kazan–Orenburg–Aktobe–Kyzylorda–Shymkent–Taraz–Almaty–Khorgos–Urumqi–Lanzhou–Zhengzhou–Lianyungang.

Some of the transport infrastructure facilities comprising the E-WC ITR are being built under PPP agreements (see Table 2).

↓ **Table 2. PPP Projects within the Framework of the E-WC ITR**

Facility	Public Partner	Private Partner	Status
Moscow–Saint Petersburg Highway (M-11) (section from the 543rd km to 684th km)	Russia	Two Capitals Highway LLC	Operation
Section of the Central Ring Road (CRR-3), Moscow Region	Russia	Highway Construction Corporation LLC	Operation
Western High-Speed Diameter Highway	Saint Petersburg	Two Capitals Highway LLC	Operation
Togliatti Bypass Highway	Samara Region	Togliatti Bypass Concession Company LLC	Construction
Large Almaty Ring Road (BAKAD)	Kazakhstan	BAKAD Investment and Operations LLP	Completion of Construction
Nur Zholy Road Border Crossing Point at the Almaty–Khorgos Highway Section	Kazakhstan	Eurotransit Terminal LLP	Operation

Source: EDB.

Due to their integrative nature, inter-country PPPs have generally the same effect on the social and economic development of the participating countries as cross-border PPPs. However, the lack of legally binding intergovernmental agreements and coordinated project implementation mechanisms exposes them to relatively higher risks.

As for **areas of implementation**, in line with the UNCITRAL approach, cross-border PPPs can be used in many diverse branches of industry (UNCITRAL, 2020).

However, our review of the existing projects shows that most cross-border PPPs are in Transport, the Water and Energy Complex, and Telecom (see Tables 3–5).

↓ **Table 3. Cross-Border PPPs: Transport Infrastructure**

Facility	Participating Countries	Regional Economic Integration Factor	Status
Øresund Bridge/Tunnel	Denmark, Sweden	EU	Operation
English Channel/La Manche Tunnel	UK, France	EU (at the time of implementation)	Operation
Road Bridge between Blagoveshchensk and Heihe	Russia, China	SCO	Operation
South Africa–Mozambique Toll Road No. 4	South Africa, Mozambique	African Union, Southern African Development Community (SADC)	Operation
Addis Ababa–Djibouti Railway	Ethiopia, Djibouti, China	African Union, BRI	Operation
Gordie Howe Bridge	USA, Canada	NAFTA	Construction
China–Laos High-Speed Rail Line	PRC, Laos	ASEAN, BRI	Operation
Turin–Lyon Alpine Rail Tunnel	Italy, France	EU	Operation
Rail Baltica Standard Gauge Railway	Latvia, Lithuania, Estonia	EU	Planning
Perpignan–Figueres High-Speed Rail Line	France, Spain	EU	Operation
Hong Kong–Guangzhou High-Speed Rail Line and Customs Station	PRC, Hong Kong	Integration of Hong Kong in the "Greater China"	Operation
Kenya–Rwanda–Uganda Standard Gauge Railway	Kenya, Rwanda, Uganda	East African Community	Project suspended. Operation under way in only one country (Kenya)
Second Malaysia–Singapore Bridge	Malaysia, Singapore	ASEAN, APEC	Operation
West African Gas Pipeline	Nigeria, Benin, Togo, Ghana	Economic Community of West African States (ECOWAS)	Operation

Sources: EDB, UNESCAP, GIH.

The significant number of cross-border PPPs for the construction of transport infrastructure is attributable primarily to their nature: they are long-range line facilities (railways and roads, pipelines, tunnels, bridges) physically capable of connecting two or more countries.

↓ **Table 4. Cross-Border PPPs: Water and Energy Complex**

Facility	Participating Countries	Economic Integration Factor	Status
Nam Theun 2 Dam	Laos, Thailand	ASEAN	Operation
Itaipu Dam	Brazil, Paraguay	MERCOSUR	Operation
Ruzizi III HPP	Rwanda, DRC	African Union	Planning

Sources: EDB, UNESCAP, GIH.

Despite the relatively small number of cross-border PPP projects for the development of water and energy infrastructure facilities, these are very attractive and have a huge potential, particularly in Central Asia, where joint utilisation of water and energy resources is in the focus of close attention of the EDB, AIFC, and other international organisations (Vinokurov, Ahunbaev, Usmanov et al., 2022).

↓ **Table 5. Cross-Border PPPs: Telecom**

Facility	Participating Countries	Economic Integration Factor	Status
Coral Sea Cable System	Australia, Papua New Guinea, Solomon Islands	APEC (as regards Australia and Papua New Guinea)	Operation

Sources: EDB.

Cross-border PPPs for the construction of telecom facilities have enormous potential. Due to pervasive digitisation, more and more production, construction, and logistics processes and public services are being transferred to the digital space to improve their functionality, accessibility, and coverage. The newly created digital and telecom infrastructure facilities are becoming the connecting link between countries, private companies, and users. The market for telecom PPP projects and its share are growing in all countries. At the same time, as digital and telecom technologies become increasingly sophisticated, development of cross-border services reduces the potential of their effective functioning in a space limited to the territory of one country. Cross-border PPPs help to avoid emergence of a digital gap between countries. Telecom cross-border PPPs enjoy the following advantages: an extended scope of implementation; a reliable legal framework; flexible payment mechanisms and state guarantees provided by the public partner; the possibility to raise funding from integration associations, multilateral development banks, etc.

Cross-border PPPs for digital platforms and other telecom facilities can be used in a broad range of industries. They are in demand in both the traditional PPP sectors, such as Transport (creation of smart cross-border transport systems, fibre optic lines along cross-border railways, etc.), and in any other regional economic co-operation sectors, such as Pharmaceuticals and Agriculture, for establishment of common markets.

The **institutionalized PPP** may be preferable form for cross-border PPPs in the telecommunications sector. Unlike the contractual PPP the institutional PPP offers to the countries acting as the public partner much more control, which may be exercised not only by using the tools provided by the cross-border PPP agreement and the existing legislation, but also through the corporate structure and participation in the management of the joint venture.

2. CROSS-BORDER PPPS: INTERNATIONAL BEST PRACTICES

A review of international best practices undertaken by several international organisations, including UNCITRAL, UNESCAP, and the GIH, shows that infrastructure development projects employing the cross-border PPP mechanism have been successfully implemented in all continents, in different groups of countries (developed countries, developing countries, including landlocked developing countries, and emerging economies), and in different sectors (Transport, Water and Energy Complex, Telecom).

Meaningful impact, and a sizeable contribution to regional co-operation, social and economic development, trade, tourism, and investment, are demonstrated by most infrastructure projects based on the cross-border PPP principles. Accordingly, this report provides an in-depth review of five practical examples of cross-border PPPs in various sectors and regions of the world (see Table 6).

↓ **Table 6. Examples of Cross-Border PPPs**

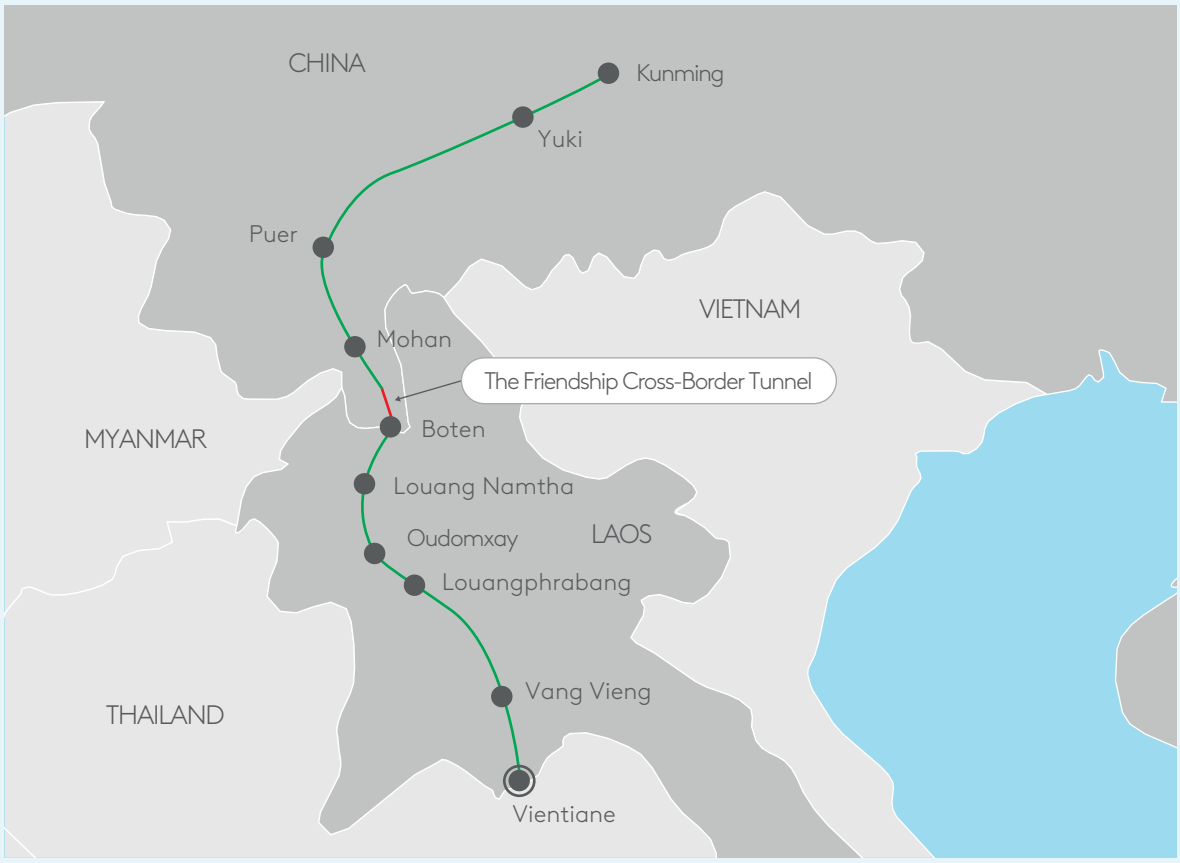
Facility	Number of Public Partners (Participating Countries)	Sector and Facility Type	Date of Execution of the Intergovernmental Agreement	Investment, $ millions
China–Laos High-Speed Rail	Two (PRC, Laos)	Railway Transport (high-speed rail line, tunnel)	2015	5,965
Road Bridge between Blagoveshchensk and Heihe	Two (Russia, China)	Road Transport (road bridge)	1995/2015	304
Nam Theun 2 Dam	Two (Thailand, Laos)	Energy (hydropower plant)	2002	1,308
Kenya–Rwanda–Uganda Railway	Three (Kenya, Rwanda, Uganda)	Railway Transport (cross-border standard gauge railway)	2013	15,000
West African Gas Pipeline	Four (Nigeria, Benin, Togo, Ghana)	Pipeline Transport (gas pipeline)	1995	950

Source: EDB.

Table 6 shows that cross-border PPP projects can differ greatly in their investment volumes and speed of implementation. The average duration of the design and construction stage for the five projects analysed in Section 2 is approximately 7.5 years (from the date of execution of the intergovernmental agreement to the date of commissioning of the first stage of the infrastructure facility).

Case 1

China–Laos High-Speed Rail Line



Participating Countries: China, Laos.

Sector: Railway Transport.

PPP Format: Build–Operate–Transfer (BOT).

Commissioning Date: 3 December 2021.

Project Costs: $5.965 billion.

Key Facts

- The first electrified standard gauge (1,435 mm) railway in Laos.
- The largest investment project and PPP project in Laos as of December 2021.

Key Technical, Economic, Territorial, and Spatial Metrics

The high-speed rail line linking China and Laos is part of the China–Singapore Rail Line megaproject; its construction was approved by the heads of state at the ASEAN Summit in 2011. In the course of implementation of the ASEAN decision, the governments of China and Laos agreed to build the first section of the line to enable passenger and freight traffic between the two countries.

The project was implemented within the framework of the BRI.

The rail line includes the Yuxi–Mohan section in China (507 km), the Boten–Vientiane section in Laos (422 km), and the cross-border Friendship tunnel between Mohan and Boten (9.6 km, including 7.2 km on the Chinese side, and 2.4 km on the Lao side). In Yuxi, the line joins with the previously built Yuxi–Kunming high-speed rail line. The CPPP project covers the Lao section and the cross-border tunnel.

Speed limit: 160 km/h for passenger trains, and 120 km/h for freight trains.

The railroad has one track in Laos and on the Chinese section between Mohan and Xishuangbanna, and two tracks between Xishuangbanna and Yuxi.

Estimated traffic capacity: 19,000–33,000 passengers per day in the Chinese section, 1,000–2,600 passengers per day in the section between China and Laos.

In Laos, tunnels, bridges, and viaducts account for 47% of the total length of the line (in total, there are 75 tunnels and 167 bridges).

The high-speed line was built in full compliance with Chinese standards, and is assigned to Class I railway according to the Chinese classification.

PPP Project Participants

- *Public Partners:* the Governments of the People's Republic of China and the Lao People's Democratic Republic acting through their authorised representatives: China Railways Group and Lao State Railway Company, respectively.
- *Private Partner:* Lao-China Railway Company, a special purpose vehicle.
- *Financing Entities:* Export-Import Bank of China.

Legal Framework

- *Agreement between the Governments of the People's Republic of China and the Lao People's Democratic Republic* (2015).
- *Agreement on the Establishment of Lao-China Railway Company.*

The parties' covenants under the intergovernmental agreement included the accession of Laos to the Organisation for Co-operation of Railways to ensure implementation in the national legislation of legal norms stipulating the rules and terms for the transportation of passengers and cargo (including the transport contract, SMGS electronic railway waybills, settlement rules, etc.). The Chinese party pledged to facilitate prompt accession of Laos

to the Organisation for Co-operation of Railways and implementation of the organisation's contractual norms and provisions in the Lao legislation, including through completion of training programmes by employees of Lao government bodies and Lao State Railway Company.

PPP Project Timeframe

- *Design:* 2015–2016.
- *Construction:* 2016–2021.
- *Operation/Maintenance:* 2021–2051.

PPP Project Funding Structure and Sources, Payment Mechanisms

Debt financing by the Export-Import Bank of China ($3.6 billion) covered 60% of total high-speed rail line construction costs, while the remaining 40% ($2.4 billion) was provided by the private partner.

China holds 70% of the joint venture stock. The share of Laos is 30%, with the Government of Laos allocating $250 million from the national budget, and borrowing $480 million from the Export-Import Bank of China.

The Lao-China Railway Company joint venture engaged the CR-Kunming Railway (China Railway Kunming Group) as the passenger/freight traffic operator.

Investments are repaid from the proceeds from operation of the high-speed rail line, mostly the fees paid for passenger and freight transport services.

According to the Feasibility Study, the Financial Internal Rate of Return (FIRR) is 6.3% over the first 25 years, while the Economic Internal Rate of Return (EIRR) is 18.5%.

PPP Project Problems and Opportunities

The project made it possible to establish a steady transport connection between the north and south of Laos, and to significantly expand opportunities for international trade and tourism between China and Laos.

It is expected that Lao goods will gain access to the huge Chinese domestic market, while the Lao tourism industry will welcome millions of Chinese tourists.

The next stage envisages construction of the section of the China–Singapore transcontinental rail line connecting Laos with Vietnam and Thailand, boosting Laos's passenger and freight transit potential.

At the same time, the project exposes Laos to certain risks. The loans received by the government to finance its contribution to the joint venture capital increased the public debt owed by Laos to the Export-Import Bank of China by $480 million. In 2019, Lowy Institute, an Australian think tank, estimated Laos's debt to China at 45% of the former's GDP. In 2020, Fitch Ratings assigned to Laos a credit rating of "CCC", stating that the country had "excessive debt".

Expected Long-Term Benefits of the PPP Project

- Reduction of the time in transit for passengers travelling between the north and south of Laos from 24 hours to 4 hours.

- Reduction of the time of delivery of cargo from Vientiane to the Chinese border from 24 hours to 6 hours.

- Indirect benefits that may become available to Laos: higher economic competitiveness resulting from the transformation of Laos from a landlocked country to a country with steady overland transport links to China. The railway will enable Laos to become a regional logistical hub (in 2022, after the launch of the railway, the country's prime minister opened a large logistical centre and dry port in Vientiane).

- The railway will not only halve transport costs to international markets, but will also facilitate access for Lao businesses to the Chinese market, with more than 1.3 billion consumers.

- The high-speed rail line will reduce CO_2 emissions by a factor of 2.5 relative to road transport.

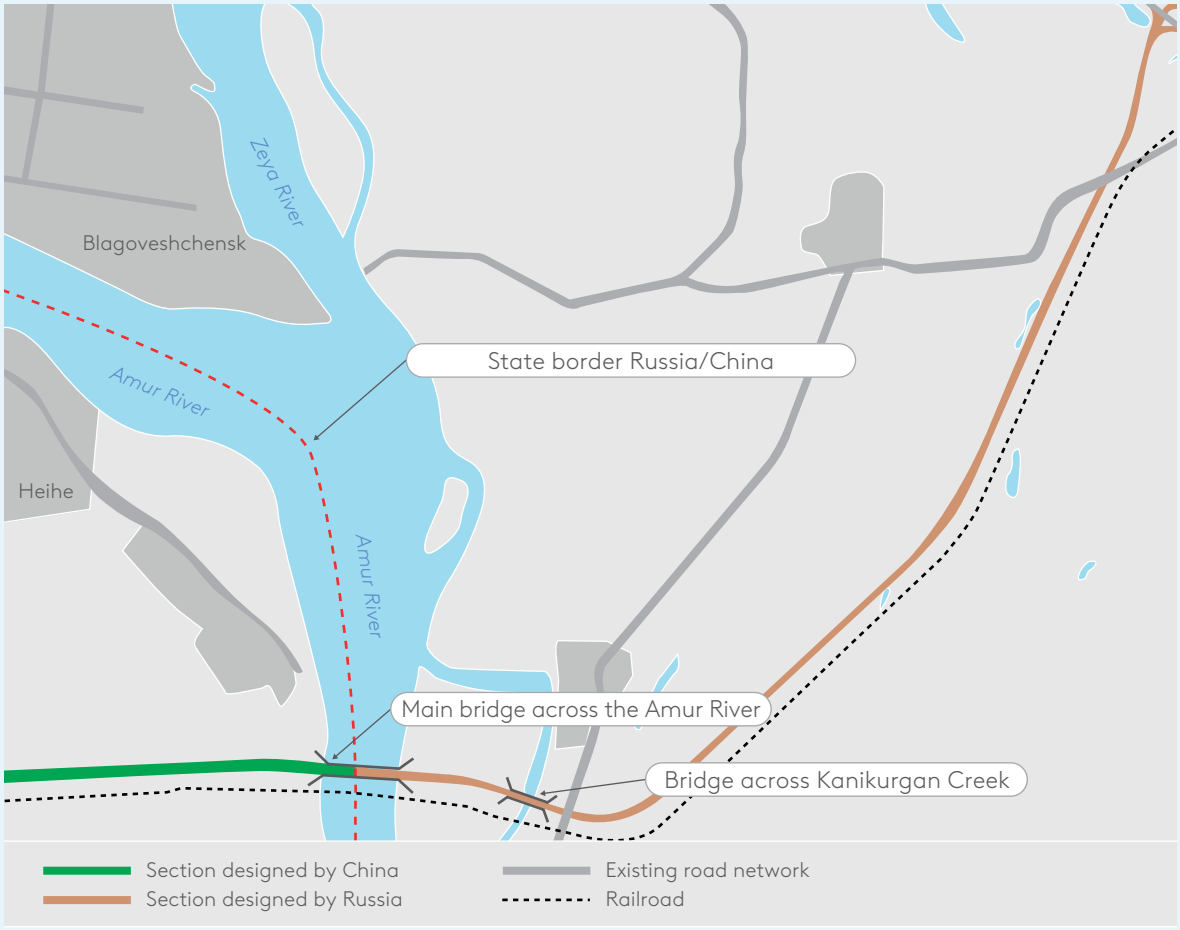
- Freight costs per metric tonne are expected to decrease by a factor of 1.5–2.

- The Lao tourism industry will receive a powerful impetus from the influx of tourists from China's Yunnan province and a number of neighbouring provinces, with a total population of 70 million, who have high purchasing power and can travel. In addition, Thai tourists may use the high-speed rail line for their trips to China.

- Upon completion, the Singapore–Kunming Railway will facilitate development of international trade in the region, where high transport costs remain one of the main trade barriers.

Case 2

Road Bridge Across the Amur (Heilongjiang) River between Blagoveshchensk and Heihe



Participating Countries: China, Russia.

Sector: Motorways.

PPP Format: Build–Operate–Transfer (BOT).

Commissioning Date: 31 May 2021.

Project Costs: $304.4 million, with $220.2 million provided by Russia, and $84.2 million by China.

Key Facts

- The only permanent bridge between Blagoveshchensk and Heihe.
- The bridge was awarded the main prize in the "Innovations in Construction of Bridges" nomination at the *Be Inspired 2017* international competition.

Key Technical, Economic, Territorial, and Spatial Metrics

Construction of a bridge crossing across the Amur River between Blagoveshchensk and Heihe became possible after the liberalisation of relations between China and the USSR, the economic and political/administrative reforms initiated in 1979 and 1985, respectively, and the demarcation of the border between the two countries in 1991. In 1988, the Government of Amur Region approached the Administrative Office of Heihe with a proposal for co-operation in building a bridge across the Amur. In June 1989, the Administrative Office of Heihe submitted to the State Council of the PRC a report on the economic and technical feasibility of the bridge construction project. Several design document variants were developed from 1993 to 2015. In 2015–2016, Institute Giprostroymost JSC and the Heilongjiang company specially created for the development and construction of the bridge across the Amur (Heilongjiang) completed their work on the design documentation, and the first stage of the construction project was launched in 2016.

The bridge across the Amur was designed in accordance with the bridge construction regulations of the Russian Federation and the PRC, and both parties agreed to apply the most stringent requirements. The Russian Institute Giprostroymost JSC was selected as the design authority. The access roads were designed in accordance with the respective national regulations.

The crossing includes the bridge across the Amur (1,080.5 m), the bridge across Kanikurgan Creek (278 m), a Category 2 road (about 17 km), as well as three road junctions and two structures linking disconnected areas (on the Russian side).

Bridge type: steel-reinforced concrete extradosed bridge with a two-lane motorway.

Roadway dimensions: 11.5 (2.0+2x3.75+2.0) m.

The bridge has 12 spans, with the five longest spans having a length of 147 m each. There are two spans for vessel passage with an underbridge clearance of 140x17 m.

The international automobile border crossing points (IABCPs) in Kanikurgan and Heihe on both sides of the bridge serve as border and customs control stations and toll stations. Payments are made in roubles at the Russian Kanikurgan IABCP, and in yuans at the Chinese Heihe IABCP.

PPP Project Participants

- *Public Partners:* the Russian Federation and the People's Republic of China, represented by the Government of Amur Region (Russian Federation) and the People's Government of Heilongjiang Province (People's Republic of China), respectively.
- *Private Partner:* Joint Russian-Chinese Concession Company with a headquarters in Heihe and a branch office in Blagoveshchensk.
- *Financing Entities:* Bank of Heilongjiang Province.

Legal Framework

- *Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the Joint Construction of the Bridge Across the Amur (Heilongjiang) River in the Vicinity of Blagoveshchensk and Heihe*, dated 26 June 1995.

- Protocol of 3 September 2015 on amendments to the *Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the Joint Construction of the Bridge Across the Amur (Heilongjiang) River in the Vicinity of Blagoveshchensk and Heihe*, dated 26 June 1995.

- *Concession Agreement with Respect to the Bridge Border Crossing Across the Amur (Heilongjiang) River in the Vicinity of Blagoveshchensk (Russian Federation) and Heihe (PRC)*, dated 15 June 2016.

PPP Project Timeframe

- *Design:* 2015–2016.
- *Construction:* 2016–2019.
- *Operation/Maintenance:* 2020–2040.

PPP Project Funding Structure and Sources, Payment Mechanisms

Equity financing (with the funds provided by the stakeholder constituent entity of the Russian Federation, namely, Amur Region, and the Chinese province of Heilongjiang) and, partially, debt financing were used for the project. The Russian Federation received a loan (debt financing) from the Bank of Heilongjiang Province, and then forwarded the proceeds to the private partner, the Joint Russian-Chinese Concession Company (its Russian branch), to build the Russian part of the bridge.

The useful life of the bridge under the Concession Agreement is 19 years.

It is expected that the invested funds will be recouped with toll monies.

Joint Rights/Obligations and Control: Institutional Mechanism

All PPP project implementation activities are coordinated by the Ministry of Transport of the Russian Federation on the Russian side, and by the Ministry of Transport of the PRC on the Chinese side. During the construction of the bridge border crossing, the parties developed simplified state border crossing rules for the persons, cargo, vehicles, and construction equipment related to the construction of the bridge.

In addition to coordinating the PPP project implementation activities, the above bodies were authorised to resolve disputes arising in the course of construction, operation, maintenance, and servicing of the bridge border crossing.

PPP Project Problems and Opportunities

The project's difficulties were attributable to the lengthy approval process, from the execution of the agreement in 1995 up to and including the issuance by Rosavtodor (Federal Road Agency of the Russian Federation) of an expert opinion claiming that construction of the bridge was inexpedient. Protracted breaks in the preparations and the ensuing need to conduct new project surveys resulted in a review of the feasibility study (its second version was prepared only in 2004).

Nevertheless, completion of the project created a steady all-season transport link between the Russian Amur Region and the Chinese Province of Heilongjiang, instead of the previous ferry service between Blagoveshchensk and Heihe, which was usable only for several months during the year.

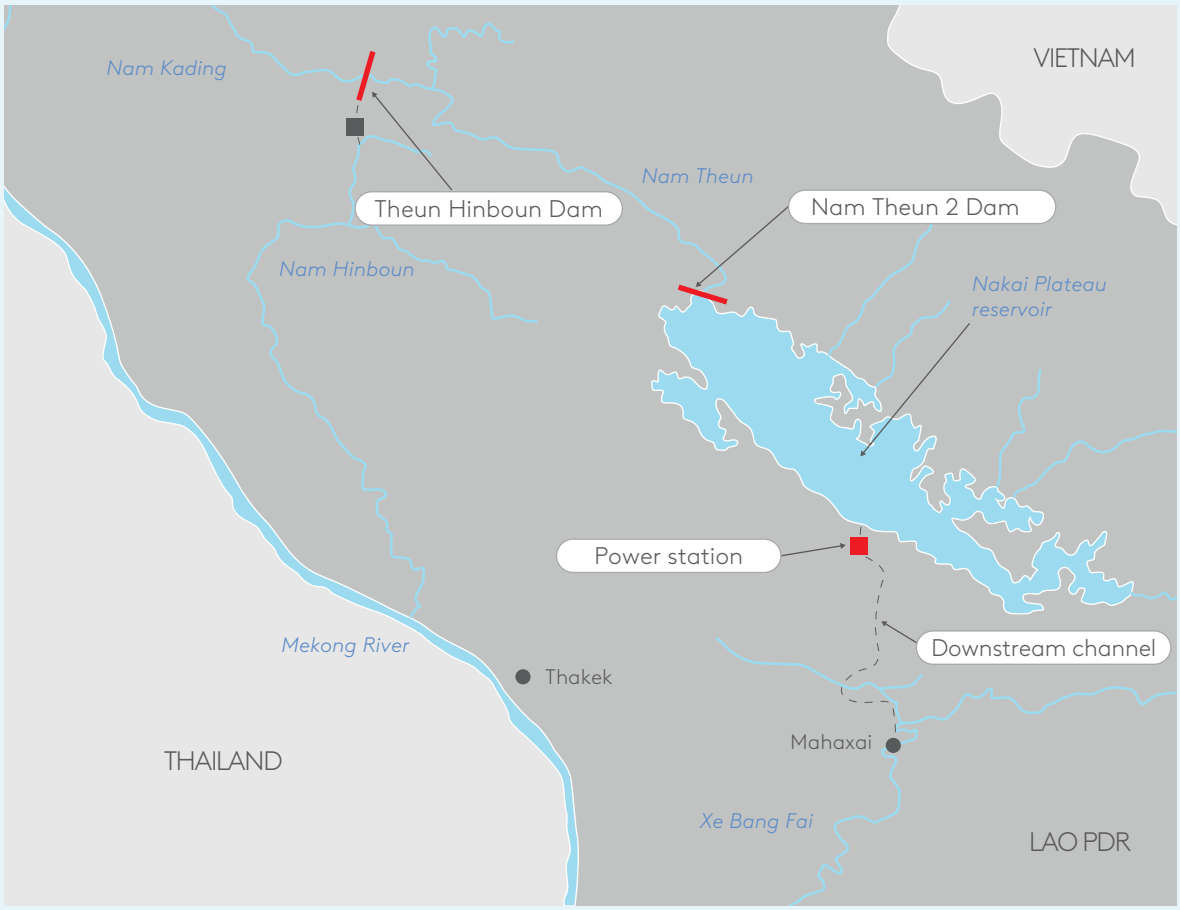
Due to the rapid expansion of the transport and economic ties between Russia and China, the bridge can be used not only for trade and tourism, but also for the increasing passenger and freight traffic between the neighbouring regions of the two countries.

Expected Long-Term Benefits of the PPP Project

- All-season 24x7 transport link between Blagoveshchensk and Heihe.
- Cargo delivery times reduced by several days due to the deployment of state-of-the-art customs and cargo processing technologies at the international road BCP Kanikurgan and Heihe.
- Local economic growth boosted by the development of trade and tourism, and various multiplier effects.
- Increase in transit freight traffic through Amur Region and the Province of Heilongjiang.
- Anticipated reduction of the cost of road freight transport due to shorter border waiting times and shorter distances, including transit distances, between the neighbouring regions.
- Reduction of pollutant and greenhouse gas emissions due to shorter distances and passenger/cargo travel times, and improved road conditions.

Case 3

Nam Theun 2 Dam



Participating Countries: Laos, Thailand.

Sector: Energy.

PPP Format: Build–Operate–Transfer (BOT).

Commissioning Date: April 2010.

Project Costs: $1,308 million.

Key Facts

- The largest hydro generation project in Laos, enabling export of electricity to Thailand.
- Project costs exceeded 85% of the GDP of Laos in 2002. The dam is the largest economic asset, source of foreign currency, and source of budget revenues in Laos.
- The largest hydro generation project financed by the private sector, the largest energy project in Asia, and the largest private cross-border energy project.

Key Technical, Economic, Territorial, and Spatial Metrics

The hydro generation potential of the Nam Theun River was identified in the mid-1970s. The Nam Theun 2 (NT2) project started in the 1980s. Sponsors appeared in 1994, whereupon the World Bank was invited to join the project. After the 1997 Asian financial crisis, the project was frozen. Preparations were renewed in 1999.

The NT2 project is an example of a PPP where the facility is physically located in one country (Laos), but operated in two bordering countries (Thailand and Laos).

The hydropower plant has a total capacity of 1,070 MW, of which 995 MW are exported to Thailand, and 75 MW are consumed domestically. The facility consists of the power plant, the 39-metre dam, and a water reservoir with an area of 450 m^2. The catchment area is 4,039 m^2.

At the initial stage, NT2 supported 42% of Lao's generating capacity.

The project also included construction of physical infrastructure, schools and hospitals, including 145 km of new and modernised roads and bridges, 138 km of 500 kV power transmission lines to the border with Thailand, and 70 km of 115 kV power transmission lines to the national power grid of Laos.

The hydropower plant uses water from the Nam Theun River, a tributary of the Mekong, and discharges it into the Xe Bang Fai River.

Electricity is sold under a "take or pay" arrangement to the Electricity Generating Authority of Thailand (EGAT, Thailand) and Electricité de Laos (EDL, Laos).

NT2 supplies inexpensive electricity to consumers in Thailand, and is a significant source of revenue for the Government of Laos. The cost of imported Lao electricity is about half of the average cost of generation in Thailand.

PPP Project Participants

To finance, build, and operate the NT2 hydropower plant, in 2002 it was decided to establish Nam Theun 2 Power Company Limited (NTPC), a private consortium with the following participants[1]:

- 40% — EDF International, an Electricité de France subsidiary (controlled by the Government of France);
- 35% — Electricity Generating Public Company Limited (EGCO) with the following main shareholders: Electricity Generating Authority of Thailand (EGAT) and TEPDIA Generating B.V. (TEPDIA);
- 25% — Lao Holding State Enterprise (LHSE).

Public Partners: LHSE, a special purpose vehicle managed by the Ministry of Finance of Laos; EGCO, one of the largest public energy companies in Thailand; and EDF, a company controlled by the Government of France.

[1] Nam Theun 2. Shareholder Structure. Available at: https://www.namtheun2.com/our-company/shareholder-structure/

Private Partner: NTPC.

Financing Entities: 26 financial institutions, including:

- four multilateral development banks: the World Bank Group, the Asian Development Bank (ADB), the European Investment Bank (EIB), and the Nordic Investment Bank;
- three export credit agencies (ECAs): Coface (France), EKN (Sweden), and GIEK (Norway);
- three bilateral financial agencies: AFD (Agence Française de Développement), PROPARCO (Société de Promotion et de Participation pour la Coopération Economique), and the Thailand Export and Import Bank;
- nine international commercial banks which provided financing in hard currencies, including: BNP Paribas, Credit Agricole Indosuez, ANZ, Société Générale, Fortis Bank, and Bank of Tokyo-Mitsubishi;
- seven Thai commercial banks which provided financing in Thai bahts.

Legal Framework

Memorandum on Mutual Understanding signed in 1994 by the Governments of Laos and Thailand.

PPP Agreement

The *Concession Agreement between NTPC and the Government of Laos* was signed in 2002.

The *Electricity Offtake Agreements* between NTPC and EGAT and between NTPC and EDL were signed in 2003.

PPP Project Timeframe

Concession Term: 31 years (construction: 6 years; operation: 25 years).

- *Design:* started in the 1980s.
- *Construction:* 2005–2010.
  2006–2008: diversion of the Nam Theun River; 2008: completion of construction of the Nakai Dam wall, and filling of the reservoir during the rainy season; 2009: test of power generation.
- *Operation/Maintenance:* 2010–2041.
  Commercial operation of the hydropower plant started in April 2010. By 2035, the year of expiry of the Concession Agreement, the hydropower plant and all related assets will be transferred to the Government of Laos free of charge.

PPP Project Funding Structure and Sources, Payment Mechanisms

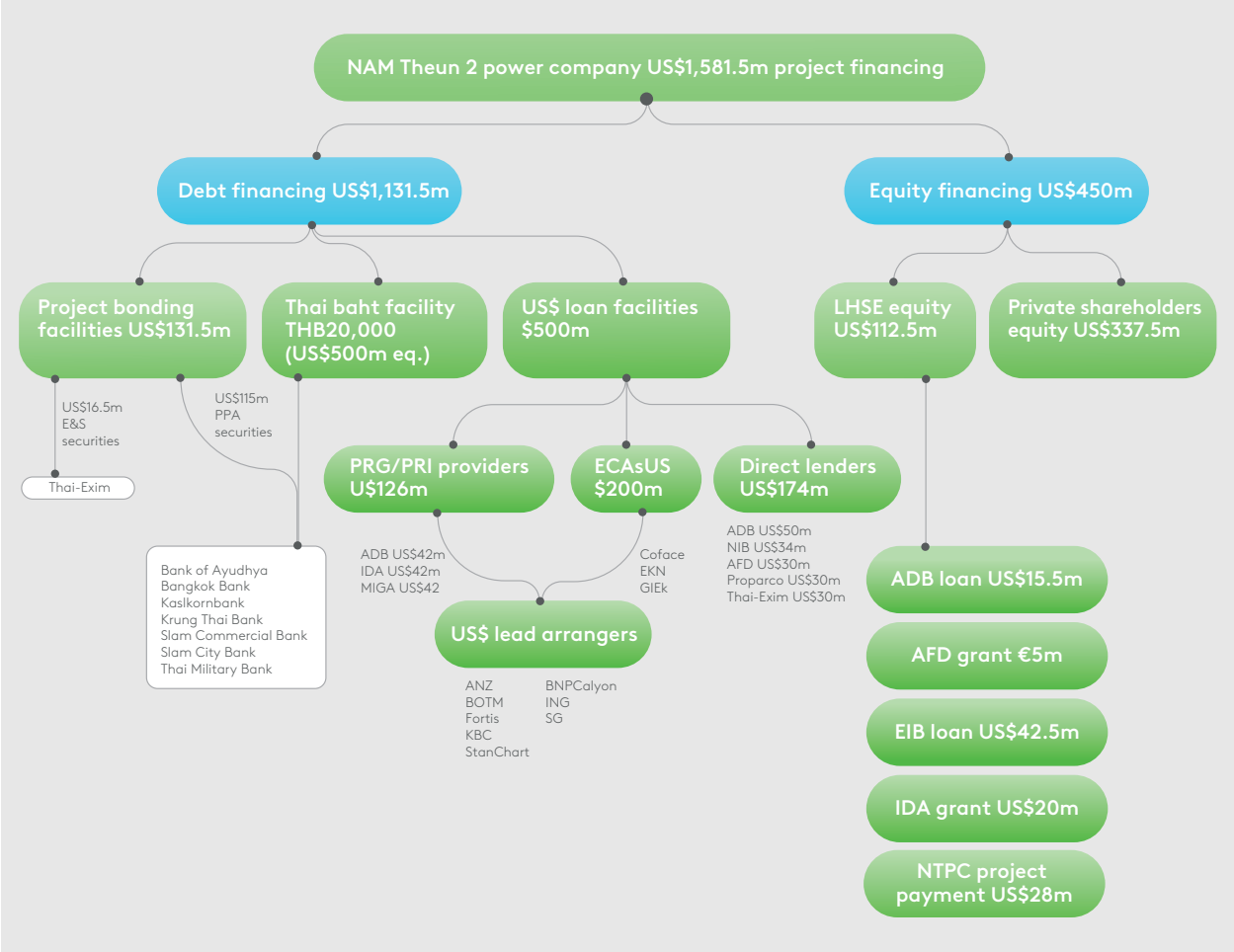
NTPC and the Government of Laos used a combined loan/grant funding arrangement. The funds were provided by the World Bank, the ADB, the EIB, the Nordic Investment Bank, and other international banks and development agencies.

The project was funded with equity, loans, and guarantees from 26 financial institutions.

The construction costs were initially estimated at $1,250 million plus $331.5 million for contingent expenses (total: $1,581.5 million, see Figure 3). The total cost of the project upon completion was $1,308 million.

The economic appeal of the project was ensured by the following mechanisms: stand-by letters of credit were used to support equity liabilities; development costs incurred by the sponsors of the project were accounted as equity; contractual capital investment liabilities remained in force until project completion.

↓ **Figure 3. NT2 Project Financing Structure (original version)**



Source: Project Finance International 500th Edition Special Report March 2013.

The Government of Laos manages the project revenues under the supervision of the World Bank and the Asian Development Bank.

Project revenues come from licence payments, dividends, profit tax and dividend tax revenues. Government revenues are estimated at $2 billion in nominal terms over 25 years. In 2010–2017, the budget of Laos received more than $170 million in project revenues.

The Electricity Offtake Agreement was designed so as to stabilise cash flows during periods of hydrological (and, accordingly, generation) fluctuation.

Three ECAs were included in the reinsurance arrangement. Coface acted as the lead insurer, while EKN and GIEK reinsured Coface liabilities.

The MDBs played a critical role. Without their involvement, international commercial creditors would not have been willing to assume the political risks usually associated with Lao projects. By the same token, without international creditors, Thai commercial banks would not have agreed to provide debt financing.

Half of the basic long-term debt was denominated in Thai bahts, the other half in US dollars.

Joint Rights/Obligations and Control: Institutional Mechanism

The project was closely monitored. The following control and reporting mechanisms were employed: (1) an expert team (social matters, environmental protection, biodiversity) was appointed by the World Bank, and prepared 28 reports in 1997–2018; (2) a technical advisor was engaged by the commercial creditors, and published 39 reports in 2005–2019; (3) a safety supervision team provided advice on the technical aspects of construction, operation, and safety of the dam; (4) an international team consulted the World Bank on project implementation; (5) independent experts were appointed by the Government of Laos to conduct external monitoring; and (6) regular missions were dispatched by international financial institutions and agencies (ADB, 2019).

PPP Project Problems and Opportunities

The main difficulties emerging in the course of the project were related to the lengthy initial approval process, and a large-scale campaign against construction of the dam. After the 1997 Asian financial crisis, the project was frozen due to the lack of funding, but work resumed in 1999.

The negative social and economic impacts of the project that affected the downstream population included water damage to riverside orchards, changes in the quality of the water, and an adverse effect on fishing. Several programmes were developed to support the villagers living downstream along the Xe Bang Fai River. The project necessitated relocation of about 6,300 people from 15 villages.

At the same time, according to a 2020 World Bank assessment, the NT2 project was a success, as it generated revenues for the government from water use charges, taxes, and dividends. Project revenues were fully consistent with the original plan.

Expected Long-Term Benefits of the NT2 Project

- Financial benefits to Laos were considerable: $2 billion in taxes, royalties, and project dividends over the 25-year term of the Concession Agreement. Upon completion of the project, all its assets will be transferred to the Government of Laos free of charge, with an anticipated residual useful life of at least 25 years.

- The project is important for the development of Laos. Project revenues are being used to reduce poverty and protect the environment. The funds are invested in several programmes, including the Free Mother and Child Health Care System, the Health Care Equity Fund, the Poverty Reduction Fund, and school grants.

- The project's macroeconomic impact is also significant. It supports economic growth in Laos through electricity exports, and catalyses the development of hydropower engineering, one of the key industries of Laos. In 2020, power generation accounted for 12% of the country's GDP.

- NT2 is the main electricity supplier to Thailand, maintaining the lowest cost per kilowatt due to the high energy efficiency of the hydropower plant because of the use of advanced technologies and the absence of direct fuel costs.

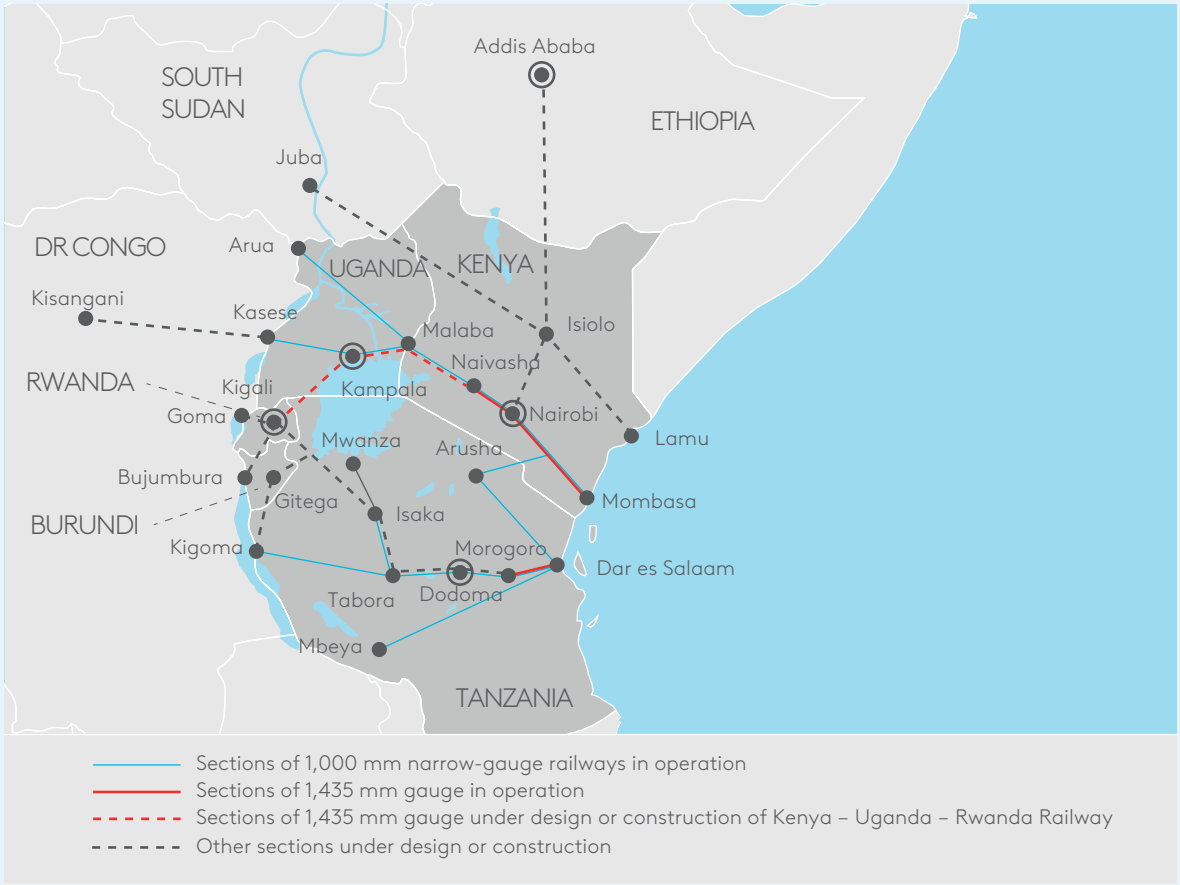
- Transport accessibility has improved. Hard-surface roads reduce travel time from Nakai to Thathek, the capital of the province, from half a day to one hour.

- New tools were developed in Laos in the course of the project, including safety rules, concession agreements, operating procedures, and a safety system. The project helped to open the country to foreign direct investment.

- NT2 facilitates structural changes in Laos through investment in human, institutional, and physical infrastructure.

Case 4

Kenya–Rwanda–Uganda East African Railway



Participating Countries: Kenya, Uganda, Rwanda.

Sector: Railway Transport.

PPP Format: Build–Operate.

Commissioning Date: 2017 (Mombasa–Nairobi section).

Project Costs: About $15 billion, with the cost of construction of the railway sections in Kenya and in Uganda and Tanzania estimated at $8.9 billion and more than $5 billion, respectively.

Key Facts

- Flagship project of the Kenya Vision 2030 development programme.
- The project was funded within the framework of the Chinese BRI.
- Passenger and freight service along the Mombasa–Nairobi section was launched in 2017.
- The project was implemented in only one country. China discontinued funding because the project was making losses.

Key Technical, Economic, Territorial, and Spatial Metrics

The East African Standard Gauge (1,435 mm) Railway (SGR) project is intended to link the Kenyan seaport of Mombasa with Nairobi (capital of Kenya), Kampala (capital of Uganda), and Kigali (capital of Rwanda). The idea for the project emerged in 2013, and its purpose was to connect East African countries, both coastal and landlocked.

The SGR project is part of the *East African Railway Master Plan* adopted by the East African Community in accordance with the directive of the Summit of Heads of State in 2004.

At some sections, the rail line is supposed to run parallel to the existing narrow-gauge (1,000 mm) tracks or roads. The line was designed to transport 22 million tonnes of cargo per year, which corresponds to 40% of the projected intake capacity of the port of Mombasa by 2035. The cargo terminals will be situated in the port of Mombasa, while new internal container storage facilities will be built at the Embakasi railway station in Nairobi.

According to the *East African Railway Master Plan*, the 1,435 mm tracks and the 1,000 mm tracks would be joined through connection and transfer hubs to facilitate passenger travel and reduce freight delivery times.

Kenya built the sections from Mombasa to Nairobi (487 km) and from Nairobi to Naivasha. Construction of the Naivasha–Malaba section at the border with Uganda stopped, as revenues from the operation of the previously built sections proved to be much lower than expected. That resulted not only in the suspension of funding of the unfinished section leading to Malaba in Kenya, but also in the refusal of the Export-Import Bank of China to extend to the Government of Uganda a loan to finance the construction of the Malaba–Kampala section.

PPP Project Participants

Public Partners: Governments of Kenya, Uganda, and Rwanda.

Private Partners: Afristar, a special purpose vehicle with equity participation of the Chinese contractors, was to act as the railway operator in the three countries. However, due to the suspension of the project in Uganda and Rwanda, Afristar is operating the railway only in one country, Kenya. China Communications Construction Co. (CCCC) and its subsidiary China Road and Bridges Corporation (CRBC) (which acted as the general contractor) were engaged to build the railway.

Financing Entities: Export-Import Bank of China.

Legal Framework

International Treaty:

- In October 2009, the Governments of Kenya and Uganda signed a *Memorandum of Understanding on the Construction of the Railway Line from Mombasa to Kampala*.
- In August 2013, the Governments of Kenya, Uganda, and Rwanda signed a tripartite agreement to accelerate the construction of the railway to their respective capitals.

- South Sudan acceded to the agreement on extension of the line to Juba in 2014.

PPP Agreement: Agreement on the Operation of the Standard Gauge (1,435 mm) Railway.

PPP Project Timeframe

- *Design:* design work was completed in 2014 for several sections of the railway.
- *Construction* of the Mombasa–Nairobi section started on 12 December 2014, and finished on 31 May 2017 (18 months earlier than scheduled). The Nairobi–Naivasha section was built in 2016–2019.
- No funding was negotiated for construction of the other sections.
- *Operation/Maintenance:* from 2017 (Stage 1: Mombasa–Nairobi section).

PPP Project Funding Structure and Sources, Payment Mechanisms

The cost of the Mombasa–Nairobi section was $3.8 billion. The Export-Import Bank of China provided about 90% of total funding under the BRI, while the Government of Kenya allocated the remaining 10%. 2014 loan terms: grace period: 5 years; maturity: 15 years.

In addition, Kenya received a $1.5 billion loan from the Export-Import Bank of China to extend the line to Naivasha. However, China refused to provide the remaining $3.6 billion to finance construction of the Naivasha–Kisumu section at Stage 3.

Kenya began to repay the SGR loan in 2019. The Mombasa–Nairobi section fails to generate enough revenues to cover its operating costs and repay the loans.

The $2.3 billion loan to Uganda to finance the construction of the Malaba–Kampala (85% of total budget) was not approved by China before completion of the Kenyan section of the railway. Accordingly, the parties negotiated a possible engagement in construction works in Uganda of Yapi Merkezi, a Turkish company.

In 2022, Tanzania announced plans to collaborate with China on the construction of an SGR section leading to the Democratic Republic of Congo (length: 2,102 km; estimated cost: $2.2 billion; timeframe: 2026).

Main Rights and Obligations of PPP Project Participants

The Chinese party made project funding contingent upon consent of the other project countries to hire a Chinese construction contractor, and hire Chinese personnel to operate the railway.

Kenya is paying the operating fees to China, and has been repaying the loan since 2019.

Joint Rights/Obligations and Control: Institutional Mechanism

A work team was established at the intergovernmental level. It includes representatives of Kenya, Uganda, and Rwanda, as well as representatives of Tanzania and South Sudan, which joined the project at a later stage. A representative of the East African Community participated in the proceedings of the work team as an observer.

Another work team was created to implement the project in Kenya. It included representatives of the Government of Kenya, the Kenyan Railway Corporation, and the contractors (CCCC and CRBC).

PPP Project Problems and Opportunities

The cross-border PPP project for construction of a railway connecting Kenya, Uganda, and Rwanda, was a failure. The revenues generated by the completed railway section do not cover its operating costs. The Mombasa–Nairobi section suffered a loss of $100 million during the first year of its operation. The services offered by the SGR railway are in low demand because of the high rates. Errors in forecasting passenger and freight traffic for the new railway were, at least in part, caused by the fact that no IFIs were involved in the project and, accordingly, no comprehensive risk assessment was undertaken.

The original plan to build a cross-border railway connecting landlocked Uganda and Rwanda to the Kenyan seaport of Mombasa had to be abandoned. As a result, the cross-border PPP project was transformed into a national PPP project implemented in Kenya and financed with international funds. Afristar, intended as a joint venture, is operating only in Kenya.

Additional difficulties (and increased project costs) were related to the need to redesign certain sections to bypass the Nairobi National Park at the demand of the Kenyan National Environment Tribunal, and to pay significant compensation to the people relocated from the railway construction area.

Suspension of funding by China raised doubts regarding the completion prospects of all other sections in Uganda and Rwanda, as well as in the other countries that joined the project. As a result, the countries of the region returned to their earlier plans to modernise the old narrow-gauge railway sections. Uganda invested $250 million in the restoration of a 1,000 mm track connecting Kampala and Malaba at the border with Kenya. The Government of Uganda is concurrently negotiating with its Turkish partners the construction of a new standard-gauge (1,435 mm) railway line between Kampala and Malaba.

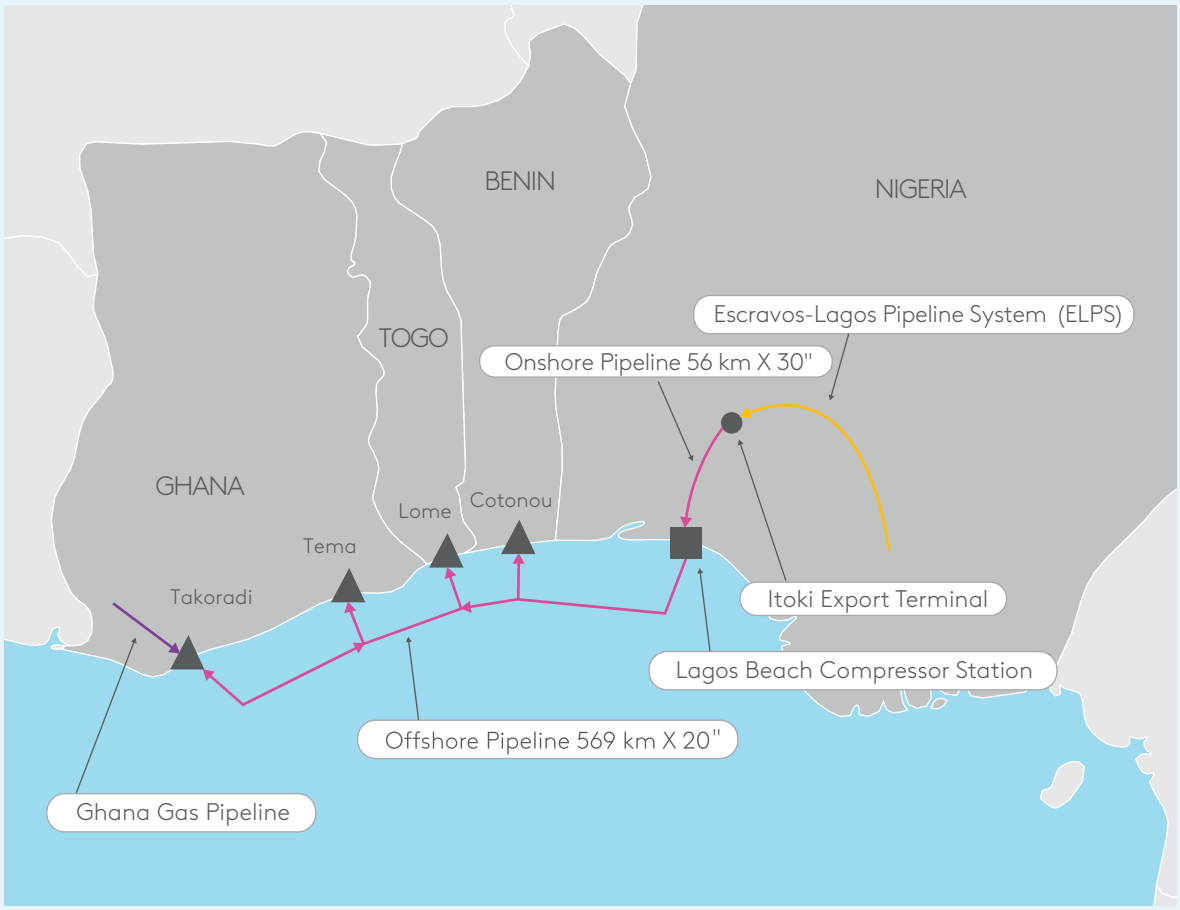
Expected Long-Term Benefits of the PPP Project

Had it been successfully completed, the project should have given the region an additional competitive edge by reducing the cost of doing business, transit times, and regional trade costs. In particular, the Mombasa–Nairobi line makes it possible to reduce passenger travel times by more than half (from 10 hours to 4 hours). Freight trains cover the distance in less than 8 hours, and can transport 25 million tonnes of cargo per year.

The prospects of social and economic transformation of Eastern and Central Africa depend on the landlocked countries getting easy access to seaports. Reduction of regional trade costs should facilitate creation of industrial parks and new jobs, and expansion of business activity along the corridor. Additional investment in tourism industry may increase the positive impact.

Case 5

West African Gas Pipeline



Participating Countries: Nigeria, Benin, Togo, Ghana.

Sector: Pipeline Transport.

PPP Format: Build–Operate–Transfer (BOT).

Commissioning Date: 14 December 2008 (first section); 1 July 2012 (all sections).

Project Costs: $950 million.

Key Facts

- The gas pipeline is laid in the territorial waters of four countries along the coastline at a distance of 15–20 km from the shore.
- In August 2012, during a botched hijacking of an oil tanker by pirates near the shores of Togo, the gas pipeline was damaged by an anchor; as a result, gas supplies to Togo and Ghana were limited for several months.

Key Technical, Economic, Territorial, and Spatial Metrics

The West African Gas Pipeline (WAGP) project was initiated on 14 August 1982 within the framework of the Economic Community of West African States (ECOWAS), as one of the key regional economic development goals of West Africa. In January 1992, a feasibility study financed by the World Bank confirmed the availability of sufficient natural gas reserves in Nigeria, and the commercial viability of the project.

The pipeline consists of three sections with a total length of 678 km. The offshore section accounts for 569 km, or 84% of the total length. It starts near the Itoki terminal in the southeast of Nigeria, and crosses the territorial waters of Benin, Togo, and Ghana along the coastline about 15–20 km from the shore at a depth ranging from 30 m to 75 m. The onshore section of the pipeline in Nigeria connects the compressor station of the offshore section at Lagos Beach with the Chevron-owned Escravos–Lagos pipeline system commissioned in 1989. It is expected that the WAGP will be extended to Côte-d'Ivoire, and then to Senegal.

Pipe diameter: 508 mm (offshore section), 760 mm (onshore section in Nigeria).

Throughput capacity of the pipeline: 5 bcm.

Most of the gas is consumed by the participating countries. In Ghana, it is supplied to the Takoradi Power Station in Aboadze operated by the Volta River Authority and Takoradi International Company Limited (TICO). However, most of the gas is consumed in Lagos.

PPP Project Participants

- *Public Partners:* Governments of Nigeria, Benin, Togo, and Ghana. The respective Ministries of Energy of the four countries were appointed as the parties responsible for the project.
- *Private Partner:* West African Gas Pipeline Company Limited (WAPCo).
- *Financing Entities:* the World Bank (feasibility study), MIGA (guarantees), the European Investment Bank, USAID, the Overseas Private Investment Corporation (OPIC), private oil companies.

Legal Framework

- *Agreement between the Governments of Nigeria, Benin, Togo, and Ghana on the Development of the West African Gas Pipeline on the Basis of Private Investment and Commercial Principles* (21 January 1995).
- *Intergovernmental Agreement between Nigeria, Benin, Togo, and Ghana on Harmonised Tax and Regulatory Regime for the Development, Construction, and Operation of the Pipeline* (21 March 2000).
- *West African Gas Pipeline (WAGP) Treaty* signed by the Governments of Benin, Ghana, Nigeria, and Togo (21 January 2003); defines project implementation parameters; ratified in October 2004.

- *International Project Agreement (IPA) between WAPCo and the Governments of Benin, Ghana, Nigeria, and Togo, and the ECOWAS Secretariat* (acting as an observer).

- National regulatory acts adopted in Benin, Ghana, Nigeria, and Togo in December 2004 in furtherance of the previously signed intergovernmental agreements to establish a shared framework for the operation of the joint venture (WAPCo) in the four countries.

PPP Project Timeframe

- *Design:* 2000–2004.
- *Construction:* 2005–2012.
- *Operation/Maintenance:* 2012–2032.

PPP Project Funding Structure and Sources, Payment Mechanisms

Project funding was of the mixed type: the funds were allocated by the participating countries and private investors, while technical assistance and loans were provided by MDBs and development agencies.

In 2014, joint venture equity investments amounted to $176.7 million, or 18.6% of total project investments (World Bank, MIGA, 2004). Chevron is the largest shareholder of the WAGP joint venture, with an equity stake of 36.9% (see Table 7). The Nigerian National Petroleum Company (NNPC) is the second-largest shareholder, with an equity stake of 24.9%. Shell (Shell Petroleum Development Company of Nigeria Limited, or SPDC) and Takoradi Power hold 17.9% and 16.3% of the company's shares, respectively. The remaining 4% is owned by Société Togolaise de Gaz (2%) and Société BenGaz (2%).

↓ **Table 7. West African Gas Pipeline Project: Financing Structure and Sources**

Source of Financial Resources	Type of Financing	Investment, $ millions
Government of Ghana (currently represented by Takoradi Power Company)	Equity stake in the joint venture	28.8
NNPC		44.2
Chevron Nigeria Limited (CNL)		64.9
SPDC		31.8
Société Togolaise de Gaz		3.5
Société BenGaz		3.5
Government of Ghana (currently represented by Takoradi Power Company)	Borrowings	117.9
NNPC	Borrowings	180.8
Chevron Nigeria Limited (CNL)	Borrowings	265.4
SPDC	Borrowings	130.2
Société Togolaise de Gaz	Borrowings	14.5
Société BenGaz	Borrowings	14.5
TOTAL:		**950.0**

Source: World Bank.

Project funding was provided by MDBs and development agencies:

- World Bank — feasibility study, two guarantees ($50 million and $75 million) through the Multilateral Investment Guarantee Agency (MIGA) (2004);
- European Investment Bank — $98 million loan to finance construction of the pipeline section in Ghana (2006);
- USAID and the Overseas Private Investment Corporation (OPIC) — two loans ($1.6 million and $45 million, respectively) (2006).

The WAGP joint venture subcontracted pipeline engineering, procurement, and construction (EPC) services. The EPC contract for the onshore pipeline and facilities was awarded to Willbros in December 2004. Concrete weight coating for the offshore pipeline was supplied by Bredero Shaw. The contract to build the compressor station at Lagos Beach in Nigeria was awarded to the French contractor Entrepose in July 2008.

Front-end engineering, design, and drafting services associated with the offshore segment of the project were provided by Project Consulting Services. The offshore pipeline from Lagos to Takoradi was installed by Horizon Marine Construction.

Loans are being repaid with the revenues from gas pumping services.

Distribution of Risks

Additional guarantees were provided by the International Development Association (IDA), the MIGA, Steadfast Insurance Company (a Zurich Financial Services Group subsidiary), and the reinsurance company Overseas Private Insurance Corporation (OPIC). Each of these entities has its own contractual obligations to the WAPCo joint venture. Indemnity claims will be distributed on a *pro rata* basis; however, detailed scenarios were negotiated for each insurance and reinsurance company due to certain structuring and coverage differences. The IDA played an important role in the project, which would not have been possible without guarantees designed to mitigate the political risks associated with the countries of the region. Participation of the World Bank combined international best practices in environmental and social guarantees, economic and financial assessment, and project structuring to secure sustainability and transparency.

PPP Project Problems and Opportunities

The project made it possible to create a sustainable gas supply system in West Africa, and to meet the increasing gas-fired power needs of the African developing nations.

The remaining project challenges include political and economic exposures, and additional costs incurred in the course of the pipeline's operation. The project was implemented in close collaboration with the local communities, and as a result the WAPCo joint venture additionally committed to use a portion of pipeline revenues to build social facilities in the countries of the region.

Project opportunities are linked to the possible expansion of the gas pipeline system to other countries of the region.

Expected Long-Term Benefits of the PPP Project

- Contribution to economic development of the countries of the region through significant cost-saving. The average wholesale cost of electricity decreased by 10–20% in Ghana, and by 40% in Benin and Togo, compared to the "no-gas" scenario.

- Significant contribution to poverty reduction and job creation (direct and indirect) in the countries of the region.

- Substantial increase in the number of large, medium, and small gas consumers in Benin, Ghana, and Togo.

- Higher volume of trade in energy commodities in the region, including gas exports from Nigeria, reduced use of heat power plants using liquid fuel, reduction of gas flaring and associated gas venting in Nigeria.

- Harmonisation of the regional institutional, legal, and normative framework to expand private involvement in the gas sector of the countries of the region.

- Contribution to social development — in line with its social commitments, the WAPCo joint venture used project revenues to take part in the construction of educational, medical, water management, sanitary, and public market facilities.

The project is an example of a successful cross-border PPP in the pipeline transport sector. There are many cross-border pipelines in the world, but almost all such projects were implemented either on an exclusively private basis (by transnational power companies), or without using the PPP mechanism. The West African Gas Pipeline shows that it is possible to build pipeline systems in the developing countries under concession agreements with the participation of local businesses and, accordingly, to make a weightier contribution to the infrastructure for social and economic development at the local, regional, and national level.

3. CROSS-BORDER PPP PROJECTS IN THE EAEU AND CENTRAL ASIA: PROSPECTS, RISKS, OPPORTUNITIES

Over the last several years, there has been an upsurge in the number of infrastructure projects in the EAEU member states and Central Asian countries, with many such projects using the PPP mechanism. Infrastructural connectivity remains a critical factor due to the region's geographical position, the structure of its economic and transport ties, the importance of its water resources, and its energy potential (UNESCAP, 2019b). In turn, infrastructural connectivity is directly linked to economic integration and regional economic co-operation.

For the EAEU member states and Central Asian countries, development of cross-border infrastructure is particularly relevant for the transport sector and the water and energy complex.

Four of the five EAEU member states and all the Central Asian countries are landlocked, and development of international transport corridors and transit routes is very important for the region. For that reason, the Eurasian Transport Network, a key investment megaproject initiated by the EDB on the basis of expansion and connection of latitudinal and meridional transport corridors and routes, will be instrumental to reducing the negative impact of large distances and high transport costs on the economic and social development of the countries of the region, getting rid of its "continental curse", and turning it into an intersection of trade and transport routes linking Asia with Europe and the Middle East (Vinokurov et al., 2021).

As a rule, transport corridors and routes in the region cross the territories of several countries. LLDCs are willing to co-operate with the neighbouring transit countries in joint transport infrastructure development projects (Vinokurov, Ahunbaev, Zaboev et al., 2022). Thus, the region has all the prerequisites to implement such projects in the cross-border PPP format.

The EDB report *Regulation of the Water and Energy Complex of Central Asia*, published in 2022, emphasises that strengthening of regional co-operation in Central Asia creates an opportunity to reformat the current architecture of relations in the water and energy complex, with a view to jointly resolving the problems arising from the growing shortage of water and energy resources. The main regional economic co-operation development task in Central Asia is to ensure that the population has steady access to high-quality potable water, and the economy has sufficient water and energy resources, on the basis of effective operation of the water and energy complex. Therefore, it is necessary to further improve the co-operation mechanism for joint utilisation of water and energy resources of the region, in line with the political, economic, financial, and environmental aims and interests of each country (Vinokurov, Ahunbaev, Usmanov et al., 2022).

Acting in concert, the Central Asian countries will be better equipped to overcome structural development issues. The increased load on their energy systems resulting from their active economic growth, as well as their connection through shared river basins, make their collaboration in the water and energy complex the only alternative (Vinokurov et al., 2022). Thus, the long-term benefits conferred by the use of cross-border PPPs for water and energy projects in the Central Asian countries sharing common rivers and common interests are predetermined by the existing circumstances in their entirety.

Infrastructure projects using the cross-border PPP mechanism in such sectors as Transport, Water and Energy will make it possible to improve productivity of the economy, strengthen trade and economic partnerships with neighbouring countries, and increase diversification of production and exports. Greater complementarity of the commodity structure of production will reinforce mutually beneficial co-operation among the Central Asian countries, and reduce their vulnerability to external shocks. Improvement of the institutional environment will enable an acceleration of the structural economic transformation in the region.

Alignment and synchronisation of infrastructure development plans is an important condition of successful cross-border PPP projects in the EAEU and Central Asia.

Article 86 of *Treaty on the Eurasian Economic Union* lists coordination of development of transport infrastructure as one of the key priorities of the coordinated (agreed) transport policy (EEC, 2014). Tasks related to the coordination of development of transport infrastructure are also stipulated by the *Treaty* and the *Main Directions and Stages of Implementation of the Coordinated (Agreed) Transport Policy of the EAEU Member States* approved by Resolution of the Supreme Eurasian Economic Council No. 19, dated 26 December 2016; by the roadmaps for implementation of that document; and by various acts adopted by the Supreme Eurasian Economic Council (SEEC), the Eurasian Intergovernmental Council (EIGC), and the Eurasian Economic Commission (EEC). For example, matters related to the coordination of development of transport infrastructure are included in the *Strategic Directions of Development of Eurasian Economic Integration until 2025*, approved by Resolution of the SEEC No. 12, dated 11 December 2020, and the *Main Macroeconomic Policy Benchmarks for 2022–2023* approved by Resolution of the SEEC No. 7, dated 27 May 2022.

One of the most important policy documents governing the coordination of development of transport infrastructure is *Main Directions and Stages of Implementation of the Coordinated (Agreed) Transport Policy of the Member States of the Eurasian Economic Union,* approved by Resolution of the SEEC No. 19, dated 26 December 2016, pursuant to which the EAEU member states:

- share information on upcoming projects for the creation or improvement of transport infrastructure facilities;

- align upcoming co-operative projects for the development of innovative industrial infrastructure facilities (industrial clusters, industrial parks, and technological parks) with ongoing or upcoming projects for the creation of transport infrastructure facilities in the member states;

- ensure the elimination of "bottlenecks" in contiguous infrastructure facilities, and provide equipment for border crossing points subject to economic expediency.

Strategic Directions of Development of Eurasian Economic Integration until 2025 envisages steps to create transcontinental and international transport corridors, to create and improve transport infrastructure in the member states along the East–West and North–South axes, including in conjunction with the Chinese BRI (EEC, 2020). The Action Plan for the implementation of *Strategic Directions of Development of Eurasian Economic Integration until 2025* includes measures to:

- develop a list of priority infrastructure projects;

- conduct a comprehensive assessment of the expediency of formation of a common development strategy for industry, agriculture, and infrastructure in the Union;

- engage in joint implementation of significant infrastructure projects in the Eurasian space, creation of transport corridors, including transcontinental and interstate corridors, to increase passenger and freight traffic with a view to fully realising the transit and logistics potential of the Union;

- create and improve transport infrastructure in the member states along the East–West and North–South axes, including in conjunction with the Chinese BRI (EEC, 2021).

In 2022, the EEC published a report entitled *On the Expediency of Formation in the Eurasian Economic Union of a Common Transport Infrastructure Improvement Strategy*. Although the authors conclude that the legal framework of the Union does not provide for common EAEU infrastructure, and at this time formulation of a common transport infrastructure development strategy would be premature, they also refer to the need to define common strategic priorities and tasks related to economic integration in the transport sector, including transport infrastructure, to enable emergence of a common transport space and a common market for transport services (EEC, 2022).

At this time, there is only one ongoing infrastructure development project using the cross-border PPP format: the construction and subsequent operation of the bridge across the Amur between Blagoveshchensk (Russia) and Heihe (China). The project is being implemented in accordance with the intergovernmental agreement signed by the two countries on 26 June 1995, and the Protocol to that agreement, dated 3 September 2015. Detailed information on that cross-border PPP project is provided in Section 2 (see Box 2).

Several projects for the construction and subsequent operation of cross-border infrastructure facilities currently being worked up by the EAEU member states can also be implemented on PPP principles, for example, the construction of the China–Kyrgyzstan–Uzbekistan Railway (see Box 4), and of the Kambarata HPP in Kyrgyzstan (see Box 5). The role that both projects can play in improving regional economic co-operation, promoting trade, and solving problems faced by the Central Asian water and energy complex is considered to be substantial.

Box 4. Project for Construction of the China–Kyrgyzstan–Uzbekistan Railway

The project for construction of the China–Kyrgyzstan–Uzbekistan Railway was initiated by China in 1996 as part of a plan to improve the transport infrastructure of the Xinjiang Uygur Autonomous Region (XUAR). In 1997, the three countries signed an appropriate memorandum of understanding. Over the next 25 years, the parties held several rounds of negotiations about the route (primarily through Kyrgyzstan), the technical parameters of the relevant infrastructure facilities (standard or broad gauge, one or two main tracks), etc.

Out of 523 km of the total length of the line, 213 km are to be built in China, 260 km in Kyrgyzstan, and 50 km in Uzbekistan. The railway will be laid across mountainous terrain, meaning that it will be necessary to build about 90 tunnels, bridges, viaducts, processing and maintenance stations. The potential freight traffic is estimated at 7–13 million tonnes per year, and construction is expected to take 6–8 years.

The new railway may play an important role in creating connectivity for China, Kyrgyzstan, and Uzbekistan to support the rapidly growing mutual trade, while in the future it may become a binding element for the expansion of transport ties with Afghanistan, whose resource base is of interest to China. The project may have a considerable environmental impact if the parties build an electrified line, and if a substantial portion of the existing freight traffic switches from road to rail transport. One of the main conditions that the new railway should meet is that it have a gauge of 1,520 mm to ensure seamless incorporation into the railway networks of Kyrgyzstan and Kazakhstan, and thus to maintain interoperability within the Eurasian space.

At the same time, the project will be possible only if the interests of all countries of the region are taken into account.

One of the options currently on the table is that the new railway will be built under a concession agreement, and that a joint venture will be established to build, operate, and subsequently transfer the railway to the participating countries.

Box 5. Project for Construction of the Kambarata-1 HPP

The Kambarata HPP is located on the Naryn River connecting Kyrgyzstan and Uzbekistan. The HPP may become the largest hydropower facility of the Kambarata HPP Chain, in the middle reaches of the Naryn. Experts estimate its total capacity at 1,900 MW, with an annual generation of 5.6 billion kWh (CIS Internet Portal, 2022).

As of the beginning of 2023, three countries — Kyrgyzstan, Kazakhstan, and Uzbekistan — intend to pool their efforts to implement the project. To make that possible, it is necessary to draft and sign an appropriate intergovernmental agreement, and to establish a joint venture with equity participation of all three countries. It is expected that the facility will be transferred to Kyrgyzstan 30 years after it is put in operation.

One of the advantages of using the cross-border PPP mechanism vs traditional financing is that the EAEU member states and the countries of Central Asia and the South Caucasus will be able to accelerate projects for the construction of cross-border infrastructure facilities. The PPP mechanism offers more certainty with respect to prices and timeframes at the design and construction stages (UNECE, 2018a). It also increases the probability that the facilities will be put in operation faster: the private partner is interested in a speedier launch, to start collecting toll revenues or receiving government transfers. It is equally important that it usually takes longer for the public sector to allocate budget funding than for the private sector to mobilise capital in the financial markets, especially to finance large-scale projects (UNECE, 2018d).

If new cross-border infrastructure facilities are put into operation faster, it may be possible to cut the time required to improve or relieve existing facilities, such as roads, railways, energy facilities, power transmission lines, etc. (UNECE, 2018c). For certain cross-border transport infrastructure projects, it may also create an opportunity to expedite the utilisation of economic and trade advantages created by better connectivity between two or more countries (UNECE, 2018b).

PPP projects in other sectors, such as Pharmaceuticals and Agricultural Production, are also highly relevant, and can be implemented using the cross-border PPP mechanism, especially taking into consideration their contribution to the creation of a common Eurasian market. A good example is the Eurasian Distribution Network (see Box 6).

Box 6. Potential of Cross-Border PPPs with Respect to Digital Systems: Agricultural Production

The purpose of the Eurasian Distribution Network KIM is to expand the common EAEU market for agricultural products.

The **Eurasian Distribution Network** is an open integrated system which is used to manage agricultural product flows within the EAEU, along the entire logistical chain from producer to retail outlet.

The EDN can be built on a **digital platform,** which will be used by both state-owned and commercial companies operating in the agricultural production complex, logistical infrastructure, and food products transportation infrastructure. The digital system will integrate available data from the existing national information systems and information systems of private companies operating in the EDN participating countries.

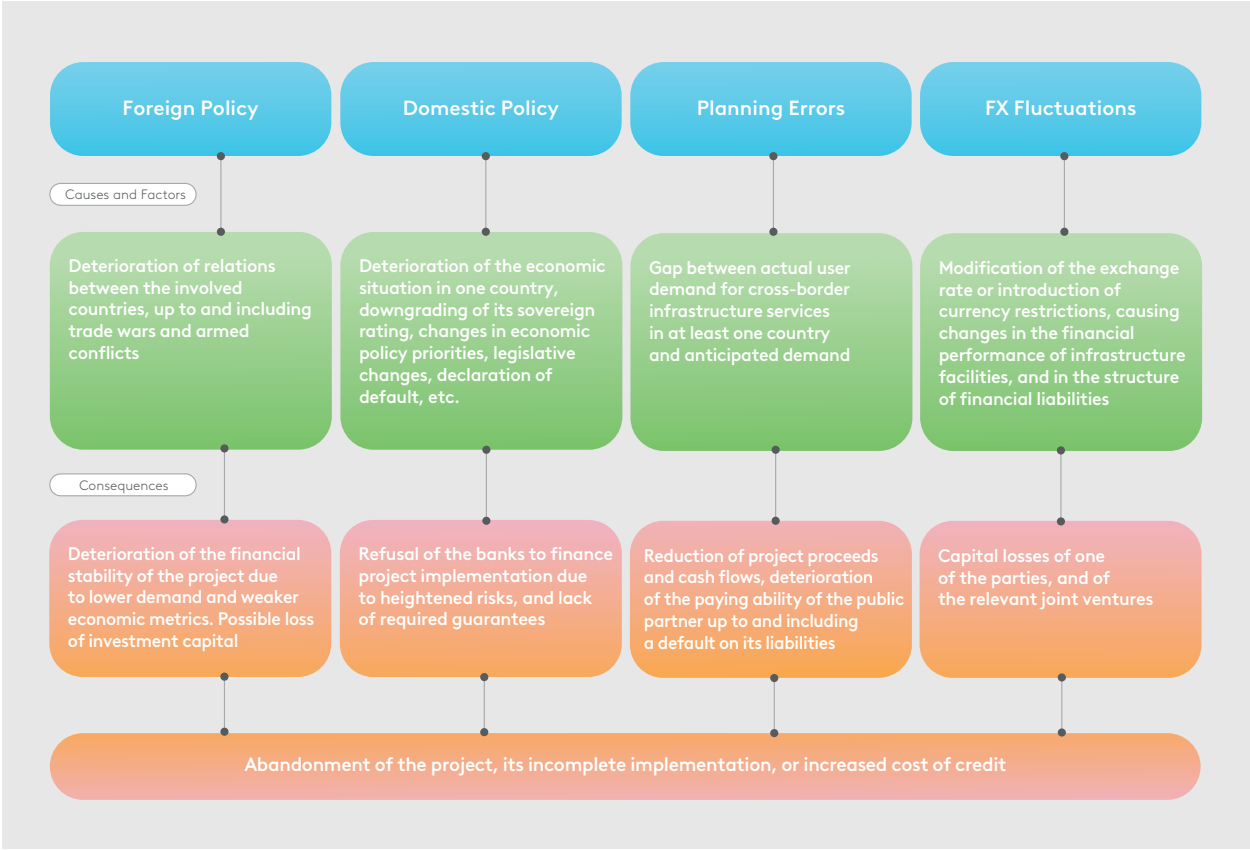
Source: EDB.

Inasmuch as there are two or more countries involved in cross-border PPP projects, these can be exposed to more uncertainties and risks than national PPP projects (see Figure 4).

Projects for the construction of cross-border infrastructure require massive investments, and have high transaction costs.

The countries participating in such projects may have different economic growth rates, financial capacities, legislative and regulatory systems, or sovereign ratings. For example, a country with a lower per capita GDP may find it more difficult to raise funding because of debt affordability considerations. As a result, countries participating in cross-border PPP projects may experience problems with attracting commercial funding. Such additional financial risks increase the financing costs of such projects.

↓ **Figure 4. Causes of Failure of Cross-Border PPP Projects**



Source: EDB.

Participation in a cross-border PPP project by several countries with different currencies creates potential exchange rate volatility risks, which may result in a revaluation of the project's financial results, value, and payback period.

Fiscal uncertainty may arise when the credit rating of at least one participating country is downgraded. If public debt is used to finance the project, and the government's credit rating is downgraded, this may increase the debt burden not only of that government, but also of the other participants in the project. A similar situation occurs when foreign debt payments are overdue.

Errors in forecasting the demand for cross-border infrastructure services at the feasibility study preparation stage may also be dangerous. In some cases, as demonstrated by international practice (see Case 4 "Kenya–Rwanda–Uganda East African Railway" in Section 2), such errors may lead to a situation where the project is not fully implemented, or implemented only in one country, which transforms the cross-border PPP into a national PPP.

Another serious risk that may emerge at the project preparation stage is a lack of understanding on the part of the countries that are potential participants in a cross-border PPP of the prospects of development of the cross-border infrastructure, and of project implementation mechanisms. This is exactly what happened with the Model Highway Initiative (MHI) proposed by the International Road Transport Union (IRU) for the countries of Central Asia. The project was not completed because the national governments were not willing to develop and sign an appropriate intergovernmental agreement, as well as a new IRU management team subsequently losing its interest in the project (see Box 7).

Box 7. Example of a Failed PPP Project: Model Highway Initiative for the Countries of Central Asia

The Model Highway Initiative (MHI) was proposed by the International Road Transport Union in 2011 after the successful implementation of another project, the New Euro-Asian Land Transport Initiative (NELTI), which confirmed the grievous state of modernisation of auxiliary road infrastructure facilities along the main international cross-border routes connecting Asia and Europe through the countries of Central Asia.

The "model highway" was understood as a demonstration segment of a cross-border highway, complete with modern roadside service infrastructure facilities (safe parking lots, rest areas, service areas with petrol stations and other services for drivers and passengers, motels, etc.) and border crossing points. It was expected that the "model highway" would be the fruit of joint efforts of national governments, international financial institutions, international organisations, and business community, to demonstrate the potential of the Great Silk Road. It was resolved that a public-private partnership would be used as the MHI implementation mechanism (IRU, 2012).

The main features of the "model highway" were that it crossed several borders, and that road service facilities on different sides of the border would be merged into a pool, a "regional infrastructure fund" (RIF), to be operated by a joint venture.

Pilot road sections connecting Kyrgyzstan, Tajikistan, Uzbekistan, and Afghanistan were selected in Central Asia for the "model highway" project.

The IRU commissioned an RIF conceptual framework, and the Transport and Communications Research Institute of the Republic of Kazakhstan conducted a pre-feasibility study of the pilot road sections connecting China, Kyrgyzstan, Tajikistan, Uzbekistan, and Afghanistan.

→

However, the consultations that the IRU conducted with the governments of the participating countries showed that they were not willing to draft and sign an intergovernmental agreement on the IRU initiative, or permit the RIF, a foreign company, to build or operate roadside service facilities in their territories.

After 2015, negotiations on the MHI implementation continued only at the national level with the Government of Turkmenistan in the context of the Ashgabat–Turkmenbashi Highway Construction Project.

The use of the guidelines developed by the EDB (see Section 4) makes it possible to minimise the risks associated with cross-border PPP projects.

There are several ways to mitigate cross-border PPP risks in the region. For example, it is possible to streamline the financial structure of the project, to secure government support in the form of grants and subsidies, debt guarantees, minimum revenue guarantees, or soft loans, and to minimise contingent liabilities.

To finance cross-border PPP projects, the participating countries can raise budget funding through the issue of treasury or infrastructure bonds. This can also be done through state-owned enterprises investing public funds on behalf of the government, or through national infrastructure banks. National development financing agencies can offer special products, such as export credit insurance or credit guarantees, to cover political, credit, and currency risks at the early stages of the cross-border project, and to facilitate private sector involvement (Global Infrastructure Hub, Ramboll, 2021).

Given the special role of cross-border PPP projects in the development of the economic integration and regional economic co-operation, international development banks and their pools should be given a significant role in such projects.

As noted in Section 1, cross-border PPP projects may be implemented for infrastructure facilities on different sides of the border, but linked by a common management system and/or information platform.

In particular, cross-border PPPs can be employed as the implementation mechanism for the Eurasian Distribution Network (EDN) KIM initiated by the EDB.

One of the key tasks of that project is not just to merge logistical infrastructure facilities into a common network, but also to create a common information platform which can operate on PPP principles. Public authorities can act as the owners/proprietors of digital data on logistical chains for the supply of food products through the EDN infrastructure, while the platform can be operated by a private joint venture.

The list of cross-border PPPs in the EAEU and Central Asia can be expanded by adding projects which may have a powerful impact on the development of regional economic co-operation. It will then be much easier for the participating countries to implement such projects.

As MHI demonstrated, border crossing points along the International transport corridors can develop as cross-border infrastructure and generate integration effects if there is political will for that, including situations where their management is transferred to a joint venture established under an intergovernmental agreement (this refers to the commercial

infrastructure facilities at border crossing points, including duty-free shops, parking areas, petrol stations, public catering facilities, etc.).

Another important aspect of cross-border PPPs in the EAEU and Central Asia is the development of the legislative and regulatory framework, including a review of the existing laws and regulations already governing the operations of national PPPs. It is necessary to examine and make effective use of international experience and national best practices (for example, PPP laws in effect in Kyrgyzstan and Serbia). In the paragraph discussing the relevant guideline in Section 4, we suggest that cross-border PPPs should be exempted from national laws (by adopting appropriate amendments), and exclusively regulated by intergovernmental agreements. We recommend that intergovernmental agreements be developed and executed on the basis of the model agreement.

The EDB, as a centre of expertise, can help governments to develop such agreements as part of its strategy for the provision of legal advisory services.

4. GUIDELINES FOR CROSS-BORDER PPPs

Effective PPP governance is based on a set of guidelines developed and proposed for application by various international organisations:

- OECD Principles for Public Governance of Public-Private Partnerships (2012),
- UNCITRAL Legislative Guide on Public-Private Partnerships (2019),
- UNCITRAL Model Legislative Provisions on Public-Private Partnerships (2019),
- UNECE Standard on Public-Private Partnerships in Roads (2018),
- UNECE Standard on Public-Private Partnerships in Railways (2018),
- UNECE Standard on a Zero Tolerance Approach to Corruption in PPP Procurement (2017),
- UNECE Standard on Public-Private Partnerships in Renewable Energy (2018),
- World Bank Guidance on Public-Private Partnership Contractual Provisions (2019),
- UNESCAP Guidebook on Public-Private Partnerships for Sustainable Development (2017),
- Guiding Principles on Public-Private Partnerships in support of the United Nations Sustainable Development Goals (2022), etc.

With these documents in view, the key PPP guidelines are embed the PPP agenda in national development strategies; develop a balanced PPP public policy and legal framework; establish PPP support institutions; set clear selection criteria for PPP projects; apply environmental and social sustainability criteria as key assessment components for PPP projects; create stimuli to encourage private sector investment in public infrastructure under PPP agreements; promote mixed finance mechanisms; avoid "debt traps" by ensuring fiscal stability of PPP projects and fiscal policy transparency; mitigate the risks associated with PPP projects; support competition and combat corruption at all stages of preparation and implementation of PPP projects; ensure openness and availability of PPP information; continuously increase PPP competence of public officials, etc.

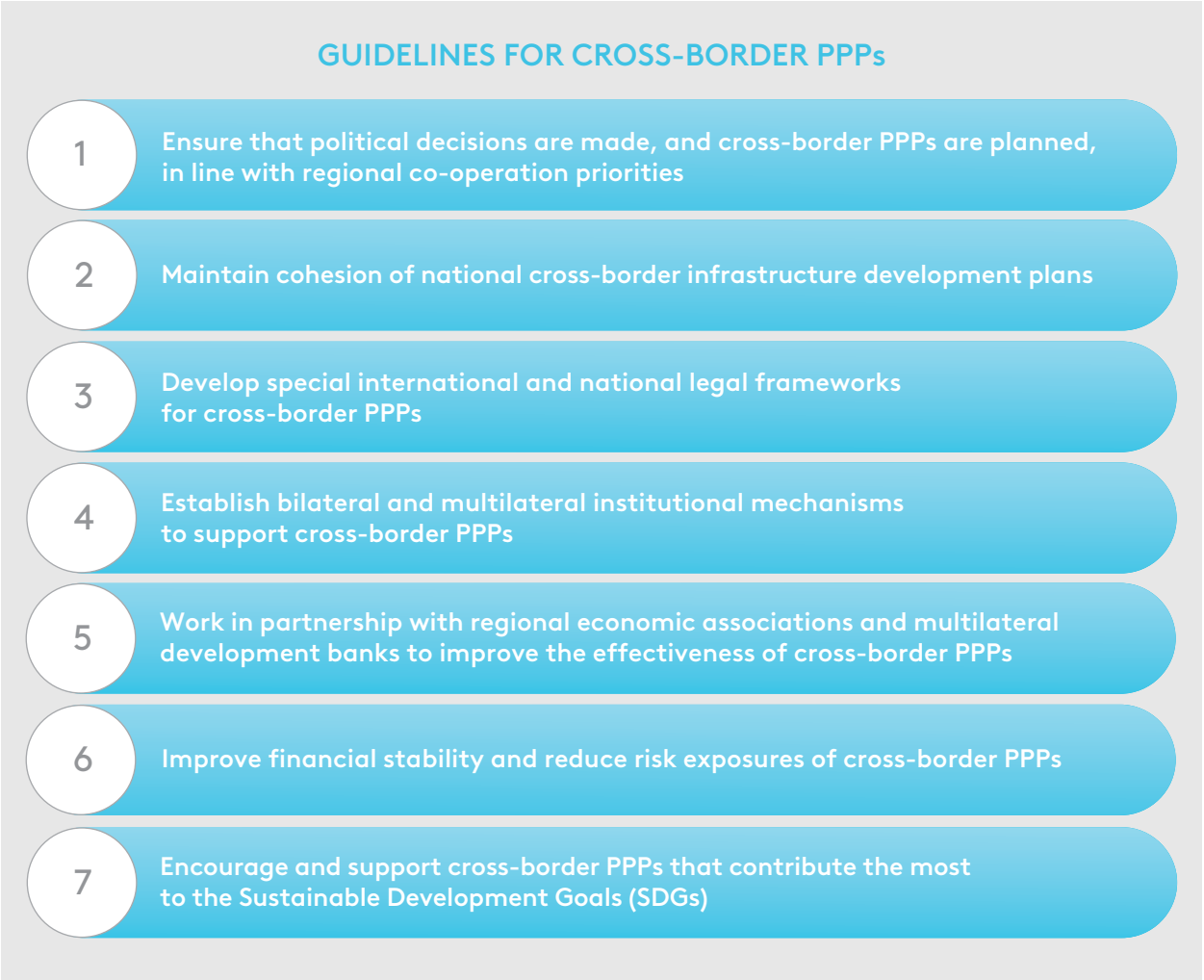
These guidelines are fully applicable to the governance of cross-border PPPs, except that they fail to take into account some special features. It is necessary to expand the scope of partnership models, and to develop a set of additional guidelines to adapt traditional PPP models to situations where two or more countries are involved in the project, and cross-border infrastructure facilities are built under PPP agreements (see Figure 5). The authors deal with that task in this report.

The guidelines for cross-border PPPs are intended to provide advice recommendations on project initiation and implementation, focusing on ways to improve the cross-border infrastructure, taking into consideration the interests of each participating country; to ensure the financial stability and attractiveness of CPPP projects for investors and creditors; to identify optimal solutions for uninterrupted and safe operation of cross-border infrastructure facilities

on both sides of the border; to define the legal framework so as to gain the most benefit from cross-border PPPs; to align efforts aimed at the attainment of the SDGs, etc.

Besides the guidelines, this section presents approaches to their application, and suggests practical methods to effectively stimulate and promote cross-border PPPs.

↓ **Figure 5. Guidelines for Cross-Border PPPs**



Source: EDB.

Cross-border infrastructure development decisions always have a political dimension, and are determined by the foreign policy and foreign economy strategies of the stakeholder countries. Important political assumptions related to CPPP projects include initiatives for regional economic co-operation and expansion of trade and investment activities. It is particularly important that infrastructure development plans of the participating countries be aligned over the medium and long term. After the political decision regarding implementation of the project is made, the parties can proceed to develop a feasibility study and negotiate an interstate cross-border PPP project agreement.

Guideline 1. Ensure that political decisions are made, and cross-border PPPs are planned, in line with regional co-operation priorities

As noted above, important political prerequisites for the creation of a cross-border PPP include initiatives for regional economic co-operation and expansion of trade and investment, as well as possible joint plans for development of transport infrastructure (for example, the draft *Comprehensive Plan to Develop the Infrastructure of Eurasian Transport Corridors* on which the EEC is working in 2023), energy infrastructure, etc. Another important prerequisite is the availability of clear tasks and priorities as defined by national strategies, and of signed bilateral or multilateral horizontal agreements and plans for their implementation (see Box 8).

For many reasons, the countries that are future participants in a cross-border project may have different capacities to implement it, incur different costs, and gain different benefits. Cross-border projects may have lower priority compared to national projects because of the labour-intensive planning, more complex coordination among the parties, and possible uncertainty. All these matters require in-depth discussion by the parties.

Accordingly, before making a political decision, the parties need to conduct bilateral or multilateral consultations and negotiations. These may result in the signing of a joint statement and/or memorandum of mutual understanding with respect to the plans for a cross-border infrastructure development project.

Box 8. Examples of Political Prerequisites for CPPP Projects

In 2011, the decision of the heads of state of the ASEAN member states to create the China–Singapore railway corridor was the political prerequisite for development of a project to build the China–Laos High-Speed Railway Line. Adoption by China of the BRI was another, equally important, prerequisite for that cross-border project. The project was underpinned by the intention of the Government of Laos to build a modern railway to connect the north and south of the country. The high-speed railway line from the Chinese border to the Laotian capital of Vientiane, built under an intergovernmental CPPP agreement between Laos and China, was put into operation in December 2021.

The political prerequisite for the construction of the N4 South Africa–Mozambique Toll Highway, using the cross-border project format, was the expansion of multilateral co-operation within the Southern African Development Community (SADC). The project was a practical step towards the implementation of one of the Spatial Development Initiatives, namely, the Maputo Development Corridor (MDC), which connects the landlocked regions of South Africa with the deep-water port of Maputo on the shore of the Indian Ocean. The Maputo Development Corridor was planned in 1994 as an economic corridor for South Africa and Mozambique and, accordingly, the N4 Toll Highway Construction Project is fully consistent with the priorities formulated for the original initiative.

The idea of creating a transport link between Sweden and Denmark by building a bridge or tunnel was first considered in the second half of the 19th century, and then again in the 1930s and the 1950s. The project received political support at the first session of the Nordic Council in 1953, with Denmark and Sweden signing the initial construction agreement in 1973. However, the plans were put on hold because of the economic, energy, and political crises which affected both countries. They returned to the negotiating table in 1991 to sign the *Intergovernmental Agreement for the Construction of Øresund Bridge/Tunnel* in the CPPP format. Construction was finished in 2000.

The political decision to implement a cross-border project leads to development of an appropriate conceptual framework, which defines the goals, priorities, and the benefits that the parties expect to receive not only individually, but also cumulatively on the bilateral and multilateral level, in the context of regional economic co-operation. In some cases, the conceptual framework may take the form of a detailed preliminary feasibility study containing initial calculations and cost-benefit assessments.

Guideline 2. Maintain cohesion of national cross-border infrastructure development plans

It is particularly important that infrastructure development plans of the countries participating in a cross-border project be aligned over the medium and long term. Accordingly, as the parties become aware of the need for a cross-border project, they will have to modify their infrastructure development plans, after appropriate consultations, by adding agreed parameters, timeframes, expected outcomes, and other milestones.

The preparation of medium- and long-term plans can also be outsourced to external specialised entities. For example, one of the goals of the South American Council of Infrastructure and Planning (COSIPLAN), established by 12 member state of the Union of South American Nations (UNASUR), is to "consolidate the portfolio of projects for the coordinated development of the South American regional infrastructure". As of 2022, the COSIPLAN project portfolio included 581 integration projects, in all countries of the region (Global Infrastructure Hub, Ramboll, 2021). COSIPLAN developed and implemented the *Strategic Action Plan for 2012–2022*, which was from time to time supplemented with annual work plans approved by the ministers of the COSIPLAN member states.

Work on the alignment of infrastructure development plans is also conducted by other regional economic integration associations, including the EU and ASEAN; similar efforts are undertaken by regional economic co-operation programmes (a good example is the Central Asia Regional Economic Co-operation Programme (CAREC)).

Cross-border projects require dedicated resources and coordinated financial planning across stakeholder countries. It may be necessary to approach external partners, such as multilateral development banks, to obtain external funding.

Cross-border infrastructure has a strong impact on the trade and economic ties among participating countries. Regardless of the target sector, the project boosts the volume of trade in goods and services, employment, the value of commercial and residential real properties, and the amount of taxes and duties, including those paid to the regional budgets (Vinokurov, Ahunbaev, Zaboev, 2022).

Transport cross-border infrastructure increases freight traffic, reduces travel times and, thus transport costs, stimulates population mobility, and attracts more international tourists. In a number of cases, cross-border projects have created favourable conditions for the expansion of passenger and freight transport services. Indirect effects include further development of hotels, public catering facilities, petrol stations, and local crafts. Therefore, cross-border PPP projects in the Transport segment encourage the construction of so-called development corridors, or economic corridors (UNECE, 2020).

Cross-border water and energy infrastructure creates opportunities for solving problems related to the imbalance between energy generation and energy consumption, and the shortage and irrational allocation of water resources; it also improves energy efficiency of the economies of the participating countries.

Cross-border telecom infrastructure boosts internet traffic, and reduces the cost of telecom services for businesses and private users.

For the EAEU, Central Asia, and certain other regions, cross-border PPP projects will mean a contribution to the *Vienna Programme of Action for Landlocked Developing Countries for the Decade 2014–2024*. An analysis of completed CPPP projects (see Tables 3–5 in Section 1) shows that approximately one third of all participating countries are landlocked.

Achievement of all these effects is one of the tasks of regional economic co-operation. Therefore, it would be fair to say that all cross-border projects have a pronounced integration dimension (see Box 9).

Box 9. Contribution of CPPP Projects to Regional Connectivity and Economic Co-operation

One of the key outcomes of the China–Laos High-Speed Rail Line Construction Project is the qualitative improvement of transport and economic ties between the north and south of Laos, with passenger and freight travel times decreasing from 24 hours to 4–6 hours (see Case 1 in Section 2). The impact of the project on trade and economic relations between the PRC and Laos is even more significant. Laos gained access to the vast Chinese tourism market, and a sales market for domestically manufactured products. The new rail line created a completely new logistical arrangement between Laos and China, and in the future it will be used for passenger and freight transit to Thailand. It will give a powerful impetus to economic integration within the framework of the ASEAN, and to economic co-operation among the ASEAN member states and China.

The EU's CPPP projects, such as the Øresund Bridge/Tunnel, the Perpignan–Figueres High-Speed Rail Line, and the Rail Baltica Railway, contribute to the development of the Trans-European Transport Network (TEN-T) and the EU common market. Those and other similar projects are classified by the EU as "Projects of Common Interest" (PCIs). Besides the Transport sector, there are PCIs in the Energy sector. On 31 October 2019, the European Commission approved the fourth list of PCIs, comprising projects for the creation of the cross-border network infrastructure linking the energy systems of the EU member states. The new list of PCIs reflects the importance of transmission infrastructure for the EU energy sector, and indicates that reaching a balance among reliability, affordability, and safety of energy supplies is one of its main objectives.

The Itaipu Dam on the Paraná River makes a huge contribution to the social and economic development of Brazilian and Paraguayan regions, and improves their connectivity. It generates 90% of all electricity consumed in Paraguay, and about 15% of all electricity consumed in Brazil. In Paraguay, the royalties from the generation and sale of hydropower became the main source of public revenues, and a key driver of the national economy. The Itaipu Binacional joint venture helps the governments of the two countries to improve transport connectivity of the adjacent territories by building bridges, which is particularly important for regions experiencing an acute shortage of funds to finance the construction of such infrastructure.

Thus, planning for cross-border projects should take into account regional economic co-operation priorities. In the course of review and assessment of infrastructure projects, integrative effects should be regarded as one of the key factors and properly reflected in feasibility studies.

It is also important for the integrative effects generated by the project to be taken into consideration when designing multilateral infrastructure development plans and programmes, as well as lists of "projects of common interest".

In the course of cross-border PPP project planning, it is expedient to:

- consider the integrative effects of cross-border PPPs when planning infrastructure development, including multilateral plans and programmes, as well as lists of "projects of common interest";
- consider the multiplicative effects of cross-border infrastructure development projects;
- consider the integrative effects of cross-border PPPs in the course of review and assessment of potential cross-border infrastructure development projects, and preparation of the relevant feasibility studies;
- promote involvement of the MDBs and other development institutions that specialise in financing projects producing integrative effects in the funding of cross-border PPP projects;
- position cross-border projects as a contribution to the *Vienna Programme of Action for Landlocked Developing Countries for the Decade 2014–2024* and other multilateral programmes aimed to improve the connectivity of countries and their access to global markets.

Guideline 3. Develop special international and national legal frameworks for cross-border PPPs

In the absence of universal international legal norms governing cross-border PPPs, and since each of the countries in the Eurasian space has its own national PPP laws, which are in many respects different from those in the other partner countries[2], **it is necessary for those countries to enter into intergovernmental agreements on co-operation in the construction and operation of cross-border infrastructure on the basis of public-private partnerships.**

Such agreements make it possible to deal with multiple challenges. They serve as a form of expression of the will of the States regarding creation of cross-border infrastructure using the PPP mechanism. They fill in regulatory lacunae, and establish the international legal framework underpinning cross-border PPPs. They also focus on the resolution of issues of bilateral mutual interest for the countries participating in cross-border PPPs, and provide an opportunity to consider special features characterising both cross-border PPPs and the international relations established between individual countries (see Box 10).

[2] EDB. Public-private partnership. Available at: https://eabr.org/en/public-private-partnership/.

Box 10. Intergovernmental Agreements Executed to Support Cross-Border PPP Projects

The *Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the Joint Construction of the Bridge Across the Amur (Heilongjiang) River in the Vicinity of Blagoveshchensk and Heihe*, dated 26 June 1995 (as amended by Supplementary Protocol, dated 29 August 2015), regulates both interstate relations of a public nature arising between the Russian Federation and the People's Republic of China with respect to the agreed locations of the cross-border PPP facility components in both countries (Article 1), shipping and environmental safety in the area of the PPP project (Article 2), utilisation of the boundary river (Article 2), appointment of the government bodies of the two countries authorised to implement the cross-border PPP project (Article 1), resolution of disputes (Article 7), and matters related to the execution and performance of the Concession Agreement between the Russian Federation and the People's Republic of China (Russian and Chinese public parties, respectively) and the concessionaire, including their respective rights and obligations under the Concession Agreement.

Crossing Agreement between Canada, State of Michigan and Crossing Authority on the Design, Construction, Funding, Operation, and Maintenance of new International Crossing between Canada and Michigan was signed by the Governments of Canada and the State of Michigan on 15 June 2012 (Gordie Howe Bridge). The agreement sets forth ownership and operating rights, financing terms, materials procurement requirements, and various procedural requirements applicable to the newly built bridge infrastructure. The agreement also establishes the Windsor-Detroit Bridge Authority, the body competent to deal with all matters related to the project, including contractor relations, procurement of materials and equipment at the construction stage, and operation of the new bridge.

Treaty between the United Kingdom of Great Britain and Northern Ireland and the French Republic Concerning the Construction and Operation by Private Concessionaires of a Channel Fixed Link (Underwater Tunnel under the English Channel/La Manche), dated 12 June 1986, defines the main technical and economic parameters of the tunnel (Article 1), the state border regime (Article 3), border and other state control procedures (Article 4), tunnel protection and safety procedures (Article 5), mutual legal assistance procedures (Article 8), the tax and customs regime (Article 9), establishment of an intergovernmental commission and a safety authority (Articles 10 and 11), dispute resolution procedures (Article 19), and the rights and obligations of France and the UK acting as the public parties under the Concession Agreement (Articles 6, 14–17, 19).

Even though the rights and obligations of stakeholder countries set forth in bilateral and multilateral agreements are customised to reflect the goals, conditions, and operating results of specific cross-border PPPs, the EDB intends to use them as the basis for a model agreement reflecting the best international treaty practices for cross-border PPPs (see Box 11). Its use will facilitate and accelerate the international negotiating process, adding certainty to the formation and alignment of positions of the contracting countries.

Box 11. EDB Proposals for the structure of the Model Cross-Border PPP Agreement

- Purposes and principles of the Agreement.
- Terms and interpretation.
- Authorised bodies of the contracting countries, the mechanism governing their interactions, establishment of an intergovernmental coordination body.
- Criteria and procedures for the selection of the private partner.
- Cross-border PPP stages and timeframes of implementation.
- Cross-border infrastructure creation and operation parameters, and design, construction, and operation requirements.
- Main terms of PPP contracts.
- Procedures for coordinating joint exercise of the rights and obligations of the contracting countries under the PPP contract.
- Financing formats for the Cross-border PPP project, amount of financial obligations of the contracting countries or how to determine them.
- Tariff regulations and use of national currencies.
- Special customs and/or tax regimes.
- Interaction in the completion of customs procedures, border and other government control, safety matters.
- Provision of guarantees.
- Applicable law.
- Harmonisation measures.
- Dispute resolution mechanisms.
- Final provisions.

The decision as to whether the model agreement will be used in full or in part, and the extent to which it can be adapted to any particular cross-border PPP, remains fully at the discretion of the States.

The contracting countries should ensure that their national PPP laws provide detailed coverage of cross-border PPPs.

This will resolve issues arising because national PPP laws of the countries in the Eurasian space: (a) regulate internal PPP projects without envisaging the possibility that a PPP project may be jointly implemented by several countries; (b) contain different regulations regarding PPP forms, procedures used to select the private partner, provision of government support, resolution of disputes, and selection of applicable law, which hinders negotiation of uniform legal and financial PPP project parameters.

States may remove cross-border PPPs from their national PPP regulation so that they may be regulated by international treaties (Box 12). States can also establish a single (unified) legal regime for cross-border PPPs in their national PPP laws.

Box 12. Best Practices Related to Withdrawal of Cross-Border PPP Provisions from the Scope of National Laws

Pursuant to the Law of the Kyrgyz Republic, dated 11 August 2021, No. 98 *On Public-Private Partnership,* legal relations arising out of PPP projects of an intergovernmental nature are regulated by the international treaties of the Kyrgyz Republic which have come into effect in accordance with the procedure established by law.

Pursuant to the Law of the Republic of Serbia, dated 22 November 2011, *On Public-Private Partnership and Concessions,* this law does not apply to PPPs established under international agreements executed by the Republic of Serbia with one or several countries for joint PPP projects.

The stakeholder countries should seek to harmonise the norms, rules, and assessment tools required for successful cross-border PPP projects.

Through harmonisation, the parties will achieve efficient interoperability of newly created cross-border infrastructure facilities and their compatibility with national infrastructure networks. It will also simplify access to the market for goods, machinery and other equipment, technologies, and labour resources required for the project. Finally, the new cross-border infrastructure facilities will be operated in a more effective manner.

Harmonisation should cover the following aspects:

- standards governing construction of the cross-border infrastructure facility;
- requirements for the safe construction and operation of the facility;
- requirements applicable to environmental safety, environmental protection, and climate consequences;
- requirements applicable to the equipment and technologies used by the facility;
- requirements applicable to personnel, including mutual recognition of university diplomas and qualification certificates;
- accounting and reporting rules;

- border crossing procedures;
- tariffs, customs procedures and formalities, both for the materials and equipment required for construction of the facility, and for the goods, individuals, and vehicles crossing the border (for transport cross-border infrastructure);
- information exchange and information security procedures.

As a rule, harmonisation is performed on the basis of generally accepted standards and recommended practices (see Box 13). For example, customs procedures should follow the standards and recommended practices of the World Customs Organisation, while authorised economic operators need to comply with the norms and requirements of the Customs Code of the EAEU Customs Union. Another example of effective harmonisation is the use of generally accepted investment project assessment tools, such as cost-benefit analysis (CBA), to ensure that analytical findings from each country participating in a CPPP project are comparable (UNECE, 2022).

Box 13. Examples of Harmonisation of Standards, Norms, and Procedures for the Creation and Operation of the Cross-Border Infrastructure

For the construction and operation of the Perpignan–Figueres High-Speed Rail Line, it was decided to use a uniform railway gauge standard (1,435 mm) along the entire length of the line, including in Spain whose railways are built in accordance with the "Iberian" gauge standard (1,668 mm). Similarly, the parties used the building proximity dimensions adopted for the standard gauge (1,435 mm) used in France.

The national laws of Laos governing railway passenger and freight transport were harmonised with similar laws in the PRC by using the legal and technical instructions published by the OSJD, which ensure interoperability of infrastructure facilities; the same was done for the rules governing transport operations, related documentation, mutual settlements, etc. This enabled Laos to promptly integrate its facilities in the international railway transport system immediately after the construction of the cross-border China–Laos High-Speed Rail Line had been completed.

The CPPP project for construction of the Hong Kong–Guangzhou High-Speed Rail Line required harmonisation not only of the technical and technological aspects related to the creation and operation of the new railway infrastructure, but also of the customs and immigration procedures applicable to passengers. The parties used civil aviation best practices, where customs and immigration procedures are completed not at the physical border, but rather in the departure and arrival station terminals (by analogy with airport terminals). That eliminates the need for the train to stop at the border, while processing of a large number of passengers is completed within a short time and with minimum inconvenience. The customs and border stations of the Hong Kong–Guangzhou High-Speed Rail Line use the "one-window" principle.

It is important to harmonise and standardise not only the norms and rules applicable to cross-border PPPs, but also cross-border treaty practices.

The cross-border PPP agreement is the key tool that sets forth specific rights and obligations of the participating countries and the private partner, and defines the order and sequence

of all actions performed by them during the cross-border PPP project. However, because of the special nature of PPPs, the negotiation and closure process (execution of the PPP agreement), complex and lengthy as it is, becomes even more burdensome for its participants.

Standardisation of the terms and conditions of cross-border PPP agreements facilitates their common understanding and uniform application.

Standardised terms and conditions using the most convenient wording, already tested and certified as effective, may be incorporated by the participants of cross-border relations in PPP agreements and other project agreements in the form of complete ready-to-use blocks (see Box 14).

Box 14. EDB Proposals on Standardisation of Select Terms of Cross-Border PPP Agreements and Other Project Agreements

- Legal framework for the construction of a cross-border PPP facility: unified model, interconnector model, mixed model.
- List of joint decisions of the countries acting as the public partner regarding termination (suspension) of operation of the PPP facility, exercise of step-in rights and other rights.
- Sustainable development clause.
- Sovereign immunities.
- Applicable law.
- Dispute resolution, etc.

Guideline 4. Establish bilateral and multilateral institutional mechanisms to support cross-border PPPs

When making the political decision to implement a CPPP project, the **parties should create appropriate institutional mechanisms, for example, bilateral or multilateral work teams or committees, and appoint national project coordinators.**

Participation of two or more countries as the public partner predetermines the complexity of joint managerial decision-making by those countries, and of joint exercise/discharge by them of their rights and obligations under the cross-border PPP agreement. Accordingly, creation of mechanisms to support coordination and interaction of the cross-border PPP participants becomes a critical condition of its success.

Effective cross-border PPP institutional mechanisms may include intergovernmental commissions, work teams and committees, other joint bodies established by the governments of the participating countries at various stages of preparation and implementation of a cross-border PPP project (see Box 15).

Box 15. Institutional Mechanism of the Cross-Border PPP "Construction of the Addis Ababa–Djibouti Railway Line"

In 2007, the Government of Ethiopia created the Technical Advisory Group (TAG) under the Ministry of Transport, which later became the body that coordinated the project not only with the Government of Djibouti, but also with the Government of China within the framework of the BRI. The TAG provided the forum for discussion of the construction of a new 1,435-mm rail line, developed the feasibility study for the project, and drafted the *Memorandum of Mutual Understanding between the Governments of Ethiopia and Djibouti on the Construction and Operation of a Standard Gauge Railway*, the *Intergovernmental Agreement between Ethiopia and the PRC on the Implementation of the Project* (both were signed in 2010), and the *Regional Agreement between the Government of Ethiopia and the Government of Djibouti on the Integration of Railway Infrastructures* (2013).

The competence of the joint body should cover preparation and coordination of the positions of the participating countries on joint statements, memoranda of mutual understanding on the cross-border PPP project, and intergovernmental agreements; discussion and negotiation of proposals submitted by the participating countries with respect to the project, and substantiation of its necessity and feasibility; assessment of compliance of the target metrics of the project with the SDGs in all participating countries; review of the main technical, legal, and financial parameters of cross-border PPP projects, and preparation of related decisions by the participating countries; preparation of a joint procedure for selection of the private partner; development of the cross-border PPP project risk matrix, and other project documents; monitoring of project implementation; holding consultations among all parties on all matters questions that arise, etc. (see Box 16).

Box 16. Institutional Mechanism of the Cross-Border PPP "Construction and Operation of the Channel Tunnel Fixed Link (Underwater Tunnel under the English Channel/La Manche)"

An intergovernmental commission was established on the basis of the international treaty to exercise/discharge, on behalf of the Governments of the UK and France, their respective rights and obligations under the Concession Agreement, and to resolve all other matters related to the construction and operation of the tunnel, with the exception of those related to the modification, extension, suspension, and termination of the Concession Agreement.

The intergovernmental commission was authorised to:

- monitor the construction and operation of the tunnel;
- conduct any required consultations with the concessionaires;
- approve decisions on the implementation of the Concession Agreement on behalf of the governments of the participating countries;
- approve proposals submitted by the safety authority, as provided by Article 11 of the international treaty;

- develop, or participate in the development of, the rules applicable to the tunnel, including those related to shipping and environmental protection, and to supervise their subsequent execution;
- review any matters submitted to the commission by the governments or the safety authority, or any other matters that warrant a review in the opinion of the commission;
- provide consultations and develop recommendations for the governments of the participating countries or the concessionaires.

The joint body should include representatives of sectoral government bodies from both participating countries (see Box 17).

Box 17. Institutional Mechanism of the Cross-Border PPP "Construction and Operation of the Bridge Crossing Across the Amur (Heilongjiang) River between Blagoveshchensk and Heihe"

Activities related to the cross-border PPP project are coordinated by:

- on the Russian side — Ministry of Transport of the Russian Federation;
- on the Chinese side — Ministry of Transport of the PRC.

It is necessary to clearly define the rules and working procedures of the joint bodies, and the sources of funding of their operations (see Box 18).

Box 18. Procedural and Financial Aspects of the Institutional Mechanism of the Cross-Border PPP "Construction and Operation of the Channel Tunnel Fixed Link (Tunnel under the English Channel/ La Manche)"

Each government appoints half of the members of the intergovernmental commission, which should have at least 16 members, including at least two representatives of the safety authority.

The meetings of the commission are chaired by the heads of both delegations with a one-year rotation period.

All decisions of the intergovernmental commission should be approved by the heads of the British and French delegations. Any differences between them are resolved by invoking the government consultations procedure stipulated by Article 18 of the international treaty.

The intergovernmental commission develops its own rules of order, and submits them for approval to the governments of the two participating countries.

To ensure proper performance of its functions, the intergovernmental commission may request assistance from the bodies of each of the two governments, or from any government body or expert at its discretion.

The governments should take all steps necessary to ensure that the rules adopted by the intergovernmental commission with respect to the tunnel are valid and effective under their respective national laws, and to authorise the intergovernmental commission to engage in investigations, inspections, and managerial activities as required in connection with the performance of its functions.

The operating costs of the intergovernmental commission are covered by the concessionaires in accordance with the terms of the Concession Agreement.

Development institutions, regional economic organisations, and multilateral development banks can play an important role in designing the institutional framework to ensure effective implementation of cross-border PPP projects, subject to their role in development of the economic co-operation.

Guideline 5. Work in partnership with regional economic associations and multilateral development banks to improve the effectiveness of cross-border PPPs

Because of the high risks and constraining factors that inhibit the growth of the number of cross-border PPP projects, the role played by international organisations in increasing the effectiveness of such projects and enabling their replication on a larger scale becomes particularly important (Maslova, 2019b). **Regional economic associations and multilateral development banks (MDBs)** have the greatest potential to promote cross-border PPPs, **due to their objectives and mission.**

They can play an important role in coordinating interactions between the stakeholder countries, including additional expertise at the national level, and provide technical assistance in the development of conceptual frameworks underpinning individual projects and preliminary or full-scale feasibility studies for them.

Initiation of a cross-border PPP by countries which are members of the same regional economic association or international financial organisation is one of the key success factors of such PPPs (see Box 19).

Box 19. Contribution of the European Union to the Effective Implementation of the Cross-Border PPP "Construction and Operation of the Perpignan–Figueres High-Speed Rail Line"

Financing: with the total cost of the project at €1,100 million, of which private funding accounts for 50%, and public funding provided by the Governments of France and Spain for 45%, the EU disbursed 5% of total funding through its Trans-European Transport Network (TEN-T) vehicle.

Technical Assistance at the Project Planning and Preparation Stage:

- The EU provides grants to finance the feasibility study and preliminary expert valuations, assessments, and economic forecasts required to structure the PPP project;
- The EU initiates the establishment, and participates in the operation, of the intergovernmental commission for the project.

It appears expedient for the participating countries to approach MDBs even at the early stages of initiation of cross-border PPPs. MDBs can raise funds in the international capital market at relatively low cost, and they have long-standing ties with the participating countries and access to private co-investment mechanisms. The sources of added value provided by the MDBs to cross-border PPP projects include their stable financial position, well-established risk management policies, transparent project development and implementation standards, mature corporate governance practices, mechanisms designed to control proper utilisation of loan proceeds and compliance with project financing schedules, focus on achievement of the SDGs, compliance of cross-border PPP projects with the MDB mission (see Box 20), etc.

Box 20. New Development Bank (BRICS) Mandate:

- provide guarantees and loans, or use any other financial instruments to support various public and private projects, including PPPs;
- support projects in the area of infrastructure and sustainable development with the participation of more than one country.

The **Eurasian Development Bank (EDB)** is an international financial organisation. Its member states are the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, the Kyrgyz Republic, the Russian Federation, and the Republic of Tajikistan. The mission of the EDB is to promote development of market economies in its member states, and assure their steady economic growth and expansion of their mutual trade and economic ties through investment activity.

The **EDB has a comprehensive PPP programme, and one of its main objectives is to promote cross-border PPPs** as a mechanism facilitating EAEU integration potential in various areas of economic co-operation, including transport, logistics, management of water and energy resources, trade, etc. (see Box 21).

Box 21. EDB Products for Cross-Border PPPs

The EDB offers **loan products** which meet the needs of large-scale investment projects in terms of maturity, repayment schedule, intended use, and tranche structure:

- Debt financing.
- Equity financing.
- Mezzanine financing.
- Special purpose tranches (to finance the payment of interest and fees, and creation of debt service reserve accounts).
- Syndicated loans.
- Additional financial instruments (currency hedging of financing arrangements, etc.).

The EDB, as a development institution and one of the leading analytical centres with in-depth expertise on PPP-related matters in the region where it is present, also offers the following **non-loan products:**

- Project advisory services.
- Legal advisory services.
- Applied research on cross-border PPPs.
- Dissemination of cross-border PPP best practices.
- Development of guidelines and standardised project documents and agreements for cross-border PPPs.
- Improvement of cross-border PPP competencies.
- Cross-border PPP roadshows.

The status of the EDB as an international financial institution enables it to **perform the function of the consolidator of resources, "connecting link", and moderator for cross-border PPPs.**

The **EDB proposes** to develop a common position on key parameters of cross-border PPP projects that will be shared by all its member states, and to create a permanent venue to discuss the regulation, financing, preparation, and implementation of cross-border PPP projects, and to share expertise among the EAEU member states, third countries, private and institutional investors, other international organisations, and regional economic associations.

Guideline 6. Improve financial stability and reduce risk exposures of cross-border PPPs

The financial stability of a project is the basis for its success. The risks inherent in cross-border projects are different from the challenges and problems encountered by national PPP projects, which can make the former more expensive and difficult to finance. To increase the financial stability of cross-border PPP projects, both public and private partners need to apply greater effort from the preparation stage (for example, during the development of the feasibility study) to the stage where the newly infrastructure facilities are put in operation.

Low-income countries, especially landlocked countries, as well as other countries with special development conditions, may experience difficulties when trying to raise commercial funding for their projects, if the potential investors and banks deem the risks associated with debt or equity financing to be too high. In addition, low-income countries may find it hard to gain funding because of debt affordability considerations or low credit ratings.

One of the key risks is that demand for the services generated by the cross-border infrastructure may decrease or be lacking, which may lead to the project being postponed or terminated. One example is the cross-border project for the construction of the East African Railway with a gauge of 1,435 mm. Erroneous freight traffic projections in the project's feasibility study led to losses from the operation of the first completed section of the railway in Kenya. As a result, the project was never implemented in the other two countries, Uganda and Rwanda, with the cross-border PPP eventually being transformed into a national PPP (see Case 4 in Section 2).

If public debt is used to finance a cross-border PPP project, and the government's credit rating is downgraded, this may increase the debt burden not only of that government, but also of the other participants in the project. If any of the parties fails to repay its debt, this may have dramatic consequences for the other parties. Accordingly, when structuring project funding, it is important to consider the fiscal risks of the countries involved, and the sustainability of their debt positions. Countries with limited financial capacity are particularly vulnerable to the risk of reduced availability of financial resources.

Project funding should be structured so as to take into account possible currency exchange rate fluctuations and risks related to currency convertibility and cross-border cash transfers. If revenues from the operation of an infrastructure facility are denominated only in the local currency, while debt financing is available only in a foreign currency, the mismatch creates currency risks.

Such risks can be mitigated by using hedging instruments. Alternatively, the debtor may try to obtain the creditor's consent to an extension of the repayment deadline. An example of hedging of the natural currency risk is shown in Box 22.

Box 22. Nam Theun 2 HPP Project: Mitigation of Currency Risk

Even though the hydropower plant was built in Laos, the project envisaged the sale of 995 MW of generating capacity and electricity to the Electricity Generating Authority of Thailand.

The currency risk was mitigated by structuring the currency profile of the project's financing so that it matched project expenses (before completion) and project revenues (after completion). That also provided natural protection from revenue fluctuations in an arrangement where one half of the principal amount of the long-term debt was denominated in Thai bahts, and the other in US dollars.

Identification of the possible impact of current monetary policy or financial regulation on potential project revenues at the planning stage makes it possible to eliminate currency risks by selecting a robust funding structure.

Taking into consideration the additional risks arising in cross-border PPP projects, the governments of the participating countries should be ready to assume higher risks than would be typical for similar national PPP projects.

Government support is provided in the form of grants or subsidies (one-off or volume-based), as well as debt guarantees, minimum revenue guarantees, demand guarantees, or soft loans. The project's financial stability may also be supported by multilateral institutions and development banks, usually in the form of soft loans, contingent assistance, guarantees, or other credit enhancement instruments.

The MDBs and other development institutions offer special products to support cross-border projects, such as export credit insurance or credit guarantees, with a view to covering political, credit, and currency risks at the early stages of project implementation, and encourage private sector involvement. For example, the European Commission and the European Investment Bank (EIB) developed a special mechanism (the Loan Guarantee Instrument for Trans-European Transport Network Projects, or LGTT) to facilitate cross-border projects for transport infrastructure in the EU (see Box 23).

Box 23. Loan Guarantee Instrument for Trans-European Transport Network Projects

The LGTT is an innovative financial instrument of the EU Trans-European Transport Network (TEN-T) Development Programme and the EIB Action Plan for Growth. The purpose of the LGTT is to attract private sector players to the development of the cross-border European transport infrastructure, which frequently encounters funding difficulties because of the relatively high risk of failure to generate revenues at the early stages of project implementation.

The LGTT partially mitigates such risks and, consequently, improves the financial viability of the project. In particular, the instrument covers the ramp-up period when newly built transport infrastructure facilities gradually increase their freight traffic. The LGTT is co-funded with €500 million parity capital contributions by the European Commission and the EIB. The funds are used to support cross-border transport projects to the tune of up to €20 billion (European Investment Bank, 2023).

One of the ways to reduce risk and improve financial sustainability of cross-border PPP projects is to raise private funding by the project financing mechanism.

The private partner in a cross-border PPP project can help to mitigate risks by cutting costs or improving the price/quality ratio. For example, it can use innovative design or construction methods, cost control or risk allocation tools, increase revenues by applying more effective infrastructure asset management techniques, and eliminate problems related to the allocation of revenues or costs if there is a structural mismatch between revenue allocation arrangements and the costs actually incurred by the governments of the participating countries. However, not all risks can be shifted to the private sector.

Additional recommendations on the allocation of project risks between the public and private sectors are provided in GIF PPP Risk Allocation Tools (Global Infrastructure Hub, Allen & Overy, 2020a, 2020b).

Guideline 7. Encourage and support cross-border PPPs that contribute the most to the Sustainable Development Goals (SDGs)

Cross-border PPPs have a potential that goes beyond just infrastructure and can have a measurable positive impact on the achievement of environmental and social SDG targets (Maslova, 2020).

Infrastructure is one of the central elements of *Agenda 2030* and the *Sustainable Development Goals*, as it affects 155 of 169 SDG targets. Cross-border PPPs are an effective tool that can be used to eliminate infrastructure gaps and meet public service needs of the population; accordingly, they can ensure achievement of the SDGs related to access to infrastructure and its development.

Cross-border PPPs make the largest contribution to SDG-9, *Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation* by developing quality, reliable, sustainable, and resilient infrastructure, including regional and cross-border infrastructure (SDG-9, Target 9.1). Depending on the sectors of implementation of cross-border PPPs, they can also facilitate achievement of SDG-2 (agricultural infrastructure), SDG-7 (energy infrastructure), and SDG-11 (transport infrastructure).

At the same time, expansion of cross-border infrastructure can produce adverse environmental and social consequences, and the infrastructure itself is becoming increasingly vulnerable to climate change (Maslova, 2019a).

Cross-border PPP participants should strive to ensure that the facilities created by cross-border PPP projects meet the requirements for sustainable quality infrastructure, and produce the following effects: reduction of greenhouse gas emissions and improvement of energy efficiency; mitigation of environmental and social risks; high resilience against natural or technogenic disasters, and high potential for rapid recovery; general and equal access to affordable basic public services; involvement of stakeholders at all stages of the project life cycle, etc. (see Box 24).

Box 24. Cross-Border PPP Project "China–Laos High-Speed Rail Line Construction and Operation" and Its Contribution to the SDGs

SDG-9. After the China–Laos High-Speed Rail Line had been put in operation, the distance that passengers have to travel to get from Vientiane (capital of Laos) to Kunming (administrative centre of Yunnan Province) decreased from 1,645 km (by bus or car) to approximately 1,100 km (by rail).

SDG-7, SDG-11, SDG-13. Environmental and climatic effects of the passenger traffic switch from road and air transport to railway transport are characterised by the following metrics measured by the EcoPassenger calculator used by the International Union of Railways (UIC): CO_2 emissions per passenger are reduced by a factor of 5.9 relative to road transport, and by a factor of 7.7 relative to air transport; nitrogen oxide emissions are reduced by a factor of 9.6 and 12.3, respectively, and non-methane hydrocarbon emissions by a factor of 14.0 and 22.9, respectively. Those effects are achieved due to route straightening, shorter waiting times at border crossing points (when travelling by railway as rather than road), use of electric energy rather than fossil motor fuels, and the higher energy efficiency of railway transport.

For the purpose of achievement of the SDGs, it is critical during the cross-border PPP planning and development stages to:

- balance economic (investment), environmental (climate), and social parameters, without giving undue prevalence to any one parameter over the others;
- involve investors with a proven record of participation in infrastructure projects for sustainable development (including green development), and their own ESG strategies;
- incorporate financial models designed to examine the environmental and social dimensions of the SDGs in project solutions, and sustainability clauses in cross-border PPP agreements.

At the national level, it appears expedient to:

- develop a set of permanent measures to attract and stimulate private investment in cross-border PPP projects that generate a measurable positive impact on the achievement not only of the economic SDGs, but also of the environmental and social SDGs;
- provide such cross-border PPPs with government support on a priority basis;
- engage in regulatory practices consistent with the public interest in environmental and social areas and, among other things, require that private investments in cross-border PPPs contribute to the SDGs;
- take steps to increase private investors' awareness of the potential benefits of their participation in cross-border PPP projects aimed at achieving the SDGs, and to offset factors constraining their involvement in such projects (EDB, 2022);
- disseminate the best practices in the area of achieving the SDGs and use of ESG standards in cross-border PPPs.

REFERENCES

ADB (2019) *Lao People's Democratic Republic: Greater Mekong Subregion: Nam Theun 2 Hydroelectric Project*. Completion Report. July. Available at: https://www.adb.org/sites/default/files/project-documents/37734/37734-013-pcr-en.pdf (Accessed 17 April 2023).

Asian Development Bank Institute (2010) *Critical Evaluation of Cross-Border Infrastructure Projects in Asia*. ADBI Working Paper Series № 226. Available at: https://www.adb.org/sites/default/files/publication/156081/adbiwp226.pdf (Accessed 04 April 2023).

CIS Internet Portal (2022) Kambaratinskaya GES-1 — eshche odin shag k energonezavisimosti Kyrgyzstana. 15 June. Available at: https://e-cis.info/news/566/101050/ (Accessed 17 February 2023).

EDB (2022) Roundtable "PPPs for Sustainable Development in EAEU+ States". PPP Roundtable Resolution. 14 June. Available at: https://eabr.org/en/public-private-partnership/events/ (Accessed 17 April 2023).

EEC (2014) Treaty on the Eurasian Economic Union. Available at: https://docs.eaeunion.org/docs/ru-ru/0003610/itia_05062014 (Accessed 15 February 2023).

EEC (2020) O Strategicheskikh napravleniyakh razvitiya evraziyskoy ekonomicheskoy integratii do 2025 goda. Reshenie Vysshego Evraziyskogo ekonomicheskogo soveta № 12 ot 11 dekabrya 2020 g. Available at: https://docs.eaeunion.org/docs/ru-ru/01428320/scd_12012021_12 (Accessed 15 February 2023).

EEC (2021) O Plane meropriyatiy po realizatii Strategicheskikh napravleniy razvitiya evraziyskoy ekonomicheskoy integratii do 2025 goda. Rasporyazhenie Soveta EEK № 4 ot 05 aprelya 2021 g. Available at: https://docs.eaeunion.org/docs/ru-ru/01429229/err_17052021_4 (Accessed 15 February 2023).

EEC (2022) *Doklad "O telesoobraznosti formirovaniya v Evraziyskom ekonomicheskom soyuze obshchey strategii razvitiya transportnoy infrastruktury"*». Available at: https://eec.eaeunion.org/upload/medialibrary/738/Doklad-o-formirovaniiy-obshchey-strategii-razvitiya-infrastruktury.pdf (Accessed 15 February 2023).

European Investment Bank (2023) Trans-European Networks. Available at: https://www.eib.org/en/about/priorities/sustainable-cities-regions/tens/index (Accessed 17 April 2023).

Global Infrastructure Hub, Allen & Overy (2020a) *PPP Risk Allocation Tool 2019* Edition — Energy, *Communications and Industrial Parks*. Available at: https://cdn.gihub.org/umbraco/media/3019/gih_rat_energy_comm_industrialpark_art_web.pdf (Accessed 14 April 2023).

Global Infrastructure Hub, Allen & Overy (2020b) *PPP Risk Allocation Tool 2019 Edition — Transport*. Available at: https://cdn.gihub.org/umbraco/media/3017/gih_rat_transport_art_web.pdf (Accessed 14 April 2023).

Global Infrastructure Hub, Ramboll (2021) Connectivity Across Borders: Global Practices for Cross-Border Infrastructure Projects. Reference Guide. February. Available at: https://cdn.gihub.org/umbraco/media/4829/gih_cross_border_web_final-11-02-21_updated-141022.pdf (Accessed 03 January 2023).

IRU (2012) Model Highway Initiative. Available at: https://www.yumpu.com/en/document/view/10645369/10-iru-model-highway-initiative (Accessed 25 April 2023).

Maslova, S. (2019a) *Gosudarstvenno-chastnoe partnerstvo kak sredstvo dostizheniya Teley ustoychivogo razvitiya: mezhdunarodnye standarty i national'no-pravovoe regulirovanie*. Saint Petersburg: Asterion.

Maslova, S. (2019b) The Role of International Organizations in Regulating Relations in the Area of Public-Private Partnership: Critical Analysis and Prospects. *International Law and International Organizations*, 2, pp. 1–15.

Maslova, S. (2020) Achieving Sustainable Development Goals through Public Private Partnership: Critical Review and Prospects. *International Journal of Innovation and Sustainable Development*, 14 (3), pp. 288–312.

Maslova, S. (2022) Trends in the Development of International Legal Regulation of International and Cross-Border Relations in the Field of Public-Private Partnership. Dissertation for a degree of doctor of legal sciences. Saint Petersburg. Available at: https://disser.spbu.ru/files/2021/disser_maslova.pdf (Accessed 10 March 2023).

Maslova, S., Sokolov, M. (2020) Public-Private Partnership's Transboundary Projects: Conceptual Features and Practical Aspects of Management. *Public Administration Issues*, 1, pp. 86–114. Available at: https://vgmu.hse.ru/data/2020/03/19/1567815115/Маслова,%20Соколов%201-2020.pdf (Accessed 4 January 2023).

UN (2021) Strengthening the links between all modes of transport to achieve stable and reliable international transport for sustainable development during and after the coronavirus disease (COVID-19) pandemic. Resolutions of the 75th Session — UN General Assembly, 29 July. Available at: https://www.un.org/en/ga/75/resolutions.shtml (Accessed 24 April 2023).

UNCITRAL (2020) *UNCITRAL Legislative Guide on Public-Private Partnerships*. Available at: https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-10872_ebook_final.pdf (Accessed 13 January 2023).

UNECE (2018a) *Guiding Principles on People-first Public-Private Partnerships in support of the United Nations Sustainable Development Goals*. Available at: https://unece.org/fileadmin/DAM/ceci/documents/2018/PPP/WP/ECE_CECI_WP_PPP_2018_03-en.pdf (Accessed 01 February 2023).

UNECE (2018b) *Standard on Public-Private Partnerships in Railways*. Available at: https://unece.org/fileadmin/DAM/ceci/documents/2018/PPP/WP/ECE_CECI_WP_PPP_2018_06-en.pdf (Accessed 01 February 2023).

UNECE (2018c) *Standard on Public-Private Partnerships in Renewable Energy*. Available at: https://unece.org/fileadmin/DAM/ceci/documents/2018/PPP/WP/ECE_CECI_WP_PPP_2018_07-en.pdf (Accessed 01 February 2023).

UNECE (2018d) *Standard on Public-Private Partnerships in Roads*. Available at: https://unece.org/fileadmin/DAM/ceci/documents/2018/PPP/WP/ECE_CECI_WP_PPP_2018_08-en.pdf (Accessed 01 February 2023).

UNECE (2020) *Euro-Asian Transport Linkages. Operationalisation of inland transport between Europe and Asia*. New York, Geneva: United Nations. Available at: https://unece.org/DAM/trans/doc/2019/wp5/ECE-TRANS-265e_re.pdf (Accessed 28 March 2023).

UNECE (2022) *Guiding Principles on Public-Private Partnerships in support of the United Nations Sustainable Development Goals*. Available at: https://unece.org/sites/default/files/2022-11/ECE_CECI_WP_PPP_2022_07-en.pdf (Accessed 01 February 2023).

UNESCAP (2019) *Review of Sustainable Transport Connectivity in Asia and the Pacific 2019: Addressing the Challenges for Freight Transport*. Available at: https://www.unescap.org/publications/review-sustainable-transport-connectivity-asia-and-pacific-addressing-challenges (Accessed 24 April 2023).

Vinokurov, E., Ahunbaev, A., Babajanyan, V., Berdigulova, A., Fedorov, K., Kharitonchik, A., Kuznetsov, A., Malakhov, A., Pereboev, V., Usmanov, N., Zaboev, A. (2022) *The Economy of Central Asia: A Fresh Perspective*. Reports and Working Papers 22/3. Almaty, Bishkek, Moscow: Eurasian Development Bank. Available at: https://eabr.org/en/analytics/special-reports/the-economy-of-central-asia-a-fresh-perspective/ (Accessed 24 April 2023).

Vinokurov, E., Ahunbaev, A., Shashkenov, M., Zaboev, A. (2021) *The International North–South Transport Corridor: Promoting Eurasia's Intra- and Transcontinental Connectivity*. Report 21/5. Almaty, Moscow: Eurasian Development Bank. Available at: https://eabr.org/en/analytics/special-reports/the-international-north-south-transport-corridor-promoting-eurasia-s-intra-and-transcontinental-conn/ (Accessed 15 February 2023).

Vinokurov, E., Ahunbaev, A., Usmanov, N., Sarsembekov, T. (2022) *Regulation of the Water and Energy Complex of Central Asia*. Reports and Working Papers 22/4. Almaty, Moscow: Eurasian Development Bank. Available at: https://eabr.org/en/analytics/special-reports/regulation-of-the-water-and-energy-complex-of-central-asia/ (Accessed 24 April 2023).

Vinokurov, E., Ahunbaev, A., Zaboev, A. (2022) International North–South Transport Corridor: Boosting Russia's "pivot to the South" and Trans-Eurasian connectivity. *Russian Journal of Economics*, 8 (2): 159–173. Available at: https://rujec.org/article/86617/ (Accessed 24 April 2023).

Vinokurov, E., Ahunbaev, A., Zaboev, A., Usmanov, N. (2022) *International North–South Transport Corridor: Investments and Soft Infrastructure*. Reports and Working Papers 22/2. Almaty, Moscow: Eurasian Development Bank. Available at: https://eabr.org/en/analytics/special-reports/international-north-south-transport-corridor-investments-and-soft-infrastructure/ (Accessed 15 February 2023).

World Bank, MIGA (2004) Project Appraisal Document on a Proposed IDA Partial Risk Guarantee in the Amount of US$50 Million for Ghana and on a Proposed MIGA Guarantee in the Amount of US$75 Million for Sponsors Equity to the West African Gas Pipeline Company Limited for the West African Gas Pipeline Project. Available at: https://documents1.worldbank.org/curated/en/353691468767744635/pdf/303350AFR.pdf (Accessed 4 April 2023).

LIST OF ABBREVIATIONS

ADB — Asian Development Bank

AFD — Agence française de développement

ASEAN — Association of Southeast Asian Nations

APEC — Asia-Pacific Economic Co-operation

BOT — Build–Operate–Transfer (PPP model)

CAREC — Central Asia Regional Economic Co-operation

CBA — cost-benefit analysis

CCCC — China Communications Construction Company

CPPP — cross-border public-private partnership

CRBC — China Road and Bridges Corporation

BRI — Belt and Road Initiative

ECA — Export Credit Agency

EDB — Eurasian Development Bank

EAEU — Eurasian Economic Union

EBRD — European Bank for Reconstruction and Development

ECOWAS — Economic Community of West African States

EEC — Eurasian Economic Commission

EIB — European Investment Bank

ESG — E — environment, S — social, G — governance

EU — European Union

GDP — gross domestic product

GIF — Global Infrastructure Facility

IDA — International Development Association

IRU — International Road Transport Union

ITC — international transport corridor

KIM — Key Investment Megaproject

LGTT — Loan Guarantee Instrument for Trans-European Transport Network Projects

MDB — multilateral development bank

MIGA — Multilateral Investment Guarantee Agency

NAFTA — North American Free Trade Agreement

NIB — Nordic Investment Bank

OPIC — Overseas Private Investment Corporation

OSJD — Organisation for Co-operation between Railways

PPP — public-private partnership

PRC — People's Republic of China

RIF — regional infrastructure fund

SADC — Southern African Development Community

SCO — Shanghai Co-operation Organisation

SDG — sustainable development goal

SEEC — Supreme Eurasian Economic Council

TEN-T — Trans-European Transport Network

UN — United Nations Organisation

UNECE — United Nations Economic Commission for Europe

UNCITRAL — United Nations Commission on International Trade Law

UNESCAP — United Nations Economic and Social Commission for Asia and the Pacific

USA — United States of America

USAID — United States Agency for International Development

WAGP — West African Gas Pipeline

XUAR — Xinjiang Uygur Autonomous Region

% — percent

$ — US dollar

km — kilometre

mm — millimetre

kWh — kilowatt hour

MW — megawatt

Macroeconomic Review
(RU)

A regular EDB publication, which provides an overview of the current macroeconomic conditions in the EDB member states and estimates their development in the short-term perspective.

Macroeconomic Outlook
(RU/EN)

EDB Macroeconomic Outlook 2023–2025

The analysis summarises economic developments in the Bank's member states in early 2023 and provides key macroeconomic projections for the region's countries until the end of the year and for 2024–2025.

Report 21/1
(RU)

Promoting the Role of the EAEU Currencies in Global Transactions

EAEU currencies service around 2% of global trade. As for the EAEU countries, payments in their currencies have notably increased over the past seven years — their share in trade flows jumped from 63% in 2013 to 74% in 2019.

Report 21/2
(RU/EN)

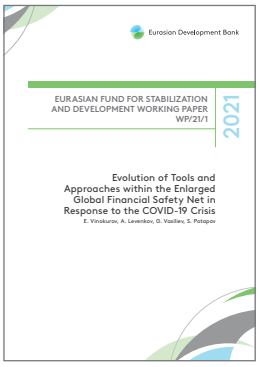
Uzbekistan and the EAEU: Prospects and Potential Impact of Economic Integration

The report estimates the potential effects of Uzbekistan's integration with the EAEU and outlines promising areas for cooperation between the current Union member states and Uzbekistan.

Report 21/3
(RU/EN)

Investment in the Water and Energy Complex of Central Asia

The report analyses Central Asia's water and energy complex after 30 years of independence of the five Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) and assesses their cooperation in the water and energy complex.



Working Paper WP/21/1
(RU/EN)

Evolution of Tools and Approaches within the Enlarged Global Financial Safety Net in Response to the COVID-19 Crisis

This working paper provides the analysis how the GFSN responded to pandemic on global level and on regional level (in the EFSD countries).

Working Paper WP/21/2
(RU/EN)

Total Debt is So Much More Than Just Sovereign Debt. Contingent Liabilities in Armenia, Belarus, Kyrgyz Republic, and Tajikistan

This study aims to contribute to understanding the potential risks and impacts of both explicit and implicit contingent liability shocks on government fiscal and debt positions in the EFSD recipient countries.

Report 21/4
(RU/EN)

EDB Monitoring of Mutual Investments

Mutual investments in Eurasia, calculated using a new methodology, reach US $46 billion. FDI has been growing steadily since 2016.

Report 21/5
(RU/EN)

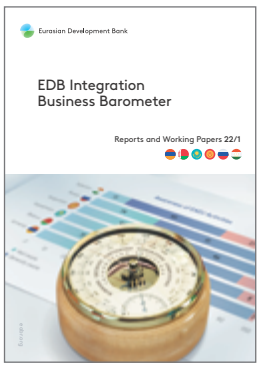
The International North–South Transport Corridor: Promoting Eurasia's Intra- and Transcontinental Connectivity

Linking up the INSTC with Eurasian latitudinal corridors could ensure around 40% of container traffic.

Joint report by the Eurasian Development Bank and the Global Energy Association
(RU/EN)

Green Technologies for Eurasia's Sustainable Future

The report is prepared by the key international industry experts and young scholars. It contains the results of technical research aimed at solving today's energy challenges and helping to reduce the carbon footprint in Eurasia.



Report 22/1
(RU/EN)

EDB Integration Business Barometer

About 73% of companies feel positive about the EAEU and say it makes doing business easier.

Report 22/2
(RU/EN)

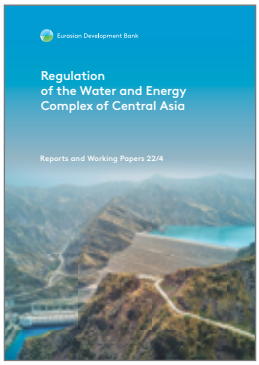
International North–South Transport Corridor: Investments and Soft Infrastructure

The study assesses the investment potential of the INSTC, identifies barriers to its development and provides recommendations on how to eliminate them.

Report 22/3
(RU/EN)

The Economy of Central Asia: A Fresh Perspective

The report provides a renewed perspective on Central Asia as a large, dynamic and promising economic region and analyses its current structural changes and major growth areas..



Report 22/4
(RU/EN)

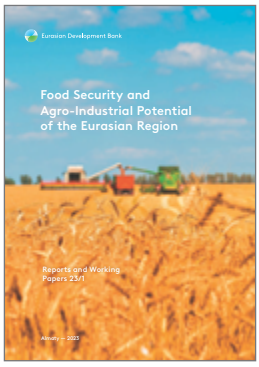
Regulation of the Water and Energy Complex of Central Asia

The report scrutinises historical data and international experience to suggest five institutional solutions for effective regulation and development of Central Asia's water and energy complex that would benefit all countries of the region.

Report 22/5
(RU/EN)

EDB Monitoring of Mutual Investments — 2022

This report continues the series of publications detailing the findings of a long-standing research project monitoring mutual direct investments of the CIS countries and Georgia.



Report 23/1
(RU/EN)

Food Security and Agro-Industrial Potential of the Eurasian Region

Based on the balance approach, the report analyses the production, resource, and export potential of the agro-industrial complexes of the EAEU countries, Tajikistan, and Uzbekistan for the period until 2035.

Report 23/2
(RU/EN)

Global Green Agenda in the Eurasian Region. Eurasian Region on the Global Green Agenda

The report provides a comprehensive analysis of the challenges and prospects for low-carbon transition in Eurasia, covering EAEU countries, Tajikistan, and Uzbekistan.

Eurasian Development Bank

RESEARCH DEPARTMENT
DEPARTMENT OF PROJECT SUPPORT
EURASIAN DEVELOPMENT BANK

Your comments and suggestions
concerning this document
are welcome at: pressa@eabr.org

Eurasian Development Bank

www.eabr.org