FINANCING INFRASTRUCTURE IN THE TRANSPORT SECTOR IN LANDLOCKED DEVELOPING COUNTRIES: TRENDS, CHALLENGES & OPPORTUNITIES



#### **UN-OHRLLS**

Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States

**INFRASTRUCTURE IN** THE TRANSPORT SECTOR IN LANDLOCKED **DEVELOPING COUNTRIES:** TRENDS, CHALLENGES & **OPPORTUNITIES** 

# FINANCING



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AfDB	African Development Bank
AGTF	Africa Growing Together Fund
AIIB	Asian Infrastructure Investment Bank
ADB	Asian Development Bank
AMC	Asset Management Company
APL	Adaptable Program Loan
ASEAN	Association of Southeast Asian Nations
BIA	Bugesera International Airport
CAF	Corporación Andina de Fomento
CAICCF	China-Africa Industrial Capacity Cooperation Fund
CAREC	Central Asia Regional Economic Cooperation
CBN	Continental Business Network
CDB	China Development Bank
CELAC	Community of Latin American and Caribbean States
CEMAC	Central African Economic and Monetary Community
C-EXIM	Export-Import Bank of China
China-CEE	China-Central and Eastern European Fund
CIF	Cost Insurance Freight
COSCO	China Ocean Shipping (Group) Company
CRCC	China Railway Construction Corporation
CRG	China Railway Group
CSCEC	China State Construction Engineering Corporation
CTF	Clean Technology Fund
DCC	Dar es Salaam Corridor Committee
DFI	Development financial Institutions
DFID	Department for International Development (UK)
EBRD	European Bank for Reconstruction and Development
ECOWAS	Economic Community of West African States
EDF	European Development Fund
EIB	European Investment Bank
FOB	Free on Board

# ACRONYMS

GIF	Global Infrastructure Facility
GPSC	Global Platform for Sustainable Cities
GDP	Gross Domestic Product
HDM	Highway Development Model
ICAO	International Civil Aviation Organization
IFC	International Finance Corporation
IMF	International Monetary Fund
IPF	Infrastructure Prioritization Framework
JBIC	Japan Bank for International Cooperation
KVA	Khöshig Valley Airport
LAC	Latin America and the Caribbean
LLDC	Landlocked Developing Country
MDB	Multilateral Development Bank
MDFI	Multilateral Development Financial Institutions
NEPAD	New Partnership for Africa's Development
PIDA	Programme for Infrastructure Development in Africa
PIMA	Public Investment Management Assessment
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public Private Partnership
RCIF	Russia-China Investment Fund
SADC	Southern African Development Community
SCF	Strategic Climate Fund
SGR	Standard Gauge Railway
SOE	State-Owned Enterprise
SSA	Sub-Saharan Africa
SWF	Sovereign Wealth Funds
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UN ECA	United Nations Economic Commission for Africa
UN ECE	United Nations Economic Commission for Europe
UN ECLAC	United Nations Economic Commission for Latin America and the Caribbean
UN ESCAP	United Nations Economic and Social Commission on Asia and the Pacific

## EXECUTIVE SUMMARY

This report provides a summary of the transport infrastructure challenges that Landlocked Developing Countries (LLDCs) face and the trends in financing of transport infrastructure of LLDCs, and gives guidance on the available opportunities of funding and financing for meeting their infrastructure challenges.

## INTRODUCTION

The LLDCs are a group of 32 countries found in Africa, Asia, Europe and Latin America. In addition to the location and the characteristics of their economy, dependency on transport infrastructure to some extend depends on the importance of international trade in the national economy. Overall, LLDCs are more trade dependent than their transit developing neighbours as their trade share of GDP is about 3 percentage points higher. LLDCs have, on average, higher import, but lower export and total trade as a percentage of their GDP than the global average, but there are important differences between the trade dependence of LLDCs by region.

Regional differences between LLDCs can also be seen in the distances to deep-water ports. LLDCs in some regions (for example East Africa) are more economically integrated with their neighbours than those in other regions (such as West Africa), while some have better access to maritime services and international markets, while yet others (such as those of Central Asia) depend more on land access to reach their major trading partners.

LLDCs also face the challenges of dependence on their transit neighbours' infrastructure, peace and stability, policies and administrative practices, as well as cross-border political relations. Many transit developing countries are themselves also facing infrastructure deficiencies that need to be addressed.

Overall, landlockedness does not only impact on economic growth through its impact on trade; it can also impact on both economic and noneconomic dimensions of development, such as human development, quality of governance and environment.

#### TRENDS

#### Changing emphasis between hard and soft infrastructure

It has been long and widely recognized that LLDCs suffer from many disadvantages associated with their lack of direct territorial access to maritime services, and their remoteness and isolation from world markets compared to their coastal neighbours. Today, LLDCs continue to face infrastructure challenges to accessing global and regional markets, largely attributable to deficiencies on their 'hard' and 'soft' transport infrastructure. The relative importance of these infrastructure categories has evolved over time, from the time of the first United Nations Conference on Landlocked Developing Countries in Almaty 2003 and the Almaty Programme of Action for LLDCs to the adoption of the Vienna Programme of Action for LLDCs for the Decade 2014-2024 in Vienna in 2014. In recent years, there has been a coming together of the two perspectives. This has come through the concept of reliability and confidence in the certainty of transport times and costs for the LLDCs that is common to both.

#### Transport infrastructure deficiencies

It has been well documented that LLDCs face higher transportation costs as well as longer time associated with their international cross-border transport than coastal countries. Despite improvement in transport infrastructure in the LLDCs, poor quality and deficiencies in the quantity of physical infrastructure are still major obstacles for LLDCs in developing viable and predictable transit transport systems.

The indicators reviewed in this report all show that the transport infrastructure quantity and quality of LLDCs is much less than the global average. In terms of quantity, measured as kms per km<sup>2</sup> of land area, LLDCs have lower road and rail network densities as compared with transit developing countries and global averages. For paved roads, LLDCs have only 12% of the global density, while for railways they have just over half (55%). But these averages conceal very large differences between the LLDCs and the LLDC regions, with the largest deficiencies observed for the LLDCs in Eastern Asia and Sub-Saharan Africa West

The two indicators based on perceptions, the World Economic Forum infrastructure indices and the Logistics Performance Index, indicate smaller differences in transport infrastructure between LLDCs and other countries but LLDCs are still being seen to have about 70% to 80% of the global average densities. A plausible interpretation is that this is

evidence of a continuing lack of appreciation of the real transport infrastructure deficiencies of LLDC.

The potential benefits of remedying these deficiencies come from the realizable increase in trade of the LLDCs. If the import and export shares of Gross Domestic Product (GDP) of LLDCs in each region were to reach the global averages, their total trade would be about US\$ 42 billion higher.

#### CHALLENGES

#### Investment cost of transport infrastructure

The available estimates of transport infrastructure Even if all the measures to reduce inefficiencies in needs in developing countries vary greatly. For the transport infrastructure investment were taken, their LLDCs to reach the global average road and rail implementation and their impact would take a long network densities, they would need to construct time to be realized. In the meantime, investment in almost 200,000km of paved roads and another transport infrastructure will need to continue. 46,000km of railway at a cost of about US\$ 0.51 trillion, about 2% of their GDP. Further analysis shows Mobilizing more domestic revenue that the gap between what is invested in transport Many LLDCs still need to raise more fiscal revenues infrastructure in LLDCs and what is needed, could in order to help meet their infrastructure gap. Tax be as large as 2.3% of GDP. Closing this gap in the mobilization remains low in LLDCs in spite of LLDCs will require not only enhanced resources from significant effort and recent reforms in some LLDCs the public sector, private sector and international and the ratio of tax revenues to GDP also ranges development partners, as well as exploring new considerably amongst the LLDCs. sources of financing, but also efforts to make better Transport user charges are a widely used way use of existing resources.

#### Better use of existing resources

Aside from better tracking and monitoring of transport investment expenditure and allocating a sufficient share of the transport investment budget to maintenance to avoid costly reconstruction, reducing inefficiencies in public spending on transport could greatly improve the use of existing resources in the LLDCs. In 2015, the International Monetary Fund (IMF) published guidelines for how the efficiency of public investment in infrastructure could be increased in the order of 30%. In section B., the report indicates practical ways through which these efficiency increases can be achieved, including better strategic planning of transport infrastructure investments, strengthening institutions and enhancing transparency.

As part of the process of making better use of domestic funding, LLDCs should also have in place an effective trade strategy which is embedded in the national development strategy, and then choosing the most cost-effective transport projects that will support that strategy. This might involve an alternative to relying on land access routes to



deep water ports, even though such strategies are aimed at avoiding rather than overcoming the disadvantages of being landlocked.

## **OPPORTUNITIES**

Funding the closing of the infrastructure gap is proving a herculean task for the LLDCs. But by making better use of what is already available, and taking advantage of all the new funding and financing possibilities that are becoming available, closing the transport infrastructure gap in the next decade could be within reach.

of raising revenue that can be used for transport investment, and of freeing public expenditure that might otherwise have been used on infrastructure maintenance to become available for investment in new infrastructure. Many LLDCs have implemented some form of charging users for the maintenance of road infrastructure, but typically increases in charges in these schemes are not keeping pace with increases in costs. Non-user fees, such as for owners of land and property that is close to the new infrastructure have also been used by some LLDCs, so that those who benefit from the investment also make a contribution to its financing. Wider application of this principle in LLDCs would further contribute to funding closure of the infrastructure gap.

LLDCs need to also complement fiscal revenues and diversify their source of domestic financing by issuing sovereign bonds and institutional investors such as pension funds, insurers and sovereign wealth funds. Through structural reforms, LLDC governments need to create a more favourable investment climate, build private sector confidence to invest and ensure that global savings are channelled into productive investments, including infrastructure.

#### Mobilizing more international finance

International development finance is a main element for the LLDCs in supplementing their domestic funding. Furthermore, new international sources of finance offer far more opportunities than domestic sources.

#### Official Development Assistance and Multilateral Development Banks

Official Development Assistance (ODA) remains the dominant source of external funding for many LLDCs. ODA flows to LLDCs reached around US\$ 25 billion in 2016, however infrastructure (water, transport and storage, energy, and communications) amounts to just around 22% of this amount.

About one third of ODA comes from the Multilateral Development Banks (MDBs). Between them, the seven larger MDBs made about 200 transport loans for a total of more than U\$ 20 billion in each of the three years between 2013 and 2015. Of this, an increasing share-more than 21% in 2015 up from just 13% in 2013-was to LLDCs.

Several new MDBs have also recently entered the stage. The Asian Infrastructure Investment Bank is a new multilateral financial institution with capital of US\$ 100 billion, equivalent to two thirds that of the Asian Development Bank and about half that of the World Bank. It aims to address the infrastructure financing gap in Asia and in those parts of the world that connect to it through trade routes and corridors, and it is therefore a large potential finance source for majority of LLDCs, with the exception of those in South America.

Many of the MDBs also have regional integration funds, typically used to support lending for corridor projects, that LLDCs should take advantage of. Project typically need to meet specific regional integration criteria, such as involving three or more countries, producing spill over benefits across country boundaries, showcasing regional ownerships and promoting regional policy harmonization. Projects that are part of trade and transport corridors also have the advantage of providing a convenient way of bringing together the public as well as private financing resources needed to increase the connectivity of LLDCs to global markets.

With the MDBs allocating an increasing share of their transport financing to LLDCs, and the emergence of new large institutions, MDBs should be one of the first sources of financing of new transport infrastructure projects in LLDCs aimed at closing the infrastructure gap, in particular at the regional level.

#### Other bilateral aid

While the traditional sources of bilateral aid for financing transport infrastructure are well known and widely used by LLDCs, the multiple new and expanding sources of bilateral funding, in particular from China are less known and exploited. These sources include funding and financing from the Silk Road Fund aimed at fostering increased investment in countries along the One Belt, One Road; Chinese Development Banks, as well as other Chinese financing sources. LLDCs can also access the China supported South-South Climate Cooperation Fund, used to finance initiatives in developing countries to combat climate change. In addition, a number of other South-South cooperation programs are available for the LLDCs to tap into. The European Union also provides funding to transport infrastructure projects through its European Development Fund to African, Caribbean and Pacific countries, that in particular the African LLDCs can access.

There are also several climate investment funds managed by international agencies that have specific development objectives, often relevant to transport infrastructure. Since environmental sustainability of transport infrastructure projects can create additional costs, these funds can be an important source of finance to cover this cost, including the Green Climate Fund and the Global Environmental Facility.

#### Private finance

Among the potential expanded opportunities for financing transport infrastructure in LLDCs are those provided by the private sector. As demands for investment in transport are increasing as developing countries are looking to expand their transport infrastructure to achieve global density and quality standards, the MDBs and other financial institutions are finding ways to leverage private finance. While the leverage strategy has been moderately successful for some middle income non-LLDCs, until now it has been far less so for LLDCs. Out of a total of more than US\$ 87 billion of private finance made available to developing countries by official interventions between 2012 and 2015, less than 7% went to LLDCs.

A simple way to categorize private finance is as direct and indirect. Direct finance goes directly from

the source to the project investor, indirect goes via an intermediary, typically investment funds, ranging from pension and insurance funds to specific infrastructure investment funds and sovereign wealth funds.

#### Public-Private Partnerships

Most direct private finance in transport infrastructure operation of existing assets ('brownfield') rather than comes via public-private partnerships (PPPs). the creation of new assets ('greenfield'). Though commonly assumed that the private Given the perceived high risk of infrastructure sector provides the majority of financing for PPPs, investment in developing countries, it could be more analyses indicate that PPP financing in developing productive for LLDCs to approach their infrastructure countries actually comes from a diverse mix of investment via indirect sources, such as pension sources, with strong roles played by both the public funds, before seeking direct investment in specific sector and development financing institutions. projects. MDBs and bilateral institutions are the most active in International Development Association (IDA) The LLDCs should take advantage of tools and initiatives to help them prepare infrastructure projects countries, playing a key role by helping to crowd in or mobilize private sources of financing in countries for private financing. The Global Infrastructure Facility where private lenders may not otherwise be for example, can support LLDCs in making sure that comfortable taking country risk. Commercial lenders any infrastructure projects presented for private tend to be the most active in what they perceive financing have a good chance of attracting more than to be more "bankable" deals, such as projects in one source of finance and that the LLDCs will be in a stable, upper-middle-income countries and in more strong position in any negotiations with the potential profitable sectors like energy. private partners.

LLDCs are advised to use private finance where possible and not prohibitively expensive, releasing public funding for non-commercially viable but economically justified projects, based on new 'Cascade' approach of MDBs. However, long term sustainable transport PPPs for LLDCs are rare, and are unlikely to become significant in the near future –except for demonstrably financially viable projects and where the legal, regulatory and transaction environment is favourable to PPPs. The LLDC governments' role in developing PPPs is as much in creating this encouraging context as it is in attracting finance from development financial institutions to the PPP projects.

Before considering PPPs for specific projects, LLDCs are advised to undertake a diagnostic of country's readiness to implement PPPs and implement the measures indicated therein. Useful examples include the Public-Private Infrastructure Advisory Facility (PPIAF) Country PPP Readiness Diagnostic tool and the PPP Readiness Self-Assessment of United Nations Economic and Social Commission on Asia and the Pacific (UN ESCAP). LLDCs also need to make investment climate for infrastructure projects more appealing to PPP investors.

#### Indirect finance

In terms of indirect private finance, in the last decade more than US\$ 200 billion has been raised by investment funds to make long term capital infrastructure investments. However, nearly all of the indirect finance has been for projects in developed countries, and most has been for the purchase and operation of existing assets ('brownfield') rather than the creation of new assets ('greenfield').

## Technical assistance from the international community

There is no overall source of information on all the potential funding and financial resources. A catalogue of all the then available lending products from the MDBs and the IMF was made available for the Third Financing for Development Conference in Addis Ababa in 2015. Given the rapid evolution of new financing sources and the transformation of existing sources, there would be great merit in this catalogue being updated, and expanded to give more insight into how each of the sources could best be used by the LLDCs.

International financial institutions and MDBs could provide valuable service to the LLDCs by compiling a database of the few courses that are available for government officials on how to prepare bankable projects, as well as to develop and provide such training courses. International organizations can further help support the sharing of experiences and successful practices on infrastructure financing with and amongst the LLDCs.

#### THE WAY FORWARD

The scale of funding and financing that most LLDCs will need to close their transport infrastructure gap and bring it to comparable global standards is daunting. It may be possible to come close to closing the transport infrastructure investment gap in LLDCs by being more cost-effective in using what funding and finance is available, maximizing use of long-standing and new sources of domestic, and more importantly, international finance, mostly from various forms of ODA but increasingly from the private sector, as well as the IFIs and MDBs and new innovative funds and financing solutions, as well as taking advantage of the tools and technical assistance provided by the international organizations.

The principal recommendation in relation to making better use of funds is to:

- Apply the IMF approach to Making public investment more efficient. If LLDCs could reach best practice standards, this could increase the quantity of transport infrastructure than can be built with current funding and financial resources by up to 30%.
- Improve the institutional processes on the selection and implementation of infrastructure projects.

Depending on the circumstances of each LLDC, there are several ways that domestic financing could be increased. The main recommendations are to:

- Allocate greater share of public revenue to infrastructure, if possible.
- Make better use of road funds and transport user charges such as tolls.
- Consider making infrastructure investment attractive to national institutional investors.

To attract more international financing, the main recommendations are to:

- Implement a project prioritization process.
- Consider private financing as an option before public funding.
- Draw on resources of regional development banks and regional integration funds.

- Undertake a diagnostic of country's readiness to implement PPPs and make investment climate for transport infrastructure more attractive to PPP investors.
- Maximize the use of technical support from specialized agencies and funds for project preparation.
- Implement system of corridor management to improve coordination between bilateral and multilateral sources.
- Review all the potential sources of multilateral and bilateral funding, including specialized funds with specific social or environmental objectives, and approach potential new sources as soon as possible.
- Take into account potential climate change impacts to ensure the environmental sustainability of the transport infrastructure projects.

In addition to these measures, MDBs, bilateral and multilateral lending agencies and other international organizations also have a fundamental role in making funding available to them for infrastructure projects and providing technical assistance and supporting capacity building in LLDCs. This includes:

- Giving prominence to technical assistance and tools towards development of bankable projects in LLDCs.
- Supporting experience sharing amongst LLDCs and other developing countries on how to develop bankable infrastructure projects and access innovative financing mechanisms.
- Expand and maintain updated the catalogue of all the various financing solutions that are available to developing countries, including LLDCs.
- Disseminate information on academic and training courses on the design and funding and financing of infrastructure projects in developing countries, with special reference to LLDCs.

Much has been written about the plight of LLDCs and what needs to be done to overcome the obstacles to their economic and social growth. Many of the analyses and prescriptions for action have been about transport, and more specifically about transport infrastructure. But much less has been written about how best to implement the prescriptions and recommendations for overcoming the obstacles.

The objective of this report is to provide practical guidance to LLDCs on how they can approach the various funding and financing measures to close or at least narrow their transport infrastructure deficits. The introduction presents an overview of the specific LLDCs challenges as they relate to transport infrastructure. Section A of the report summarizes the trends in understanding the role of transport infrastructure for LLDCs and the evolution of international engagement on LLDC issues. It describes the extent of the transport infrastructure deficiencies of the LLDCs and their impacts.

Section B indicates the investment cost of improving transport infrastructure in LLDCs and draws attention to the recent understandings of how to make better use of the financial resources that are available. Section C then showcases the funding and financing resources that can be used for financing transport infrastructure investments, ranging from domestic to international, public to private and outlines the process for LLDCs to follow in finding funding and financing for their transport infrastructure projects.

Taken together, these opportunities hold out the potential for helping to overcome the transport infrastructure deficits in LLDCs in the next decade. Implementing the recommendations made in this report could be a significant step in realizing this ambitious goal.

# 1. Dealing with transport infrastructure is a priority for all LLDCS

The LLDCs represent a group of countries with a wide range of total and per capita Gross Domestic Product (GDP), total land areas and population density, stages of economic and social growth, and degrees of landlockedness. They are found in Africa, Asia, Europe and Latin America.

The report makes use of the global average figures for the group and at times refers to the regional averages. Given the dependence of LLDCs on their transit neighbours and taking into account that these neighbours have many characteristics of developing countries in common with the LLDCs (other than their landlockedness), average values for transit countries are included with global averages as benchmarks for comparison with LLDCS.

Their per capita incomes range from a low of less than US\$ 300 per capita (Burundi) to a high of around US\$ 7,000 per capita (Botswana and Kazakhstan) with an average of U\$ 1,440. In population, they range from less than 1m (Bhutan) to more than 90m (Ethiopia). In land area, they range from 0.017 million km<sup>2</sup> (Swaziland) to 2.7 million km<sup>2</sup> (Kazakhstan) and in population density from Mongolia with less than 2 people per km<sup>2</sup> to Burundi with more than 400 people per km<sup>2</sup>.

The ability to address infrastructure deficiencies depends to a large extent on access to funding and finance, and this in turn is related to the size of a country's GDP and its GDP per capita. The former is an indicator of the potential for domestic sources while the latter is an indicator of access to external sources. In this respect, transit developing countries are at an advantage compared to LLDCs, with an average per capita income more than three times higher.

Table 1 showcases the income per capita differences across the LLDC regions. Transit developing countries are similarly distributed by region, but with fewer in East Europe and Central Asia (for which several transit countries are developed rather than developing), some are in Middle East and North Africa although this region does not have any LLDCs, and with more in Sub-Saharan Africa West than East.

#### Table 1: Distribution of LLDCs and transit countries by income group and region<sup>1</sup>

Region		Num	nber of cour	Number of transit	Average per capita income, 2016 (current US\$)			
	High	Upper middle	Lower Middle	Low	All LLDCs	countries	LLDCs	Transit
East Asia			2		2	5	2,758	7,391
East Europe & Central Asia		4	5		9	1	3,621	10,863
Latin America		1	1		2	5	3,476	9,301
Middle East & North Africa						3		4,782
South Asia			1	2	3	3	676	1,645
Sub-Saharan Africa East		1	3	7	11	7	774	2,152
Sub-Saharan Africa West				5	5	10	666	1,636
Total LLDCs		6	12	14	32		1,440	
Total transit countries	2	10	13	9		34		4,542

Source: Based on World Bank data for 2016 and World Bank classification of countries for fiscal year 2018

In addition to location and GDP per capita,<sup>1</sup> dependency on transport infrastructure to some extend depends on the importance of international trade in the national economy. Data relating to such dependency needs to be interpreted carefully; for example a small share of trade in GDP can indicate a lack of trade dependence, or a lack of opportunity to develop trade, in which case development of transport infrastructure is important to spur growth in trade. LLDCs have, on average, higher import, but lower export and total trade as a percentage of their GDP than the global average (Table 2). Transit developing countries trade less than LLDCs, with their import share of GDP being about 5% points lower but their export share being about 2% points larger. Transit countries' overall trade share of GDP is less than that of LLDCs and the global average<sup>2</sup>.

There are important differences between the trade dependence of LLDCs by location. For LLDCs in South Asia, imports account for about 42% of GDP, while for those in Sub-Saharan Africa West it is only 20%. As well as having the highest import share of GDP, LLDCs in South Asia also have the lowest share of exports in their GDP at only 5%, with Sub-Saharan Africa West with just 10%. LLDCs in East Asia have 30% of their GDP represented by exports. When overall trade as a percentage of GDP is considered, LLDCs in almost all regions have close to the global average share. East Asia and Sub-Saharan Africa West stand out as the regions with the highest and lowest shares, respectively.

#### Table 2: Trade dependence of LLDCs and transit countries (2016)<sup>3</sup>

Region	Import % of GDP	Export % of GDP	Trade % of GDP
East Asia	32	30	61
Eastern Europe & Central Asia	18	19	37
Latin America	29	29	58
South Asia	42	5	47
Sub-Saharan Africa East	26	15	41
Sub-Saharan Africa West	20	10	30
All LLDCs	23	17	40
Transit countries	18	19	37
Global	21	21	42

Sources: Author's calculations based on IMF data on trade in goods and GDP in current US\$

The locational differences in trade are to some extent attributable to the level of economic integration within a region. LLDCs in some regions (for example East Africa) are more economically integrated with their neighbours than those in other regions

## Table 3: Average distance to a deep-water port from LLDCs in each region

Region	Average distance (kms)
East Asia	1,157
Eastern Europe and Central Asia	2,630
Latin America	718
South Asia	1,298
Sub-Saharan Africa East	1,012
Sub-Saharan Africa West	1,345
All LLDC	1,587

Source: Author's calculations based on data in Landlocked Developing Countries: Facts and Figures, UNCTAD, 2014

Table 3 shows that the average distance from the capital of LLDCs to a deep-water port is just almost 1.600km, but this hides a wide variation since the standard deviation of the distance is just over 1,500km. The differences are not only between individual LLDCs, but also between their regions:

(such as West Africa), while some have better access to maritime services and international markets, while yet others (such as those of Central Asia) depend more on land access to reach their major trading partners.

#### Standard % of average deviation (kms) 537 73 2.147 166 248 45 427 82 64 567 200 85 1,534 100

Eastern Europe and Central Asia has an average of 2,630km (166% of the mean), while Latin America has an average of 718km and 45% of the mean. While far from a dependable index, these distances act as a very approximate indication of the relative 'landlockness' penalty of the LLDC countries<sup>4</sup>.

<sup>3</sup>Table 2 refers to trade in goods. When trade in services is included, UNCTAD data shows that LLDCs have a consistently slightly higher

<sup>&</sup>lt;sup>1</sup>The global regions used throughout the report are the same as those used by the World Bank group, but with a further division between Sub-Saharan Africa East and Sub-Saharan Africa West. A listing of LLDCs by sub-region and income per capita group is provided in Annex A. <sup>2</sup>Part of the explanation of the low trade share of transit countries is the negative correlation between GDP and the trade share of GDP, with the averages for transit countries being heavily weighted by the inclusion of China, India and Brazil.

trade share of GDP than the global average (56.4% for LLDCs, 53.5% for the global average). Since the focus of this report is on transport infrastructure which has little impact on trade in services, data on trade in goods is more relevant. The higher share of trade in services of LLDCs could be an indication that services trade is preferred by LLDCs as it is less impacted by their geographic disadvantages. <sup>4</sup>Uzbekistan has the additional penalty being doubly landlocked.

## A. TRENDS: TRANSPORT INFRASTRUCTURE IN LLDCs

#### 2. Most LLDCs are highly dependent on their transit neighbours

In spite of technological improvements in transport, landlocked developing countries continue to face structural challenges to accessing world markets. As a result, landlocked countries often lag behind their transit neighbours in overall development and external trade. While the relatively poor performance of many LLDCs can be attributed to distance from coast, several other aspects of dependence on transit neighbours have also been shown to be important, including:

- dependence on neighbours' infrastructure;
- dependence on sound cross-border political relations;
- dependence on neighbours' peace and stability; and
- dependence on neighbours' policies and administrative practices (Journal of Human Development 2004).

These factors combine to yield different sets of challenges and priorities in each LLDC. Many transit countries are themselves developing countries with their associated infrastructure deficiencies that need to be addressed. Sometimes. addressing these deficiencies will also help their transit neighbours. Obvious examples are ports and airports and the transport corridors that connect them to their hinterlands. But there often remains an issue of the 'last 100km' that leads to the border with the landlocked neighbour. Unless there is a high volume of bilateral trade, completing these links and enhancing the border facilities is rarely seen as being a high priority of the transit country.

The last 100km can bring extra trade to the trade and transport facilities of the transit country that can more than make up for the investment and operating costs of the 'last 100km,' the border crossing, and the rest of the corridor including its port and logistics facilities. This potential has been realized by some transit countries, which have invested significantly in the 'last 100km' and other infrastructure to facilitate the trade of their LLDC neighbours.

In most circumstances, the extra transit trade incurs only marginal costs (of investment and operation) but brings average revenues (from

tariffs and fares). The difference between average revenues and marginal costs could generate enough to make the whole enterprise worthwhile. These principles of marginal costs and average revenues apply to most transit corridors. Only when the facilities are operating near capacity are more than marginal costs incurred.

#### 3. Broader impacts of landlockedness

Landlockedness does not only impact on economic growth through its impact on trade, it can also impact on both economic and noneconomic dimensions of development and these development effects can be transmitted through several channels that include international trade and quality of institutions. This was the premise behind a 2013 OHRLLS study that analysed the impact of landlockedness on the overall development prospects of LLDCs (UN-OHRLLS 2013). In particular, it assessed the impact on a large number of economic, institutional, and social indicators. This in turn was used to estimate the development cost of being landlocked using an econometric approach. It was found that the level of development of LLDCs, was on average, 22% lower than it would have been had the countries not been landlocked. Based on the findings, the proposed recommendations aimed to provide a more holistic strategy to the development of LLDCs than had been used previously.

In addition to the expected trade, investment and economic growth impacts, the study found that being landlocked had significant negative impacts on:

- Human development: LLDCs have lower health and higher poverty indicators than other country groups, although in terms of gender parity and youth literacy, LLDCs performed better than the transit countries;
- Quality of governance: LLDCs have a lower guality of governance than other regions, however, the difference from the transit developing economies was found to be small;
- Environment: There are two important reasons of concern with respect to environmental sustainability in LLDCs: the high rate of forest depletion and the extremely fast increase in CO2 emissions. In addition, LLDCs are also relatively more vulnerable to natural disasters than coastal economies.

#### 1. Evolution of priority transport infrastructure issues for LLDCs

It has been long and widely recognized that LLDCs suffer from many disadvantages associated with their lack of direct territorial access to maritime services, and their remoteness and isolation from world markets compared to their coastal neighbours. Their international trade depends on transit through other countries. Additional border crossings and the long distance from major markets, coupled with cumbersome transit procedures and inadequate infrastructure, substantially increase the total expenses for transport and other transaction costs, which erodes the competitive edge of landlocked developing countries, reduces economic growth and subsequently negatively affects their capacity to promote sustained economic development, human and social progress and environmental sustainability.

The issues of landlocked developing countries in terms of freedom of transit have been on the international agenda for a long time. For over 100 years, international agreements have been developed to provide freedom of transit for the landlocked countries, including the New York Convention on Transit Trade of Landlocked Countries (1965), and the United Nations Convention on the Law of the Sea (UNCLOS) (1982).

Starting from the United Nations Millennium Declaration of September 2000, which recognized their special needs and problems, landlocked developing countries came to attract more global attention. There had been a slowly growing awareness of the specific problems of LLDCs, but no consensus on what would be the best ways of addressing them. During this period, attempts to address the cost of being landlocked were mainly focused on the development of regional transport infrastructure and on regional and multilateral conventions aiming at ensuring freedom of transit. Since then there has been an evolution in the understanding of these issues, which of them are priorities and

how they can best be dealt with. As with most forms of evolution, the path of progress has not been direct, with different issues coming to prominence as others have appeared to be at least partially resolved.

#### *i.* The Almaty Conference and Programme of Action

The broader issues of LLDCs, other than just freedom of transit, first came to global attention at the time of the International Ministerial Conference of Landlocked and Transit Developing Countries and Donor Countries and International Financial and Development Institutions on Transit Transport Cooperation, the first ever United Nations Conference on Landlocked Developing Countries, held in Almaty in 2003.

The Almaty Programme of Action<sup>5</sup> adopted by the Conference was based on the recognition that LLDCs as a group were among the poorest of developing countries, with limited capacities and dependence on a very limited number of commodities for their export earnings. Leading up to Almaty, the growth rate of the landlocked developing countries had been negative or very low<sup>6</sup>. This was largely attributed to lack of territorial access to the sea and remoteness and isolation from world markets substantially inflating transportation costs and lowering their effective participation in international trade. Most, if not all, LLDCs were at that time commodity exporters and the trade-reducing effect is strongest for transport-intensive activities. The very high transport costs which they bore constrained their export development and the prices of their imports tend to be exceptionally high because of high transit transport costs.

The Almaty Programme also recognized that in most cases, the transit neighbours of landlocked developing countries were themselves developing countries of broadly similar economic structure and beset by similar scarcities of resources.

Taking these considerations into account, the Almaty Programme, highlighted five priority areas

<sup>&</sup>lt;sup>5</sup> http://unohrlls.org/UserFiles/File/LLDC%20Documents/almaty\_programme.pdf <sup>6</sup> Falls in the prices of many basic commodities on which many LLDCs depended was the main contributing factor.



for addressing the trade issues of landlocked countries:

- i. Fundamental transit policy issues;
- ii. Infrastructure development and maintenance:
- iii. International trade and trade facilitation:
- iv. International support measures: and
- v. Implementation and review.

In the immediate aftermath of the Conference, attention focused on infrastructure development. To a large extent, infrastructure in the transit countries was only developed to the extent that it was part of these countries' own trade and transport corridors, and the benefit to LLDCs was largely coincidental. Typical of these efforts was focus on port infrastructure which expanded rapidly in this period to deal with the impacts on the container revolution and the beginnings of increases in container vessel sizes and the need to minimize their time in port. These expansions helped LLDCs as much as the transit countries that implemented them.

#### ii. Post Almaty change of perspective

A new approach argued that logistics/trade services efficiency—and hence trade and economic growth—should include much more than investing in infrastructure. It was seen that logistics had become increasingly complex and critical for firms' competitiveness, and that addressing logistics weakness would be the most cost-effective way to overcome the transport and trade disadvantages of LLDCs<sup>7</sup>. This new approach also emphasized 'soft' infrastructure—transit policy, transport regulation and trade and transport facilitation—to complement 'hard' infrastructure—roads, railways, ports and airports.

This change was reflected in the 2008 Almaty midterm review<sup>8</sup>, which recognized a substantial change in the environment, stressing the need 'to look at new approaches directly linked to transit' and to consider 'developments in the transport sector...among these are port developments, intermodal transport operators, and increased use of information and communication technologies (ICTs) to program and manage operations and check traffic at border control points."

In a 2011 re-assessment by the World Bank (World Bank 2011b), it was observed that attempts to address the cost of being landlocked had until then mainly focused on regional and multilateral conventions aiming at ensuring freedom of transit, and on the development of regional transport infrastructure. Although there may still have been infrastructure gaps, the World Bank, based on extensive data collection in several regions of the world, went on to argue that logistics/trade services efficiency could be more important for landlocked countries than investing in infrastructure.

This approach by the World Bank argued that improvements in transport Infrastructure mostly impact on the direct costs of transport operations, which are only a fraction of the total transport costs, and an even smaller share of total logistics costs faced by traders in landlocked countries. The policy prescription was to give more attention to addressing governance issues that result in high, unpredictable and unreliable logistics costs.

## iii. Accommodation of perspectives and application of new theory of change

More recently there has been a coming together of these two perspectives (UNCTAD 2014). It is the concept of reliability and confidence in the certainty of transport times and costs that is common to the two approaches that brings them together. The costs of completing the remaining 'missing links' in the transport corridors of LLDCs remain significant, and having to use longer routes than necessary adds to uncertainty of transit times as well as their total time. The frequent reliance on one transport mode and one transport corridor is conducive to the monopolistic practices, such as restricting services and charging tariffs higher than those needed to earn a 'normal' profit. The implementation of these practices is highly unpredictable and further adds the uncertainty of transport costs and times and the lack of alternative routes results in a low 'resilience' of transport infrastructure to climate extremes and natural disasters (Freckleton, Heaslip, Louisell, and Collura 2012).

This new understanding of how best to improve the state of LLDCs comes close to what has for long been known as a theory of change (Weiss 1995). In the current application of this concept, it is postulated that development success depends on actions taken in coordination with others. that between them address all the weaknesses of a development framework. This approach is now widely applied in development practice, for example by TradeMark, a consortium of bilateral trade agencies working to stimulate trade growth in East Africa<sup>9</sup>. Its theory of change proposes that three necessary key 'trade competitiveness' elements contribute to increasing trade, these being: increased physical access to markets; enhanced trade environment; and improved business competitiveness. The increased trade is expected to contribute to increased economic growth and subsequently reduce poverty. This theory of change, or one very similar, even though not explicitly recognized, is now applied to most transport infrastructure developments for LLDCs; they are accompanied by parallel actions that enhance their probability of positive outcomes.

#### iv. The Vienna Conference and Vienna Programme of Action

Although there had been some progress in the implementation of the Almaty Programme of Action, there was felt to be a need for reinvigorated global support for LLDCs. By 2014, LLDCs still had a long way to go to fully benefit from globalization and to achieve sustained and inclusive economic growth, sustainable development, poverty eradication, employment generation and structural transformation.

The goal of the Vienna Programme of Action for the LLDCs for the Decade 2014-2024<sup>10</sup>, adopted at the Second UN Conference on LLDCs held in Vienna in 2014, was to address their special development needs arising from landlockedness, remoteness and geographical constraints in a more coherent manner than before, and so contribute to an enhanced rate of sustainable and inclusive growth and poverty eradication. This approach was compatible with the underlying concepts of the theory of change. Attention was given to achieving practical results in the next ten years. Actions were anticipated in the development and expansion of efficient transit systems and transport development, enhancement of competitiveness, expansion of trade, structural transformation, regional cooperation, and the promotion of inclusive economic growth and sustainable development to reduce poverty, build resilience, bridge economic and social gaps and ultimately help transform LLDCs into land-linked countries.

The priorities for action of the still current Vienna Programme of Action are to address:

- i. Fundamental transit policy issues
- ii. Infrastructure development and maintenance
  - a. Transport infrastructure
  - b. Energy and information and communications technology infrastructure
- iii. International trade and trade facilitation
  - a. International trade
  - b. Trade facilitation
- iv. Regional integration and cooperation
- v. Structural economic transformation
- vi. Means of implementation

While the Vienna Programme is based on a more holistic approach than in the Almaty Programme, it still gives priority to infrastructure development and maintenance, but includes not only transport infrastructure, but also information and communications technology and energy infrastructure which are crucial for LLDCs to reduce the high trading costs, improve their competitiveness and become fully integrated in the global market. The Vienna Programme of Action also identifies for the first time structural economic transformation as a priority area for action.

There has been limited time since the Vienna Programme was agreed to see whether it has begun to have any positive outcomes, but it does seem to have had some output impacts, as LLDCs and their transit neighbours are working on a common understanding of their mutual advantage. The high-level midterm review of the Vienna Programme of Action, to be held in 2019, will present an opportunity to comprehensively review the implementation of the Vienna Programme at the national, regional and global levels and suggest recommendations and initiatives to overcome remaining challenges.

<sup>&</sup>lt;sup>7</sup> This new approach was promulgated in publications such as the World Bank's The Cost of Being Landlocked, Logistics Costs and Supply Chain Reliability, Directions in Development, World Bank, Washington, D.C.,2010 <sup>8</sup> http://unohrlls.org/about-Ildcs/midterm-review/

<sup>&</sup>lt;sup>9</sup> https://www.trademarkea.com/who-we-are/theory-of-change/# <sup>10</sup> http://unohrlls.org/about-lldcs/programme-of-action/

## 2. Incidence of transport costs and impact of transport infrastructure on trade

Development of high quality and quantities of transport infrastructure comparable with coastal countries are not ends in themselves. They are necessary in that they are needed to facilitate trade and economic growth. Most measures of transport infrastructure quality and quantity, including those used here, do not take account of its location or its impact on connectivity, both important in determining its usefulness to trade and economic growth. Transport infrastructure that might have been relevant in terms of quality and quantity when it was built decades ago is not necessarily of the same value in current global trade patterns that depend on distributed more than concentrated production. Not only do LLDCs need sufficient transport infrastructure to serve their trade demands, it needs to be of the appropriate type (in terms of technology and transport mode) and in the most useful locations.

The importance of location is one of the perspectives on the 'new economic geography'. Variants of this, of the new trade theory, and of theories of neo- classical and endogenous growth, are now applied to highlight the nexus between geographic location, trade, and economic growth and to explain the cost of being landlocked (MacKellar, Wörgötter and Wörz 2000).

Amjadi and Yeats were among the first to demonstrate that the incidence of transport costs heavily affects landlocked African countries because the prices at which they can sell their exports are market determined and not cost determined (that is, they are price takers, not price makers) (World Bank 1995). Since the markets in which their exports compete are often the same as for their coastal neighbours, who often export the same or similar products at lower transport costs, so their exporting opportunities are correspondingly less. Gallup, Sachs, and Mellinger (1999) proposed two further reasons why landlocked countries may be disadvantaged: i) transit countries may have political or economic incentives to impose additional costs on the trade of landlocked countries, and; ii) infrastructure development across national borders is more difficult to arrange than similar investment within a country.

Most authors have documented the transportation cost burden facing landlocked countries using macrodata. Using cost, insurance, and freight (CIF) and free on board (FOB) margins as proxies for transport cost, Radelet and Sachs (1998) found these costs to be about 50% higher for landlocked countries. Stone (2001), using freight payments as a percentage of total imports, showed that LLDCs, especially in Africa, bear exorbitant transport costs: out of 15 landlocked African countries, 13 had a ratio higher than 10%, and for seven the ratio was even higher than 20%, compared with only 4.7% for industrial countries and 2.2% for the United States.

The standard approach used to tackle the cost of being landlocked has taken two directions: i) facilitating the signing of regional or multilateral conventions aiming at ensuring freedom of transit, and ii) developing regional transport infrastructure.

On the infrastructure side, progress has indeed been made by making almost all the capital cities of LLDCs to be linked to ports via paved roads in fair or good condition. Despite this, transport and logistics tariffs remain extremely high for most operators based in LLDCs. User surveys demonstrated that the costs and time penalties borne by LLDCs' international trade operations were indeed high and problematic (World Bank 2011a).

#### 3. Transport infrastructure in LLDCs still compares unfavourably with global averages

Despite improvement in transport infrastructure in LLDCs, poor quality and deficiencies in the quantity of physical infrastructure are still major obstacles for LLDCs in developing viable and predictable transit transport systems. There is inadequate physical infrastructure in road, railway and airport infrastructure, and limited cross-border infrastructure. Physical links of LLDCs via regional transport networks to deep-water ports and global markets are also deficient.

#### *i.* Transport infrastructure density index

There have been several attempts at quantifying transport infrastructure quantity, but none on its quality (except for roads, and even this has not been comprehensive). Most measures of transport infrastructure quantity are based on ratios of length of network to land area, and have been restricted to roads (either all roads or paved roads) and railways. Some have used network length per capita, and found that this gives very different indications of density to those based on land area (since population densities are very different). One measure has used a combination of density per unit of land area, population and GDP. recognizing that all three separate indicators are from different perspectives, and that none of them is sufficient by itself to capture all the perspectives (Carruthers 2012). There are even differences between the indicators based on area. some using total national territory, others only land area and others only arable land area, with the choice between them depending on reasons the measurement is being made. For simplicity, the measure used here is network length (kms) per unit of land area (km<sup>2</sup>).

For the two main categories of transport infrastructure that impinge on trade and economic growth, LLDCs are deficient in quantity as measured by density per km<sup>2</sup> of land area. In terms of paved roads, LLDCs have only 12% of the global density, while for railways they have just over half (55%). But these averages conceal very large differences between the regional averages, as shown in Table 4. Eastern Europe and Central Asia LLDCs have by far the highest road density of any region, even higher than the global average. These LLDCs also have the highest density of railways, also above the global average. The largest deficiencies for both road and rail are for the LLDCs in East Asia and Sub-Saharan Africa West.

Region	Road density	Rail density
	Kms per	1,000 km²
Eastern Asia	5.7	1.2
Eastern Europe & Central Asia	181.1	11.8
Latin America	10.6	2.8
South Asia	80.2	-
Sub-Saharan Africa East	34.7	5.7
Sub-Saharan Africa West	3.5	2.3
All LLDCs	19.1	3.6
All LLDCs with railway	36.4	3.6
All LLDCs without railway	7.9	-
Transit countries	191.4	8.6
Global	151.0	9.5

# Table 4: Paved road and railway density of LLDCs and transit countries

Source: Author's calculations based on data from World Development Indicators and CIA World Factbook

Note: Data is most recent available, ranging from 2009 to 2015.

Transit developing countries have higher than the global average length per km<sup>2</sup> of land area of their paved road networks. LLDCs have about 39% of their road network paved, compared to about 58% for transit countries. A global comparison is difficult as many countries have not recently reported their road network data. The most recent comprehensive data is for the year 2000 when 39% was paved. For railways, transit developing countries have more than twice the density per km<sup>2</sup> of LLDCs, even just considering those LLDCs that have a railway. They also have more than 90% of the global average density, taking account only the area of countries that have railways. The averages also conceal large differences between LLDCs themselves. For example, in terms of railways, in East Europe and Central Asia, Kyrgyz Republic has about 2.2 km of railway per 1,000 km<sup>2</sup> of land area whereas Macedonia has more than 21km/1,000 km<sup>2</sup>; in East Africa, Ethiopia has about 0.76km/1,000 km<sup>2</sup> whereas Zimbabwe has 7.75km/1,000 km<sup>2</sup>.

#### ii. World Economic Forum Infrastructure Indices11

Another indicator of the quantity and quality of transport infrastructure is provided in the Global Competitiveness Report of the World Economic Forum. It assesses the competitiveness landscape of economies<sup>12</sup>, providing insight into the drivers of their productivity and prosperity. Unlike the indictors of transport density, this is a 'perception' index based on the opinions of the people survey. The questions they answered for seaports was:

In your country, how is the quality (extensiveness and condition) of seaports (for landlocked countries, assess access to seaports) [1 = extremely poor—among the worst in the world; 7 = extremely good among the best in the world] 2015–16 weighted average.

There was similar wording for roads, railways and airports. Although the indicator has the disadvantage of being based on perceptions rather than quantitative measures, it does have the advantage of covering the condition as well as the extent of infrastructure.<sup>13</sup>

#### Table 5: Global Competitiveness Report: LLDC comparisons

		LLDCs		Transit	developing co	All countries		
Type of infrastructure	% all countries score	Average rank	Average score	% all countries score	Average rank	Average score	Average rank	Average score
Road	77	104	3.13	88	82	3.56	70	4.05
Rail	82	67	2.78	76	72	2.59	54	3.38
Airport	78	106	3.42	93	83	4.06	70	4.41
Port	62	117	2.49	92	73	3.69	70	4.04

Source: Author's calculations based on Global Competitiveness Report, 2015–2016.

Despite these limitations, the indices are useful in indicating the extent of the transport disadvantage of the LLDCs. Table 5 shows that the scores and ratings for LLDCs were below the averages of all countries and for developing transit countries for all four types of transport infrastructure, except for rail. For roads, the LLDC average score was only 77% of that of all countries (transit countries had 88% of the global score), for airports almost the same (78%) while for railways, and for those LLDCs that have them, the ranking is rather better at 87% of



Bank

the global average. Not surprisingly, <sup>Bank</sup> the LLDCs are perceived to have much worse port infrastructure (or access to port infrastructure), at only 62% of the global average. For roads, railways and airports the LLDC score was within one standard deviation of the average of all countries, but for ports it was outside of one standard deviation. Transit developing countries were seen as having rather worse rail infrastructure than LLDCs but their airports and ports scored within 10% of the global average.

#### iii. Logistics Performance Index as indictor of transport infrastructure

Another subjective indicator of transport infrastructure is provided in the Logistics Performance Index. The LPI is based on perceptions of six characteristics of logistics performance by logistics' professionals (mostly freight forwarders), one of which is the 'quality of trade and transport infrastructure'. All characteristics are measured on a scale of 1 to 5 where 1 is perceived as poor and 5 is excellent. Respondents from coastal countries are asked to provide scores for five most important export and three most important trade partners, while those from LLDCs are asked for scores for trade partners that include at least two transit countries.

When the LPI was first measured in 2007, the LLDCs had an average Infrastructure score of 1.94, only 75% of the overall average of 150 countries covered by the LPI (Figure 1). By 2012 the LLDC average had increased to 2.31, almost 84% of the average of by then 155 countries; and by the time of the latest survey in 2016, the LLDC average score had fallen slightly, as had the global average,

#### Figure 1: LPI Infrastructure scores

Source: Author's estimates based on full Logistics Performance Index data of World

but the LLDC score was now 83% of the global score. A difference of 17% might not sound much, but given that the standard deviation of the global score was only 0.71, the difference was significant at about the 2.5% level. The perception of transport infrastructure for transit developing countries was consistently higher than that of LLDCs, but lower than the global average. While the perceptions of LLDCs and all countries fell slightly between 2014 and 2016, that of transit countries continued to improve, so that by 2016 it was 95% of the global average.

In 2016, the LLDC country average for all six components was between 81% and 87% of the global average, with the Infrastructure percentage of 83% being equal to second lowest ('tracking and tracing' was the lowest and 'logistics quality' was equal second lowest with 'infrastructure').

LLDCs in all regions scored below the global average and below the average rank, for both the overall LPI score and its components for transport infrastructure (Table 6). Sub-Saharan Africa East had the highest score of all regions, both for the total LPI and transport infrastructure. This is probably a consequence of the efforts made by these countries to improve their domestic transport infrastructure and logistics services, and recent improvements in the performance of the ports of their transit neighbours. In contrast, the LLDCs of East Asia scored lowest both overall and on their transport infrastructure.

Transit developing countries were perceived to perform better than LLDCs on both their overall LPI and transport infrastructure performance.

<sup>11</sup> http://reports.weforum.org/global-competitiveness-report-2015-2016/

<sup>&</sup>lt;sup>12</sup> In the 2015/2016 version, data was available for 138 countries.

<sup>&</sup>lt;sup>13</sup> For ports and airports, the extent relates to their number and their facilities. For ports, the indicator applies to access to ports (that is, to the road, rail and inland waterway transport in the international trade corridors of each country), not to the ports themselves, so the rankings for LLDCs are not strictly comparable for those of other countries, for which the rankings apply to the extent and condition of the ports themselves. For roads, the indicator refers to all roads, paved and unpaved, although as it is based on perceptions and most use is made of paved roads, it is probable that the ratings are heavily weighted in favor of paved roads. For railways, the scores are only averaged over the countries that have railways, and for these it applies to the whole network, not just that used for trade.

#### Table 6: Comparison of regional average LPI results for LLDCs

	Overall LPI				Infrastructure			
Region	Score	Rank	% of global score	% of global rank	Score	Rank	% of global score	% of global rank
East Asia	2.29	130	79	62	1.91	148	69	55
Eastern Europe and Central Asia	2.36	122	82	66	2.35	105	85	77
Latin America	2.41	120	83	67	2.28	113	83	71
South Asia	2.28	136	79	59	2.02	139	73	58
Sub-Saharan Africa East	2.57	103	89	78	2.41	102	88	79
Sub-Saharan Africa West	2.49	115	86	70	2.32	109	84	74
All LLDCs	2.43	117	84	69	2.28	115	83	70
Transit developing countries	2.76	87	96	93	2.61	85	95	95
Global	2.88	81	100	100	2.75	81	100	100

Source: Author's calculations based on 2016 Logistics Performance Index data of World Bank

Their performance was within 5% of the global average for both, in contrast the scores of LLDCs were not within 15% of the global averages.

This observation applies not only to transport infrastructure but also to the services that operate over it. Using the LPI parameters of Logistics quality, tracking and tracing of consignments and timeliness of deliveries, the relative scores of LLDCs and transit countries to the global averages are very similar to those for infrastructure (Table 7). For all three parameters LLDCs scored

less than 90% of the global average whereas transit developing countries scored more than 95%.

These results give some credence to the understanding that the transport infrastructure connectivity issues of LLDCs are more related to their own performance than to that of their transit neighbours. The transit neighbours have developed internal and port connectivity to further their own trade interests but in doing so may have also improved that of the LLDCs that depend on them.

#### 4. Potential benefits of improving transport infrastructure of LLDCs

The potential benefits of remedying these deficiencies come from the realizable increase in trade of the LLDCs. If the import and export shares of GDP of LLDCs in each region were to reach the global averages (as shown in Table 2),

#### Table 8: Potential increase in trade of LLDCs by region

Region	Increase in imports as	Increase in exports as	Increase in imports	Increase in exports	Increase in trade
	(%)	(%)	US\$ billion	US\$ billion	US\$ billion
East Asia	0	0	-	-	-
Eastern Europe and C. Asia	3	3	10.6	8.1	18.7
Latin America	0	0	-	-	-
South Asia	0	17	-	7.3	7.3
Sub-Saharan Africa East	0	6	-	11.3	11.3
Sub-Saharan Africa West	1	12	0.5	4.4	4.9
All LLDCs	2	5	11.1	31.2	42.2

Source: Author's calculations based on data in Table 2 (and GDP from IMF)

#### Table 7: Comparison of LPI scores for logistics services

Country Group	Logistics quality	Tracking & tracing	Time-liness
All countries	2.82	2.86	3.27
LLDCs	2.35	2.31	2.84
Transit developing countries	2.72	2.73	3.12
(% of global score)			
LLDCs	83	81	87
Transit developing countries	96	95	95

Source: Author's estimates based on 2016 Logistics Performance Index data of World Bank

![](_page_12_Picture_17.jpeg)

<sup>&</sup>lt;sup>14</sup>The analysis was undertaken at the regional level. The import and export share of GDP for each region was compared to the global average for each (21% of GDP for each of imports and exports). The potential for each region was assumed to be to reach the global average. Where the region's share of imports or exports (as a percentage of GDP) is already higher than the global average, no further change was assumed. East Asia and Latin America already exceed the global average for both imports and exports as a share of GDP, so this estimation indicates they have little to gain from improving their trade infrastructure. This would be a wrong interpretation, as this method only indicates the minimum potential trade increases, not the most probable.

#### 1. Investment cost of transport infrastructure in LLDCs<sup>15</sup>

At the global level, the estimates of transport infrastructure needs vary greatly. Transport investment typically requires up to 3% of GDP for developing countries, with a rather higher share for LLDCs. The OECD estimated in 2017 that global transport (roads including reconstruction, railway including suburban, port and airports) infrastructure needs were about US\$ 2.7 trillion (Mirabile, Marchal and Baron 2017). This is about 3.4% of GDP in 2017 current prices. The Asian Development Bank (2017) estimated in 2017 that meeting the transport development needs of its developing member countries would require about 2.6% of GDP between 2020 and 2030<sup>16</sup> but this excluded urban transport. In Latin America, the transport infrastructure investment need between 2016 and 2030, including new investment and maintenance, ranges from 0.7% of GDP to 2.2% of GDP (based on GDP growth projections between 1.4% and 3.9%; this estimate includes road and rail only).<sup>17</sup>

Turning to the LLDCs specifically, Table 9 shows that to reach the global average paved road and railway densities, the LLDCs would need to construct almost 200,000km of paved roads and another 46,000km of railway at a cost of about US\$ 0.51 trillion. The investment cost of building this transport infrastructure would be of the order of 2% of GDP over a period of 20 years. The estimates made here do not include non-paved roads, urban transport infrastructure, aviation infrastructure, any cost for recovering the deteriorated condition of current transport infrastructure-and the cost of maintaining the expanded transport networks in good condition. These figures only give a first indication of the scale of the problem in LLDCs, and different ways of estimating the infrastructure deficit would give different numbers, and the order of magnitude would likely be even greater.

#### Table 9: Investment cost to bring road and rail infrastructure of all LLDCs to global benchmarks

Region	Additional length		Cost	
	Road km	Rail km	US\$ billion	% of GDP
East Asia	8,300	5,100	37.2	4.2
Eastern Europe and C. Asia	57,900	13,900	171.6	1.4
Latin America	15,200	1,800	37.7	1.7
South Asia	7,700	4,700	34.1	3.9
Sub-Saharan Africa East	53,900	12,700	158.5	1.9
Sub-Saharan Africa West	53,100	8,000	70.3	4.5
Total LLDCs	196,100	46,300	509.3	2.0

Source: Author's calculations based on data in Landlocked Countries: Facts and Figures, UNCTAD, 2014

<sup>16</sup> Based on an estimate for the needed GDP percentage of total infrastructure investment in its borrowing member countries assuming a Climate Change scenario, and the transport share of that investment.

<sup>17</sup> Information presented by UN ECLAC at the Expert Group Meeting on Financing Infrastructure in LLDCs on 4-5 October 2017 in New York.

For example, World Bank assessment estimates suggest that for nine of the LLDCs in Sub-Saharan Africa, the average transport investment need was estimated at 4.8% of GDP, compared to the 3.0% average for the other Sub-Saharan countries<sup>18</sup> (Carruthers, Krishnamani and Murray 2008). These figures include investment in unpaved roads, airports and urban transport, as well as investment in maintaining the transport assets, and so are better estimates of the total investment needed than that in just paved roads and railways.

ESCAP (2017) estimated that the average annual transport infrastructure investment need for the LLDCs in Asia-Pacific between 2016 and 2030 would be a third of the 6.9% of GDP required for all infrastructure (therefore around 2.3% of GDP is needed for infrastructure)<sup>19</sup>. These estimates cover provision of universal access by 2030; keeping up with growing demands for new infrastructure; and maintaining existing infrastructure, but cover only paved and unpaved roads and rail lines.

On the other hand, historic shares of GDP invested in transport for developing countries have been of the order of 1%<sup>20</sup>. Of the four LLDCs for which recent data on investments in transport infrastructure is available<sup>21</sup>, they invested an average of 2.5% of GDP (International Transport Forum 2017). If we take this as a reliable estimate of actual investment in transport infrastructure by LLDCs and as representative of all of them, using the highest estimate of 4.8% of GDP as the average investment needed and the 2.5% of GDP as that achieved, the gap is about 2.3% of GDP per year-or more than US\$ 15 billion out of about US\$ 32.5 billion needed. This represents a deficiency of more than 46%. It is important to point out however that these four are middle-income countries in Eastern Europe and represent a very small share of the total number of LLDCs. It is also important to note that none of these estimates even include border crossing infrastructure and investments in transit countries for the benefit of their LLDC neighbours.

The infrastructure gap between LLDCs and global averages appears to have been reducing slowly over recent decades, but the global data is unreliable due to lack of consistent reporting from many countries for their paved road network and some countries for their railways. Unless LLDCs greatly accelerate their rate of new construction. significantly closing the gap will take many decades.

The main sources of funds for the transport infrastructure investment have not changed much in recent decades, but there are now the beginnings of real change with better use being made of existing resources, and multiple new sources being identified and becoming available, mostly from the private but also from the public sectors.

Current funding mostly comes from government budgets. The World Bank has estimated that in developing countries, 70% of infrastructure projects are funded from government budgets, 10% financed by loans and credits from Multilateral Development Banks (MDBs), and the remaining 20% financed by the private sector. The Asian Development Bank (2016) has estimated that public funding makes up about 92% of the region's infrastructure investment. On the other hand, in developed countries only 30% of infrastructure projects are publicly funded.

Although no assessments are available specifically for transport infrastructure in LLDCs, it is likely to fall into the upper end of public funding and the lower end of private financing. The public sector has been and will remain the main source, followed by international development partners and the private sector. But before considering the potential expanded existing sources and new sources, a start can be made by making better use of existing resources.

#### 2. Improving the use of existing resources

Reducing inefficiencies in public spending on transport can better utilize available funding. One of the first ways is to increase the efficiency of public sector transport operations, so funding their deficit is reduced and the balance could be available for investment. Many transport state-owned enterprises (SOEs) have now

<sup>&</sup>lt;sup>15</sup> The data in this section makes use of a report by the International Transport Forum on transport investment in OECD countries.

<sup>&</sup>lt;sup>18</sup> The nine countries were Burkina Faso, Chad, Ethiopia, Lesotho, Malawi, Niger, Rwanda, Uganda and Zambia. <sup>19</sup> Excluding demands related to climate change.

<sup>&</sup>lt;sup>20</sup> Based on analyses in Asian Development Bank (2017): Meeting Asia's Infrastructure Needs (2017), and The Infrastructure Consortium for Africa (2016): Infrastructure Financing Trends in Africa (2016). <sup>21</sup>Armenia, Azerbaijan, Macedonia and Moldova

been privatized or are subject to some form of negotiated financial support, so this source of increased funding for investment is largely played out. But there remains the reduction of inefficiencies in the procedures for making transport investments. The inefficiencies can be reduced in at least two ways. First, there can be improvement in budget execution rates, so that what is allocated to transport investment is actually invested. The second is to use those resources more efficiently. These will be discussed in more detail below.

#### i. Better use of budget allocations

It is not uncommon for substantial parts of the transport investment budget to be unspent and unallocated at the end of a fiscal year, largely through lack of human capacity to undertake the lengthy public procurement processes typical in LLDCs, but also because of the unreliable availability of budget funds. Closing much of this efficiency gap could substantially increase the economic dividends for public investment. The lack of capacity and unreliable budget allocations is also not particular to the transport sector.

Reducing these inefficiencies will require better tracking and monitoring of transport investment expenditure than is often available, but there are now standard software packages that can be used. These usually need benchmarks for what is an achievable performance, these having to be carefully selected, at least in the first applications, from comparable rather than global best practice countries. Typical results from these improvements are for a 30% or better increase in what can be achieved with a given investment budget. Delays in the availability of funds and release of funds can contribute to not only poor project preparation, but more significantly to delays in payments to contractors with associated penalty charges. So, the inefficiencies not only result in delays in outputs but also to higher incurred costs.

A less direct impact comes through a failure to allocate a sufficient share of the transport investment budget to maintenance of existing infrastructure. The result can be accumulated deferred maintenance that results in more costly reconstruction. There are widely used software available for optimizing the allocation of road investment between new construction and maintenance (such as the Highway Development and Maintenance Program (HDM) originally developed by the World Bank in the 1980s, and now in its fourth version (HDM IV)). Unfortunately, the output of this and similar software can only advise decision making, with its indications often being overridden by political choices which favour new construction.

## ii. Making public infrastructure investment more efficient

In 2015 the International Monetary Fund (IMF) published guidelines on how the efficiency of public investment in infrastructure could be increased (IMF 2015). It provided an evaluation framework that countries could use to assess their efficiency compared to that of their peers and it found that the economic and social impact of public investment depends on its efficiency. Comparing the value of public capital (input) and measures of infrastructure coverage and guality (output) across countries, it found that average inefficiencies in public investment processes were in the order of 30%. The economic benefits of closing the efficiency gaps were found to be substantial: the most efficient public investors get twice the economic growth for their public investment than the least efficient.

Improvements in public investment management could significantly enhance the efficiency and productivity of public investment. Based on a sample of 25 countries, the IMF's new Public Investment Management Assessment (PIMA) found that there was significant scope to strengthen the 15 key institutions which shape the planning, allocation, and implementation of public investments. Countries with stronger institutions have more predictable, credible, efficient, and productive investments. Strengthening these institutions could close up to two-thirds of the public investment efficiency gap, which could be significant for the LLDCs.

The main recommendations, expanded here, were that to increase the effectiveness of public spending on (transport) infrastructure countries would need to:

• Implement more rigorous and transparent arrangements for investment project appraisal, selection, and management: Finance or planning ministries should develop standardized methodologies and central support functions for project appraisal and risk analysis. All results should be made public, and criteria for project selection should be clear and transparent. It is also important to maintain an active pipeline of approved projects that can be funded in future budgets. Also, during project implementation, ministries would benefit from having in place standardized procedures for project adjustments that are applied systematically and, as needed, allow for a fundamental review of the project's rationale, costs, and expected outputs. Ex-post evaluations of projects should be conducted to provide lessons for future investment projects.

• Strengthen institutions related to investment **implementation**: The transparency of budget execution, openness of the procurement process, and efficiency of cash management are critical to the stability and predictability of investment and to reducing opportunities for rent seeking. Finance ministries could focus on protecting investment expenditures within ministry and agency budgets by appropriating total project costs at the commencement of the project, preventing those budgets from being "raided" to meet current pressures, and allowing some carryover of unspent appropriations to future years<sup>22</sup>. Greater transparency and accountability regarding project management, monitoring, and evaluation is needed to strengthen incentives to deliver projects on time and on budget and ensure value for money and integrity in the use of public resources.

• Implement transparent procurement procedures: Non-transparent procurement procedures are an open invitation to collusion between bidders to manipulate award prices. Direct awards without competition are little better as they give little opportunity to know whether a lower price could have been secured. Best practice procurement has for several years been based on on-line processes, to reduce the opportunities for interventions that favour one bidder over

others. Bids should also be published on-line so all the bidders can confirm that the winning bid fully conforms with the bidding documents. Guides to best practice procurement of publicly funded contracts have long been available, but their use has been very uneven. Most of the MDBs have recently revised their procurement guidelines and methods to make them more helpful to the countries that use them<sup>23</sup>. The new guidelines indicate that agencies undertaking procurement should start with a strategy for how to engage with bidders. An even more significant change from the previous procurement guidelines is that it is now not necessary for a bid to be awarded to the lowest bidder, but the award can be made to the bid that offers best 'value for money', taking account of quality (which might be better than in the specification), cost, including possible financing options, and other factors as needed.

- · Strengthen the management of Public-Private Partnerships (PPPs): Some LLDCs have already implemented and acted on diagnosis of their PPP systems, using the tools available from Public-Private Infrastructure Advisory Facility (PPIAF) and UN ESCAP strategies (discussed later in this report). But their selection of PPP projects is rarely based on uniformly applied value-for-money reviews by a dedicated PPP unit and guided by clear criteria for choosing between PPPs and traditional financing. PPP commitments should be systematically monitored, with overall limits on the accumulation of PPP contingent liabilities, to minimize related fiscal risks.
- Integrate institutions for strategic investment planning with subsequent stages in the Public Investment Management Assessment (PIMA) process: While most countries publish national or sectoral investment strategies, many are only weakly linked to the budget planning, project appraisal or project prioritization and selection processes. However, Chile, Korea, and the United Kingdom provide good examples of

 <sup>&</sup>lt;sup>22</sup> There may be a trade-off between protecting investment and spending and accommodating revenue and financing volatility, for example in the case of a large fiscal shock that may also impact social spending needs.
 <sup>23</sup> The new procurement guidelines for the World Bank became effective in 2016. They can be found at http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework. The new guidelines of the ADB were issued in 2015 and can be found at https://www.adb.org/sites/default/files/institutional-document/31482/procurement-guidelines-april-2015.pdf

integrated approaches to strategic investment planning and budgeting that LLDCs could learn from. Among the LLDCs, Paraguay has perhaps come closest to comprehensive transport, trade and logistics planning. It is important for the prioritization of investments to be more rigorous.

- Better prioritize transport investments: One of the few guides on how best to prioritize transport projects, as part of the overall transport planning process, is provided in the Infrastructure Prioritization Framework (IPF).<sup>24</sup> This is a quantitative tool that synthesizes and displays financial and economic as well as social and environmental indicators at the infrastructure project level. Two composite indices or dimensions are displayed to offer a simplified picture of comparative performance alongside the public budget constraint for a particular sector. Although the IPF is quantitative, it makes use of information that is political or practice-based and opens space for deliberation in criteria and project selection. The approach recognizes that objective evaluation and selection of investments cannot be dissociated from the politics of project selection. Particular projects may be chiefly valued by governments and other stakeholders due to key policy goals which are noneconomic in nature, or due to considerations that objective indicators cannot measure, such as upholding election promises, promoting social cohesion, or honouring culture. As such, the IPF accommodates policy and political responsiveness in two ways: through the identification and weighting of criteria (indicators) for assessment, and by leaving a degree of freedom in decision-making through provision of two references for judgment (the composite indices).
- Strengthen public investment management institutions: The institutions should be strengthened to enhance the impact of public capital investment on economic and social outcomes. Past investment surges have often taken place in weak institutional environments or been associated with the circumvention of established decision-making processes.

In the absence of an investment management institution's environment, the potential benefits from ramping up of investment will be diminished. It would be advantageous for LLDC governments to undertake diagnoses of their current systems, and undertake necessary reforms and capacity building as part of their plans for ramping-up investment.

#### *ii.* Reviewing the trade expansion strategy

For a long time, the core objective of improving the connectivity of LLDCs was that of connectivity via a trade corridor to a deep-water port, and through that to global markets. Even if the land trade corridors operated at maximum efficiency and minimum costs, the distances involved would always present the LLDC with a market disadvantage compared with their competitors within and beyond their own region.

The transport connectivity disadvantages for LLDCs of regional trade tend to be less than those for intercontinental trade. For much intra-regional trade, LLDCs have similar costs of access to regional markets as do other regional countries, in contrast to their comparatively high access costs for global markets. Recognition of this reality is now diverting attention to alternative or at least parallel development strategies.

As part of the process of making better use of domestic funding, LLDCs should also have in place an effective economic development or trade strategy which is embedded in the national development strategy, and then choosing the most cost-effective transport projects that will support that strategy. The strategy might involve an alternative to relying on land access routes to deep water ports, that ultimately depend on the support of coastal neighbours. Among the more frequent of these related to transport infrastructure are to develop trade with regional partners rather than, or as well as, with global partners, and developing a trade strategy based on air rather than land and sea transport, that is diversifying to products that can tolerate the cost of air transport better. However, both are aimed at avoiding rather than overcoming the disadvantages of being landlocked

Among the advantages of both these alternative strategies are:

- More competitive delivered costs and prices: For regional markets, the geographical disadvantage of LLDCs is reduced, as transport costs as a share of delivered costs are lower. and the difference in transport costs of an LLDC compared to its regional competitors can be much less.
- More transit country interest in 'last 100km': Transit countries have little commercial interest in building and maintaining the 'last 100km' link within their own country to a border with their neighbouring LLDC-unless it is also used for their own exports to the LLDC and for regional trade.
- Less dependence on port efficiency: Port efficiency in some coastal countries that serve landlocked neighbours has sometimes been far below international norms, impacting on the landlocked country's trade as much, and sometimes more, than their own. With increased competition between deep-water ports, particularly to attract trans-shipment trade, many of the previously inefficient ports serving LLDCs have increased their efficiency too, but only few of them have reached benchmark standards<sup>25</sup> and some of them are not even close.

Coastal countries have not demonstrated the expected commercial interest in attracting trade to and from their LLDC neighbours to their deepwater ports. This LLDC trade should be at least if not more attractive to the transit country port operators, since in the most part it pays average tariffs while only incurring marginal costs-the

difference between these being profit for the port. Where deep-water ports are competing with each other for the trade of LLDCs, they might have been expected to offer tariffs more related to marginal than average cost, but this has rarely happened. The exceptions to this are when the port is operating close to capacity, when the need to invest in additional capacity makes the marginal cost of handling the LLDC trade very high.

The second strategy based on developing air transport is a higher risk strategy for the LLDCs as it involves higher up-front costs and requires an even greater change in trading patterns than the first alternative of focusing on regional markets. For air transport, the geographic disadvantage of LLDCs is greatly reduced or negligible, but the penalty of small market size can be considerable. The strategy is usually based on the current or potential export of high unit value products that can tolerate the high cost of air transport. LLDCs in East Africa, including Uganda and Rwanda, were among the first LLDCs to develop this strategy with the export of cut flowers for the European market. But they still rely to a large extent on being able to exploit the large air passenger market between Kenya and the EU, making use together with Kenyan flowers, of the large cargo capacity of the passenger aircraft. Mongolia is hoping to focus on high value-added products destined for North America (such as pharmaceuticals and consumer electronics), taking advantage of its location on the air routes between South East Asia and the United States. Rwanda is considering acting as a regional distribution center for goods coming from Europe and the Middle East (and eventually South and East Asia) destined for Central and East Africa.

![](_page_15_Picture_19.jpeg)

<sup>&</sup>lt;sup>25</sup> Among those that have increased their efficiency are Dar es Salaam and Mombasa, which compete strongly for the trade of landlocked Rwanda, Burundi, and to a lesser extent Uganda. Dar es Salaam is now being challenged by Nacala for the trade of Malawi and by Durban for that of Zambia.

<sup>&</sup>lt;sup>24</sup> http://documents.worldbank.org/curated/en/676711468187764022/pdf/WPS7433.pdf

#### 1. Domestic revenue

At best, increasing the effectiveness of public funding would increase the quantity of transport infrastructure that could be built with current fiscal resources by about 30%, equivalent to increasing funding from about 1% of GDP to about 1.3% of GDP. However, as mentioned earlier, transport investment typically requires up to 3%

of GDP for developing countries, with a rather higher share possible for LLDCs. For comparison, actual investment in transport infrastructure from public revenue for OECD countries only averaged 1.2% of GDP between 2004 and 2015 (Figure 2). It is important to note that OECD countries have higher investment from private sources and overall lower investment needs than developing countries.

![](_page_16_Figure_4.jpeg)

Figure 2: Inland transport infrastructure investment as % of GDP of selected countries, 2004 to 2015

Source: International transport forum, OECD

As mentioned earlier, historic shares of GDP invested in transport for developing countries in Asia and Africa have been of the order of 1%. The investment of the four European LLDCs that are part of the OECD analysis ranged from 3.05% of GDP for Azerbaijan to just 0.62% for Moldova, on average between 2004 and 2015. In Latin American LLDCs, transport infrastructure investment has gradually increased from 2.6% in 2008 to 5.5% in Bolivia, while in Paraguay transport infrastructure investment increased from 1.3% in 2008 to a high of 2.9% in 2014 before falling to 2.2% in 2015.

Raising resources to finance public projects is dependent on the revenue-raising capacity of the economy. There are three main categories of domestic public revenue sources: i) taxes on goods and services (comprising Value Added Tax, excise duty, and withholding taxes); ii) direct taxes (including Pay As You Earn, corporation income tax, personal income tax and tax imputed on turnover); and iii) taxes on international trade. None of these are specific to the transport sector and are more appropriately considered in the context of domestic fiscal reforms.

But what is specific to the transport sector and is discussed below is the share of public revenue that is allocated to it, as well as making use of the revenues from user charges to fund infrastructure investment. Other ways include raising public resources from institutional investors, including pension funds, issuing sovereign bonds and diaspora bonds, all with the intention to finance infrastructure investments.

#### i. Making greater use of transport user charges

Transport user charges are another way of raising revenue that can be used for transport investment, of freeing public expenditure that might otherwise have been used on infrastructure maintenance to become available for investment in new infrastructure. Most LLDCs have implemented some form of road user charge, at least to cover the necessary costs of road maintenance. These charges are usually imposed as a fuel surcharge, to give some correlation between the incidence of the charge and the benefits of the investments the charges facilitate. Sometimes the revenues

are allocated directly to a road maintenance or road investment fund without passing through the general revenue account. Only thirteen LLDCs have an independent agency for management of the revenues of their road fund. Most of these are in Sub-Saharan Africa where budgetary discipline had not been strong enough to ensure adequate funding for road maintenance. A few LLDCs make broader use of road user charges and their dependent road funds to provide a revenue source for new construction as well as maintenance. Although neither practice is favoured by the IMF, which sees them as encouraging off-budget expenditure, they do make investment funds available that might not otherwise be allocated.

Airport passenger charges are widely used for a similar purpose to road user charges, but to fund airport investments, usually for passenger terminals, rather than maintenance. But by most accounts they do not usually generate enough revenue to amortize debt charges incurred for such projects<sup>26</sup>. The purpose of an airport passenger charge can often be determined from its name; a security fee for example is probably aimed at covering an operating cost whereas an airport facility fee or development charge is more likely aimed at covering an investment cost. Sometimes the objective is clear, as with the Airport Development Charge in Kyrgyzstan, but only four other LLDCs have such an explicitly named development charge (Central African Republic, Chad and Mali and Moldova). As with road user charges, the revenue from airport passenger charges aimed at airport development rather than operation does facilitate construction of new facilities that might not otherwise be possible. Unlike road user charges that are based on a fuel surcharge, air passenger charges are usually fixed amounts per passenger, with a different charge being applied to international than to domestic passengers.

Rail tariffs are another form of user charge, being distance related charges for both passengers and freight so again having some correlation with the investments that the revenue supports. Road tolls are in a slightly different category of charge, as they usually apply to a specific road<sup>27</sup>. Road user charges, airport passenger charges and

<sup>&</sup>lt;sup>26</sup>Charges on aircraft, such as for landing and parking, tend to cover airport operating costs rather than investment costs. <sup>27</sup>For the theory of road tolls see http://www.unescap.org/publications/asia-pacific-countries-special-needs-2017

rail tariffs are invariably charged to users of the transport network, not just those benefiting from the investment.

## ii. Using non-user fees for transport infrastructure

Part of the justification of imposing transport user charges is to make the beneficiaries of the investment finance a large share of the cost. But users of the transport infrastructure are not the only beneficiaries of its investment. Owners of land and property that is close to the new infrastructure benefit from increase in the value of their asset and in the rents that they charge for its use. Many countries, including some LLDCs, impose some form of land betterment charge or tax, so that the land and property owners who benefit from the investment also make some contribution to its financing (Peterson 2008). On a similar reasoning, some landowners who suffer a disadvantage from the investment (typically people who live under the flight paths taken by aircraft using a new or expanded) expect to receive some form of financial compensation.

#### iii. Domestic fiscal sources

Although data on government spending on infrastructure are not readily available, some recent estimates by the IMF show that national budget spending by sub-Saharan African countries reached about US\$ 59.4 billion or 72.9% of total funding for infrastructure in 2012 (Abiad, Furceri and Topalova 2014).<sup>28</sup> Excluding MDB contributions to national governments, spending on infrastructure projects amounts to US\$ 51.4 billion (63% of total funding) (The Infrastructure Consortium for Africa 2014).<sup>29</sup> Domestic resources available for transport investment in sub-Saharan Africa have increased thanks to debt relief, increased revenue collection. gains from the commodity price boom, and, more generally, improved macroeconomic and

institutional policies, as the average tax-to-GDP ratio increased from 18% in 2000-2002 to 21% in 2011-2013. This increase was equivalent to half of 2013 aid receipts.

However, increased tax mobilization has been driven by resource-rich countries and resourcerelated taxes. Tax mobilization remains low in LLDCs in spite of significant effort and recent reforms in non-resource-rich countries (Bhushan, Samy, and Medu 2013). The ratio of tax revenues to GDP also ranges considerably amongst the LLDCs (Table 10). Thus, in spite of good progress in raising fiscal revenues, in particular in African countries, many LLDCs still need to raise more fiscal revenues to meet their infrastructure gap. Based on the latest data available between 2011 and 2016. 19 of the 26 LLDCs where data is available, had tax revenue to GDP ratios below 18% which was identified as a rule of thumb for financing required for the MDGs.<sup>30</sup>

It should be noted, however, that increasing tax mobilization over a certain threshold does not necessarily lead to adequate spending on infrastructure and revenue, spending reforms may be needed. For instance, Brazil's tax-to-GDP ratio was relatively high at 24% in 2013, but since taxes are heavily earmarked, spending on infrastructure is just 1.5% of GDP (both public and private) (Ahmed et al. 2013).

#### iv. Sovereign bonds

LLDCs need to complement fiscal revenues and diversify their source of domestic financing. For example, LLDC governments are increasingly accessing international capital markets. Although before 2006, of Sub-Saharan countries only South Africa had issued a foreign-currency denominated sovereign bonds, from 2006 to 2014, 14 other SSA countries issued a total of US\$15 billion in international sovereign bonds, often with the intention to finance part of their infrastructure needs.

#### Table 10: Tax revenue to GDP ratio in LLDCs

Country	Tax revenue to GDP ratio (%)	Latest Year	Country	Tax revenue to GDP ratio (%)	Latest Year
Afghanistan	7.6	2015	Malawi	15.5	2016
Armenia	20.9	2015	Mali	15.4	2016
Azerbaijan	15.6	2015	Moldova	19.4	2016
Bhutan	13.2	2016	Mongolia	15.7	2013
Bolivia	17.0	2007	Nepal	18.7	2016
Botswana	25.8	2014	Niger		
Burkina Faso	15.5	2016	Paraguay	12.9	2015
Burundi	12.2	2013	Rwanda	14.9	2016
Chad			South Sudan		
Central African Republic	9.2	2011	Swaziland	28.6	2012
Ethiopia	9.2	2011	Tajikistan		
Kazakhstan	9.9	2016	Turkmenistan		
Kyrgyz Republic	17.6	2016	Uganda	13.5	2016
Lao PDR	13.5	2015	Uzbekistan	17.5	2015
Lesotho	48.6	2013	Zambia	16.1	2011
Macedonia	16.4	2012	Zimbabwe	21.4	2012

Source: World Bank World Development Indicators

#### v. Institutional investors

In addition to attracting foreign savings to finance infrastructure, institutional investors such as pension funds, insurers and sovereign wealth funds, due to the longer-term nature of their liabilities, represent a potential major source of long-term financing for illiquid assets such as infrastructure. Over the last decade, these investors have been looking for new sources of long-term, inflation protected returns. Asset allocation trends observed in recent years show a gradual globalization of portfolios with an increased interest in emerging markets and diversification into new asset classes.

The willingness of institutional investors and the private sector to finance major investment projects in any given country is heavily influenced by the perceptions of a country's investment climate and the broad suite of policy settings and institutions that underpin a country's economy and political processes. Through structural reforms, LLDC governments need to create a more favourable investment climate, build private sector confidence to invest and ensure that global savings are channelled into productive investments, including infrastructure.

#### vi. Domestic pension funds

Pension funds have a natural fit with infrastructure finance, given that both are long-term in nature. By end-2012, pension funds in emerging economies had US\$ 2 trillion in assets. The challenge is to channel these resources towards infrastructure. There have been some attempts to tap pension funds for infrastructure, such as the case of Bhutan which was successfully able to use pension fund investments in their hydro power project (See Box 1). In Africa, NEPAD and UN ECA are forging partnership to promote the 5% Pension Funds campaign, aimed to increase allocations of African pensions funds and sovereign wealth funds for PIDA and other African Infrastructure Projects.

<sup>&</sup>lt;sup>28</sup> In this it is assumed that countries allocate 75% of total public investment to infrastructure. This assumption does not take into account infrastructure spending executed by public utilities and local governments.

<sup>&</sup>lt;sup>29</sup> Using survey data for 21 countries, the Infrastructure Consortium for Africa (ICA), estimates that national budgets accounted for US\$ 46.7 billion in 2013, up from US\$ 42.2 billion in 2012. The ICA (2014) data on budget allocations for infrastructure projects are collected from the national budgets of 21 African countries (Botswana, Cape Verde, Cameroon, Central African Republic, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Lesotho, Liberia, Mali, Morocco, Namibia, Rwanda, São Tomé and Principe, Sierra Leone, South Africa, South Sudan, Tanzania, Uganda, and Zimbabwe). The amounts allocated to budgets may differ from amounts actually spent.

<sup>&</sup>lt;sup>30</sup> Ahmad et. al. (2013) notes that a rule of thumb for calculating the amount needed to meet the financing requirements for the 2014 MDGs was a tax-to-GDP ratio of around 18%, which would cover the provision of the MDGs as well as operations and maintenance spending, and new investment in infrastructure.

However, obstacles to pension fund investments that need to be considered at inception include geographical mismatches, the role of pension trustees and positioning by the infrastructure industry. Money held in pension funds, for example, is not always located where the investment is needed, which means that pension fund managers will have to consider legal obligations before lending.

The lessons from the Bhutan project to other LLDCs are that with the support of the national government, multilateral development and commercial banks and the financial participation of the suppliers and users, a project with a demonstrable long term reliable revenue stream can be attractive to national pension fund managers. Similar approaches should be applied in the transport infrastructure sector.

#### vii. Diaspora bonds

Many developing countries are targeting the savings of their diaspora (Terrazas 2010). As an example, Ethiopia issued diaspora bonds in 2011 to finance the Grand Ethiopian Renaissance Dam. There is now an African Diaspora Network (ADN)<sup>31</sup> that acts as a facilitator of innovation. technology transfer, skills and development and investment advice, but not as yet investment funds. However, so far, other than Ethiopia, only India and Israel have used diaspora funds for infrastructure investment.

#### 2. International finance<sup>32</sup>

Even if all the recommendations for increasing domestic funding and financing sources for transport infrastructure investment were to be implemented, there would still be a large financing gap. International development finance is a main element for the LLDCs in supplementing their domestic funding.

#### i. Official Development Assistance (ODA)

ODA flows to LLDCs reached around US\$ 25 billion in 2016. While ODA to LLDCs has been surpassed by FDI and remittances in recent years, the more recent falls in the latter two flows made ODA on par again with FDI and remittances,

#### Box 1: Bhutan pension fund investment in a power plant

An example of how pension funds in even relatively small LLDCs can invest in infrastructure comes from Bhutan. Its Hydro Power Corporation Limited was incorporated in May 2008 as the vehicle for development of the run-of-the-river 126MW Dagachhu Hydroelectric Project in southwestern Bhutan. The project is designed for an estimated mean annual generation of 515 GWh and in a 90% dependable year to generate 360 GWh.

The Dagachhu project is a PP venture, with Druk Green (the national operator of hydropower stations) as the majority equity partner with a 59% stake. Tata Power Company of India (the holder of the power purchase contract) with 26% and the National Pension and Provident Fund (NPPF) of Bhutan with the remaining 15% stake.

The project is funded in a 60:40 debt equity ratio with the Asian Development Bank providing a loan of US\$ 51 million for the civil works; RZB of Austria providing a loan of  $\in$ 41m for the electro-mechanical works; and NPPF providing a loan of US\$ 9 million. Asian Development Bank (ADB) also provided a loan of US\$ 39m to the Government to meet the financing gap of the project. The cost of the project on completion was about US\$ 200 million and it started producing electricity in 2015.

Source: https://www.drukgreen.bt/index.php/44subsidiary-company/dhpc/289-background-of-theproject

![](_page_18_Figure_13.jpeg)

While social sectors received the largest share of concessional finance directed to LLDCs, with 55% of total sector allocable aid in 2015, infrastructure (water, transport and storage, energy, and communications) amounted to just 22%, equivalent to US\$ 4.4 billion. Non-concessional funding provided an additional US\$ 1.4 billion for infrastructure for LLDCs in 2015.

![](_page_18_Figure_15.jpeg)

![](_page_18_Figure_16.jpeg)

Figure 4 indicates that ODA is the most important source of non-national funding especially for those LLDCs that are low income countries (a category that includes 44% of LLDCs). ODA accounts for more than 70% of the total non-national funding in low-income countries. For lower middle-income developing countries (which includes 38% of LLDCs) the ODA share falls to between 35% and 65%, while

## Figure 4: Importance of ODA by per capita income group

![](_page_18_Figure_19.jpeg)

Source: OECD

<sup>32</sup> Annex C provides some examples of how specific LLDCs are currently using various sources of international finance for their transport infrastructure projects.

#### Figure 3: ODA, FDI and remittances to LLDCs (Billions current US\$)

Source: OECD, UNCTAD, World Bank

remittances, private flows and other official flows become more important. For upper middleincome countries (where 19% of LLDCs are found<sup>33</sup>) ODA is even less significant, accounting for as little as 10% of the total, and is largely replaced by FDI (up to 50%). At the same time, tax revenues become a lot more significant.

<sup>&</sup>lt;sup>31</sup> http://www.africandiasporanetwork.org/news-list/african-diaspora-e-newsletters/

<sup>&</sup>lt;sup>33</sup> The numbers do not add up to 100% due to rounding.

#### Table 11: Comparison of MDB lending to LLDCs with that to other countries

	2013	2014	2015
	Loan amount (US\$ billion)		
LLDCs	2.58	3.85	4.78
All countries	20	21	23
LLDC share	13%	18%	21%
	Number of borrowing countries		
LLDCs	17	23	20
All countries	81	83	85
LLDC share	21%	28%	24%
	Number of loans		
LLDCs	35	48	51
All countries	187	193	229
LLDC share	19%	25%	22%
	Average loan size (US\$ million)		
LLDCs	74	80	94
All countries	107	109	100

Source: Annual Progress Reports of the MDB Working Group on Sustainable Transport

#### ii. Multilateral Development Banks

While bilateral financing makes up about two thirds of all ODA, the remaining one third comes from the MDBs. There are seven larger MDBs and several smaller ones. The larger MDBs are the African Development Bank (AfDB), the Asian Development Bank (ADB), CAF–Development Bank of Latin America (CAF), the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Inter-American Development Bank (IADB), the Islamic Development Bank (IsDB) and the World Bank (WB). With the exception of the World Bank and the International Development Association (its equivalent for lending to lower income countries at preferential rates) and the Islamic Development Bank, they all represent some form of regional or special interest.

Between them, the seven larger MDBs made about 200 transport loans for a total of more than US\$ 20 billion in each year during 2013 to 2015 to more than 80 developing countries (Table 11). Of this total, an increasing share-more than 21%

in 2015 up from just 13% in 2013-was to LLDCs, with the number of loans to LLDC borrowing countries and the number of LLDC countries each representing a slightly larger share of the total. The average loan size to LLDCs was significantly smaller than the average to all countries in 2013, but by 2015 the difference closed to just 6%.

#### iii. Asian Infrastructure Investment Bank (AIIB)

The AIIB is a new multilateral financial institution with fifty-six member states and another 24 prospective members, to give a total of 80. It has capital of US\$ 100 billion, equivalent to 2/3 of the capital of the Asian Development Bank and about half that of the World Bank. Until now data for the AIIB is not included with that of the other large MDBs. The AIIB was founded to address the infrastructure financing gap in Asia and in those parts of the world that connect to it through trade routes and corridors, a crucial objective for the LLDCs. By furthering interconnectivity and economic development in the region through advancements in infrastructure and other productive sectors, it aims to stimulate

and facilitate Asia's continued economic growth. It aims to do this by focusing on its thematic priorities of:

- Sustainable Infrastructure: Promoting green infrastructure and supporting countries to meet their environmental and development goals.
- Cross-country Connectivity: Prioritizing crossborder infrastructure, ranging from roads and rail, to ports, energy pipelines and telecoms across Central Asia, and the maritime routes in South East and South Asia, and the Middle East, and beyond, and
- · Private Capital Mobilization: Devising innovative solutions that catalyse private capital, in partnership with other MDBs, governments, private financiers and other partners.

Early in its operations, the Bank signed a cofinancing framework with the World Bank and MOUs with the ADB, EBRD and EIB, respectively, to set the stage for jointly financing projects. In so doing, the Bank demonstrated its commitment to international cooperation, and to working within the existing multilateral development financing system.

In its first year of operations (2016), AIIB approved US\$ 1.73 billion in financing for nine infrastructure projects in seven countries. Six of the projects are co-financed with MDBs: ADB, World Bank and EBRD, while the remaining three are AIIB only projects. Of the nine projects, four were for transport infrastructure representing about 25% of the total lending (not dissimilar to the transport share of the MDBs) but only one was for an LLDC (25% of the transport projects, again about the same share of the MDBs). However, the lending share for the LLDC project was only about 6% of the total compared to the 21% of the MDBs. Of the projects approved in 2017 only three have been specifically for transport (although two have been for investment funds that include transport) but neither was for an LLDC. Of the three transport projects under preparation, one is for an LLDC. Nonetheless, LLDCs in the region should be

encouraged to approach the AIIB for their infrastructure investment project needs.

## iv. Regional Integration Funds

Many of the MDBs have regional integration funds that are used to complement the usual MDB country lending with additional funds. For transport, the regional integration funds are typically used to support lending for corridor projects. The funds are available for projects that meet specific regional integration criteria. These can include that the project<sup>34</sup>:

- Involves three or more countries, all of which need to participate for the project's objectives to be achievable (that is, the project would not make sense without the participation of all of these countries). The three countries do not have to receive credits or grants under the project.
- · Produces benefits, either economic or social, that spill over country boundaries (that is, projects that generate significant positive externalities or mitigate negative ones). This is often interpreted as meaning the benefits of the project must accrue to more than two countries.
- Involves clear evidence of country or regional (such as ECOWAS or SADC) ownership and demonstrate commitment of the majority of participating countries.
- Provides a platform for a high level of policy harmonization among countries (this is key to the success of a regional initiative) and are part of a well-developed and broadly supported regional strategy.

**Global**: The World Bank Regional Integration Fund is a grant facility to support the design and implementation of projects that meet the above criteria. The resources allocated to the Fund are determined each year as part of the annual budget process. They are generally insufficient to meet all the demands made on the Fund.

Asia: The Regional Cooperation and Integration Fund is a special fund established in February 2007 in response to the increasing demand for

<sup>&</sup>lt;sup>34</sup> These are the conditions to access the World Bank Regional Integration Fund. It was originally aimed at African countries but is now available to all IBRD and IDA eligible countries. https://siteresources.worldbank.org/INTAFRREGINICOO/Resources/1587517-1271810608103/ RIAS-Paper-Final-Approved-Oct2010.pdf

regional cooperation and integration activities among ADB's member countries in Asia and the Pacific. Its main objective is to improve regional cooperation and integration by facilitating the pooling and provision of additional financial and knowledge resources. It aims to: i) improve crossborder physical connectivity; ii) increase trade and investment flows in developing member countries from regional and non-regional economies; iii) preserve macroeconomic and financial stability in the region; and iv) improve the regional environmental, health and social conditions.

Europe: The EU provides substantial grant funding in the area of regional integration for most global regions, not only for the candidates for accession to the EU itself. This financial support is channelled through geographic and thematic programs, with the latter aimed at social issues such as human rights and democracy, but some related to food security can include transport infrastructure. Nearly all support for transport and trade of LLDCs comes from the geographic programs.

It funds projects in countries and regions that have prioritized and requested such assistance as part of their cooperation strategies (Country Strategy Papers and Regional Strategy Papers). These instruments include the European Development Fund (in the African, Caribbean and Pacific countries), the Development Cooperation Instrument (in Latin America, Asia and South Africa), the European Neighbourhood and Partnership Instrument (in the neighbouring regions).

South America: The Regional Infrastructure Integration Fund (RIIF) of the Inter-American Development Bank supports its Integration Strategy. The objective of the RIIF is to contribute to increasing production and trade, fostering

sustainable growth, and promoting the countries' competitive integration at the regional and global levels. The Fund's ultimate outcome is to deepen integration through cross-border connectivity and regional physical infrastructure corridors and networks.

Sub-Saharan Africa: The Africa Trade Fund was established by the African Development Bank in March 2012, with seed financing from the Government of Canada. This is a trade-related. multi-million dollar technical assistance facility with the objective to accelerate the integration of Regional Member Countries (RMCs) and Regional Economic Communities (RECs) in regional and global trading systems.

#### Transport corridors

It is often easier for LLDCs to access regional integration funds for projects that are part of international trade corridors. Many of the projects needed to improve logistics performance of trade corridors and make the exports of the LLDCs more competitive in global markets are in transport infrastructure-that is publicly funded mostly through loans and credits from MDBs and bilateral sources. But much of the investment in ports, border crossings and logistics facilities will need to come from private sources, the logistics and transport operating companies themselves. Designated transport, or trade and transport corridors provide a convenient way of bringing together the public and private operating and financing resources needed to increase the connectivity of LLDCs to global markets<sup>35</sup>.

#### Box 2: Two typical Regional Integration Projects

#### The 2013 Southern Africa Transport and

Trade Facilitation Project in its first phase of Part 1 provided a US\$ 210 million credit to Tanzania and a US\$ 3 million grant to the Dar es Salaam Corridor Committee (DCC). Together these will fund 100% of the project, therefore there are no other agencies involved, although other funding agencies are supporting other activities in the corridor. A grant from the Global Road Safety Facility, managed by the World Bank, is funding some associated activities under two of the project components.

Part 1 consists of three sequential phases, covering Tanzania, Malawi and Mozambique. Part 2 will start when the other corridor countries request support, are considered to have met the program triggers and are ready for implementation. Malawi is the intended beneficiary of the second stage of the first phase of the Adaptable Program Loan (APL), but had not complied with the conditions of readiness when the first stage was implemented.

The CEMAC (Central African Economic and Monetary Community) Transport Transit Facilitation Project was approved in 2007 for US\$ 225 million. It comprises three separate loans, one credit (to Cameroon) and two grants to other CEMAC countries (Central African Republic and Chad). World Bank (IDA) funding represents just under 30% of the total.

Source: Various

Two other donors are providing credits to CEMAC as the regional trade agency, and each of the three countries are also receiving grants from two other donors. The three countries are themselves contributing about 11% of the total cost. The other CEMAC countries were assessed as not being ready to participate in the program and showed no potential of being ready in the foreseeable future.

The CEMAC countries established a Regional Steering Committee to supervise the project preparation and implementation. The Steering Committee is receiving support from the EC and the Africa Development Fund (the AfDB equivalent of IDA) to make credits available to low income countries. There is now a single committee overseeing the whole CEMAC Project including funding from Africa Development Fund, France, Japan, the EU and IDA.

CEMAC has little capacity to manage this regional coordination role, which was recognized by its receiving technical support from two funding agencies. But its lack of management capacity has been a hindrance to the successful implementation of the project. A reflection of the difficulties of implementing such a complex project has been the reason for frequent extension of the closing date of the project, now not expected until the end of 2019, more than 12 years after it started.

![](_page_20_Picture_20.jpeg)

<sup>&</sup>lt;sup>35</sup> Annex D provides examples of trade corridors that have been used to attract regional integration funding.

#### v. Regional Development Agencies

Many of the regional development agencies (e.g. SADC, ASEAN, CAREC, CAF) have regional funding sources that can help with project preparation, including the search for project financing. Although these regional funds can usefully complement conventional MDB funding, compliance with the specific integration criteria needed to access these funds can complicate what is already a more than usually complex project because of the multiple countries involved.

While the funding is a useful supplement, it is frequently not enough to make an otherwise unattractive project viable, although this is the intention of some of the regional funds. Even a facility to attract funding from further sources, mostly other MDBs and bilateral sources, and occasional private foundations, tends to bring with it burdensome administrative tasks in managing and accounting for the allocation of funds from various sources, each with its own procurement and accounting procedures.

One of the main difficulties with these projects is finding a regional agency that can receive the funds (usually a grant rather than a credit or loan) and that sufficient human resources are in place to prepare and manage the project. In East Africa for example, the Corridor Management Agencies can now fulfil this function, whereas for the earlier corridor projects they did not have the legal status to receive grants from MDBs.

The difficulty in addressing these issues has resulted in regional integration funds not having their anticipated success. They have been used as a last resort financing source, rather than being the first call resource for regional projects as intended. To take advantage of most of these funds, any LLDC project needs to have regional benefits beyond its own borders and preferably beyond its transit neighbour.

#### 3. Other bilateral financing/funding and specialized funds

The main sources of bilateral financing for transport in LLDCs are well known and widely used by the LLDCs, and with one notable exception have not changed significantly over the last two decades or more. The exception is China, which has massively increased its financing of transport projects in LLDCs. particularly through its 'One Belt, One Road' initiative

The focus in this section is on the various new financing sources involving Chinese financing and funding, with a secondary focus on those of the European Union, and some specialized funds, since they are new and/or are of such a size and importance for LLDCs that they merit special consideration<sup>36</sup>. These new bilateral sources of finance are already being accessed by some LLDCs; for example, Ethiopia has taken out more than US\$ 3.5 billion in loans from Chinese sources to finance three large transport projects. These sources of finance have the potential to make a major contribution to closing the LLDCs' transport infrastructure gap.

#### i. Silk Road Fund<sup>37</sup>

The Silk Road Fund is a state-owned investment fund of the Chinese government to foster increased investment in countries along the Belt and Road Initiative, an economic development initiative primarily covering Eurasia. At its creation in December 2014 US\$ 40 billion was pledged as initial capital for the Fund; this has since been increased to US\$ 124 billion. As of May 2017, the Fund had financed 15 projects for a total of US\$ 6 billion. None was specifically for LLDCs, but two of the transport projects, the Mombasa to Nairobi High Speed Railway and the China Pakistan Economic Corridor Project (linking Kashgar in China to Gwadar port in Pakistan) both promise to open up access to LLDCs (Uganda for the former and Afghanistan and Tajikistan for the latter). Given the aims of the Belt and Road Initiative to enhance connectivity, the LLDCs should be prime candidates for its funding.

#### ii. China Development Bank (CDB) and China EXIM Bank (C-EXIM)

Two of China's policy banks, the China Development Bank (CDB)<sup>38</sup> and the China-EXIM Bank (C-EXIM)<sup>39</sup>, already hold more assets than the combined sum of the assets of the Westernbacked multilateral development banks, with more than US\$ 1.8 trillion, compared to the MDBs with just over US\$ 700 billion. Although comprehensive data is not readily available, a recent estimate was that loans of more than US\$ 675 billion for infrastructure, mainly transport and energy projects in developing countries have been made by China Development Bank and China export Import bank since 2014, and that the current lending rate is of the order of US\$ 70 to 80 billion per year (Dollar 2017).

These banks provide concessional and nonconcessional (in the case of the C-EXIM) finance throughout the world, including LLDCs. The Chinese state has full ownership of the Bank and implicitly guarantees its debt, enabling it to provide low interest rates and long-term loans that are competitive with those of the MDBs. For some countries in Latin America and Africa, the CDB is the largest single source of development bank finance.

#### iii. Other Chinese financing sources

Other Chinese funds to which LLDCs have access to have total assets of a little more than US\$ 50 billion. For LLDCs in Eastern Europe and Central Asia, the China-Central and Eastern European (China-CEE) Fund<sup>40</sup>-set up to facilitate financing of projects to enhance inter-connectivity in the region, specifically in Eastern Europe-and the bilateral Russia-China Investment Fund (RCIF)<sup>41</sup> established by two government-backed investment vehicles, the Russian Direct Investment Fund and China Investment Corporation (CIC) are available. The RCIF will invest 70% of its capital in Russia and other Commonwealth of Independent

States countries (Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan. Uzbekistan and Ukraine). many of which are LLDCs, and 30% in China.

Chinese finance also has funds available to LLDCs in South America, the largest being the US\$ 20 billion CELAC (Community of Latin American and Caribbean States)-China Investment Fund for infrastructure projects (Reuters 2017). China has created even greater financing sources for Africa, where half the LLDCs are located. The largest is the China-Africa Industrial Capacity Cooperation Fund Company Limited (CAICCF), jointly established in 2016 by the China Foreign Exchange Reserves and C-EXIM. The fund supports infrastructure development, particularly in the transit sector. Another is the China-Africa Development Fund (CAD Fund), a Chinese private equity fund financed by the CDB, set up in order to stimulate investment in Africa by Chinese companies in power generation, transportation infrastructure, natural resources, and manufacturing. The Africa Growing Together Fund (AGTF), co-financed by the African Development Bank (AfDB) and the People's Bank of China finances eligible sovereign and non-sovereign guaranteed development projects in Africa.

#### iv. European Union<sup>42</sup>

As the European Union claims to provide over 50% of all global development aid, the EU and its Member States are collectively the world's leading donor. EU development policy seeks to foster the sustainable development of developing countries, with the primary aim of eradicating poverty. It is a cornerstone of EU relations with the outside world and contributes to the objectives of EU external actionalongside foreign, security and trade policy (and international aspects of other policies like environment, agriculture and fisheries).

proposals and access the European Development Fund can be found on the EU website https://ec.europa.eu/europeaid/about-funding\_en

<sup>&</sup>lt;sup>36</sup> A notable mention is the New Development Bank (NDB), a multilateral development bank established by the BRICS states (Brazil, Russia, India, China and South Africa). As yet the NDB does not have other than its founding members. Membership is open to all members of the UN and invitations have been made to fifteen other countries, one of which is an LLDC. The NDB is not covered further in this report. <sup>37</sup> http://www.silkroadfund.com.cn/enweb/23773/index.html

<sup>&</sup>lt;sup>38</sup>http://www.cdb.com.cn/English/

<sup>&</sup>lt;sup>39</sup> http://english.eximbank.gov.cn/

<sup>&</sup>lt;sup>40</sup> http://china-ceefund.com/

<sup>&</sup>lt;sup>41</sup> http://www.rcif.com/

<sup>&</sup>lt;sup>42</sup> More information on the EU system of supporting projects through grants and via the EDF, including how to apply for grants, respond to

#### European Development Fund (EDF)<sup>43</sup>

The main contribution of the EU to transport infrastructure projects is via its European Development Fund (EDF) but it also has a system of grants (which can come from the EDF or directly from the EU budget). For the EU, a grant is a public invitation by the Contracting Authority, addressed to clearly identified categories of applicants, to propose operations within the framework of a specific EU programme. They are awarded as donations to third parties that are engaged in external aid activities. The Contracting Authority awards grants that are used to implement projects or activities that relate to the EU's external aid programmes. Grants are based on the reimbursement of the eligible costs, in other words, costs effectively incurred by the beneficiaries that are deemed necessary for carrying out the activities in question. The results of the action remain the property of the beneficiaries. Grants are subject to a written agreement signed by the two parties and, as a general rule, require co-financing by the grant beneficiary. Since grants cover a very diverse range of fields, the specific conditions that need to be fulfilled may vary from one area of activity to another.

Created in 1957 by the Treaty of Rome and launched in 1959, the EDF is the EU's main instrument for providing development aid to African, Caribbean and Pacific (ACP) countries and to overseas countries and territories (OCTs). The EDF funds cooperation activities in the fields of economic development, social and human development as well as regional cooperation and integration. It is financed by direct contributions from EU Member States according to a contribution key and is covered by its own financial rules. The total financial resources of the 11th EDF amount to  $\leq$ 30.5 billion for the period 2014–2020.

#### v. Specialized investment funds

There are several investment funds managed by international agencies that have specific development objectives, some of which are relevant to transport infrastructure.

#### **Climate Finance**

Transport contributes with around 17% to global greenhouse gas emissions and plays an important role in international climate change mitigation efforts. Therefore, environmental sustainability of transport is an important issue that should be taken into consideration when designing transport infrastructure projects. At the same time, this can create an additional cost to the transport infrastructure projects. Climate finance can be an important source of finance to cover additional incremental costs. In particular, some climate funds, such as the Green Climate Fund and the Global Environmental Facility, have also been putting increasing emphasis on efficient transport technologies and concepts in their financial operations and instruments.

The Green Climate Fund (GCF) was created to support the efforts of developing countries to respond to the challenge of climate change, by helping them to limit or reduce their greenhouse gas emissions and adapt to climate change. It aims to catalyse a flow of climate finance to invest in low-emission and climate-resilient development. GCF launched its initial resource mobilization in 2014, and rapidly gathered pledges worth USD 10.3 billion. The Fund is using public investment to stimulate private finance, seeking to multiply the effect of its initial financing by opening markets to new investments. The Fund puts emphasis on the most vulnerable countries, in particular SIDS, LDCs and African States, but not to LLDCs as a group, even though there are overlaps with the LDCs and African countries.

The Global Environment Facility (GEF) includes 182 countries, and operates, in partnership with international institutions, nongovernmental organizations (NGOs), and the private sector, to address global environmental issues. It provides grants to developing countries and countries with economies in transition for projects related to biodiversity, climate change mitigation and adaptation, international waters, land degradation, the ozone layer, and persistent organic pollutants.

The GEF's Global Platform for Sustainable Cities (GPSC) aims to bring about greater efficiency,

synergy and increased returns of investment in developing cities. It is providing US\$ 1.5 billion between 2015-2020, initially to 27 cities in 11 developing countries-only one of which (Paraguay) is an LLDC. Investments are aimed at promising new technologies or approaches in the hope that some will emerge as "game changers" and have a "beacon effect," spurring adoption elsewhere. The program puts strong emphasis on enabling city leaders to share knowledge and best practices in areas like low carbon public transport, clean water, green buildings and other interventions designed to reduce air pollution and GHG emissions, and promote resource efficiency, ecosystem and biodiversity protection, and climate resilience.

Another specialized fund is the Climate Investment Fund, comprising two separate funds-the Clean Technology Fund (CTF), and the Strategic Climate Fund (SCF). The Clean Technology Fund provides new large-scale financial resources to invest in clean technology projects in developing countries, which contribute to the demonstration, deployment, and transfer of low-carbon technologies with a significant potential for long-term greenhouse gas emissions savings. The Strategic Climate Fund provides a framework to support three targeted programs only one of which is relevant to transport, a Pilot Program for Climate Resilience (PPCR), aimed at demonstrating ways to integrate climate risk and resilience into core development planning.

These funds have been little used by LLDCs and even less by them for transport projects. Overall, less than 5% of GEF and 16% of the Climate Investment Fund's funding has gone to transport projects (Kopp, Block and Limi 2013). Only one LLDC had made use of the Climate Investment Fund to finance a project rather than for technical assistance and training, and that was not for transport. Through an integrated approach, the program will help countries and cities address two trends: the rising urban demand of goods and services, and the rising consumption of resources. In this way, it will help reduce global environmental degradation. Investments will cover all aspects of urban sustainability, including access to services like public transport and clean water supply; green buildings and other interventions designed to mitigate greenhouse

gases and air pollution emissions; resource efficiency; waste management; ecosystem and biodiversity protection, and climate resilience.

Many of the countries aim to promote integrated planning that will go far beyond the initial participating cities. In addition to funding activities at the city level, the program will support the creation of a global knowledge platform. This will enable recipients to share experiences with other cities or organizations, as well as to reach out to stakeholders.

Since LLDCs are among the most environmentally challenged of developing countries, they might have been expected to make more use of these funds.

#### South-South Cooperation

South-South Cooperation has great potential which has only been partially realized. LLDCs stand to gain much from these programs. Among the several South-South funds are:

- The China supported South-South Climate Cooperation Fund, used to finance initiatives in developing countries to combat climate change.
- The India-UN Development Partnership Fund which is a dedicated facility within the United Nations Fund for South-South Cooperation (UNFSSC) established in 2017. It is supported and led by the Government of the Republic of India, managed by the United Nations Office for South-South Cooperation, and implemented in collaboration with the United Nations system.
- The Pérez-Guerrero Trust Fund for South-South Cooperation (PGTF) was established by the United Nations General Assembly in 1983, as a mechanism for supporting economic and technical cooperation among developing countries. PGTF's catalytic financial support is geared towards projects carried out by three or more developing countries and activities that strengthen regional cooperation and provide mutual benefits across borders.

The latter two are available to southern hemisphere LLDCs, more for technical assistance and project preparation than investment. The LLDCs should take advantage of the possibilities that these funds offer.

<sup>&</sup>lt;sup>43</sup> https://ec.europa.eu/europeaid/funding/funding-instruments-programming/funding-instruments/european-development-fund\_en

#### 4. Private finance for transport infrastructure

Among the potential expanded opportunities for financing transport infrastructure in LLDCs are those provided by the private sector. A simple way to categorize these opportunities is by those that involve either direct and indirect project finance<sup>44</sup>. Direct finance goes directly from the source of finance to the investor in the project, which could be a public agency (such as a state railway), a private infrastructure provider and operator (such as bulk ports) or a combination of the two in a private public partnership (PPPs-such as urban metros, airports, container ports etc). Indirect finance goes via an intermediary between the source of the original finance and the investor. The intermediaries can be of many types but are typically funds, ranging from pension and insurance funds to infrastructure investment funds and sovereign wealth funds.

In the last decade, more than US\$ 200 billion has been raised by investment funds to make long term capital infrastructure investments. It is estimated that at least the same amount again has been allocated to direct investments in infrastructure (PWC and GIIA 2017). Nearly

all of the indirect finance has been for projects in developed countries, and most has been for the purchase and operation of existing assets ('brownfield') rather than the creation of new assets ('greenfield').

One of the rationales for continued financing of transport projects in LLDCs by MDBs and other IFIs is to use that finance to leverage further finance from the private sector, most of it from external sources. This is now seen as essential activity, with the sector investment needs in LLDCs being several times greater than the resources available from domestic sources, both public and private, and ODA. While the leverage strategy has been moderately successful for some middle income non-LLDCs, until now it has been far less so for LLDCs (Figure 5). Out of a total of more than US\$ 87 billion of private finance made available to developing countries by official interventions between 2012 and 2015, only US\$ 6 billion (less than 7%) went to LLDCs.

Most of the leverage comes from the subset of MDB finance that is provided for PPPs, although many PPPs do not include any MDB financing, so projects of this type are not included in the above analyses whereas the former type are included.

#### Figure 5: Private finance mobilized by official interventions

![](_page_23_Figure_7.jpeg)

Source: OECD

<sup>44</sup>As with all forms of categorization, there is a grey area of overlap between categories. In this case, it can include direct financing of greenfield projects through financial intermediaries such as investment and pension funds.

#### 4.1. Direct private infrastructure investment via PPPs

Infrastructure is essential to an economy's growth, yet worldwide, especially in developing countries, a funding gap exists for building and maintaining infrastructure. The private sector together with development finance institutions, which include both multilateral and bilateral development banks, can play an important role in bridging this gap—often alongside public sector funding. Annex C provides some examples of how specific LLDCs are currently using various sources of international private finance for their transport infrastructure projects, including their experience with PPPs.

#### i. The Cascade Process

A fundamental change has occurred in the approach of MDBs to infrastructure finance. In 2015 a group of them<sup>45</sup> reiterated their commitment to scale up and leverage their support for infrastructure finance, noting that:

"Our business models are well suited to help move the international community from billions of dollars in ODA and other official assistance to trillions in finance for development from all sources-public and private, national and global."

At the same time they agreed to adopt what they call a 'cascade' approach. In this, financing for viable infrastructure projects is first sought from the private sector. If this is not available, a review is made of the project itself and of the institutional, legal and regulatory frameworks under which PPPs are offered. Recommendations are made to change the project to remove non-essential features that increase its cost or otherwise make it unattractive to private investors, and also to revise the legal and regulatory framework of PPPs where these do not comply with global best practices. With the project revised and the institutional recommendations promised (if not implemented), a new approach is made to seek private finance. Only if this is still not forth-

coming, is direct finance by an MDB considered appropriate. The thinking behind this process is that scarce public funding should be prioritized for economically, environmentally and socially viable projects that might be financially viable (whether in transport or in other sectors).

#### ii. Structure of PPP financing

PPP financing may come from public, private, or development finance institutions (DFI) sources. Public source financing includes (a) governments providing part of a project's upfront capital costs through grants or viability gap funding (government subsidies4); (b) stateowned enterprises (SOE) investing equity; and (c) state-owned banks extending loans. Private source financing includes (a) equity (including equity financed by corporate debt) through the project's developer or (b) project finance debt through private lenders, which can be either commercial banks or institutional financiers. Particularly for developing countries (tracked by the PPI Database), DFIs, which includes bilateral institutions and MDBs, also provide various forms of support.

The annual PPIAF review of PPP<sup>46</sup> infrastructure projects assesses the financial sources for the upfront capital costs of PPP projects reaching financial closure in each year in low-to middleincome countries (excluding divestitures, management and lease contracts, which have no investment in physical assets, as well as any concession fees paid to governments, as these fees are often defrayed by project revenues and thus not representative

of a project's upfront capital investment).

Financing information was available for only 163 of the 294 PPP projects identified in 2015. About half of those projects with no financing information available were in China, the other half in Latin America and the Caribbean (LAC). Both regions have a lot of activity in locally funded and developed small-scale PPPs, in which case financing information is not often accessible publicly.

<sup>&</sup>lt;sup>45</sup>African Development Bank, Asian Development Bank, Asian Infrastructure Investment Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, International Finance Corporation, Islamic Development Bank, New Development Bank and the World Bank <sup>46</sup> http://ppi.worldbank.org/

The 163 projects had investment commitments in physical assets totalling US\$ 52.3 billion. The sources of financing for these projects comprised of about two-thirds in debt (US\$ 35.2 billion), one-quarter equity (US\$ 13.1 billion), and 7.5% in government subsidies (US\$ 3.9 billion). Breaking the debt down further, exactly half (US\$ 17.6 billion) was financed by commercial lenders; about a quarter (US\$ 9.0 billion) by public lenders, i.e., SOEs and financial institutions; and the remainder by DFIs and, to a lesser extent, institutional investors.

Forty-four of the projects (27%) received multilateral support and forty-seven projects (29%) received bilateral support, mostly loans. Twenty-two projects were in both categories, receiving support from both multilateral and bilateral financial institutions.

Important for LLDCs considering using institutional investors as a private source, these were active in only two out of the 163 projects, committing only US\$ 0.7 billion, representing about 2% of the debt portion, or 1% of the total investment. This is likely linked to the higher risk profile of PPPs in developing countries, particularly because of the lack of credit ratings for the PPPs, making it difficult for institutional investors to accurately evaluate the asset risk.

Most of the total equity (US\$ 12.1 billion or 92%) was financed by private sponsors via balance sheet transactions, that means the concessionaires in PPP projects were largely self-financed. The remaining equity (US\$ 1.0 billion or 8%) was financed by SOEs forming joint ventures with private sponsors in order to implement the projects.

In terms of the public-private split, out of the total capital investment of US\$ 52.3 billion, 58% of the projects were financed by private sources (US\$ 30.3 billion); 26% by public sources (US\$ 13.9 billion); and 15% by DFI sources (US\$ 8.0 billion). Therefore, both the public sector and DFIs still have key roles to play in PPPs.

#### iii. Regional variation of PPP funding<sup>47</sup>

The mix of financing for PPPs varies by region. East Asia and Pacific had the most active private sector financing, with 83% coming from

Conversely, Latin America and the Caribbean had relatively low contributions from the private sector at 46%, with correspondingly high activity from the public sector at 39%. DFI sources made up the remaining 15%. However, public funding in 2015 includes the US\$3.6 billion capital subsidy for the Lima Metro-Line 2 Project, which drove up the public sector's totals.

With about 30% of total investment commitments from state-owned banks. South Asia (SAR) is notable for attracting the highest investments by state-owned lenders than any other region. This is because India's public sector banks were the most active lenders in the country's infrastructure sector. DFI sources funded 20% of capital costs in South Asia, while private sources funded 48%-roughly, an even split between debt and equity.

In Europe and Central Asia, dominated by Turkey, private sources funded 64% of the total investment; public sources provided 28% (mostly from state-owned lenders); and DFIs, the remaining 8%.

Sub-Saharan Africa (SSA) had healthy private sector financing at 66% of PPPs, but very low public funding at only 12%. MDBs filled the 22% gap, the second highest contribution sources after MENA. Local debt providers were the most active in Europe and Central Asia in 2015, capturing 83% of the total debt requirements in the region. They were also active in SAR and East Asia and the Pacific, financing 68% and 62% of the total debt in each region, respectively. In SAR the higher contribution of local debt providers was driven by Indian banks, contributing 92% of the total debt, while debt in Nepal was largely internationally financed. In East Asia and the Pacific the higher contribution of local debt providers is because of Thailand, where local banks contributed 88% of the total debt. In SSA, 52% of the total debt was financed by international lenders.

#### iv. Share of PPP funding to the transport (and energy) sector

Of the 163 total projects, 137 were in the energy sector, with investments totally US\$ 31.7 billion; 24 were in transport, US\$ 20.7 billion: and only two were in water. US\$ 162 million. The share of private sector funding in energy was higher than that in transport: 65% and 49%, respectively. The same can be said of DFI funding in energy (19%) versus transport (10%). Conversely, 41% of the investments in transport projects were funded by the public sector, compared with only 16% in energy, indicating that private sector financing is more accessible in the energy sector. There was not enough of a sample size for water projects in 2015 to determine conclusively the trends in that sector.48

#### v. PPP financing in LLDCs

The PPIAF monitoring of PPP reports do not analyse LLDC financing as a separate topic, but they do analyse financing in IDA countries, which are used here as a proxy. Twenty-three LLDCs are eligible for IDA financing. Of these, four are blend countries<sup>49</sup>, which are excluded from the PPIAF analysis below.

In IDA countries, during the period 2011–2015, PPP investments amounted to US\$ 27 billion in 24 countries. Lao PDR, however, accounted for almost one third of the investments with its hydropower projects. In 2015, the amount of PPP investments on 12 projects for which financial information was available reached US\$ 2.5 billion.

The majority of PPP projects in 2015 were financed by development finance institutions, with bilateral institutions contributing about 34% of PPP investment and MDBs contributing 19%. At the same time, 43% was financed from private sector sources, while public sector accounted for 4%. While 68% of the investment was financed by debt, mainly by bilateral institutions and MDBs. the remainder that was financed by equity came in two-thirds from the private sponsors.

MDBs continue to play an important source of infrastructure PPP finance, and in particular for transport. Overall, MDBs also contribute a larger share of financing to PPPs in IDA countries. Over the period 2011–2015, MDBs provided some financial support to 33% of the projects in IDA countries, compared with 14% in non-IDA countries.

The overwhelming majority of projects in IDA countries during 2011–2015 were in the energy sector, accounting for 86% of the projects and of the investment. The transport sector accounted for only 18 of the 142 projects and only 14% of the investment.

Only 7 LLDCs that are IDA countries had at least one project during the period 2011-2015. These were Ethiopia, Kyrgyzstan, Lao PDR, Nepal, Rwanda, Uganda and Zambia. All of these projects were in the energy and ICT sectors, with the exception of one road project in Nepal. Majority of the projects were financed by international lenders, mostly DFIs.

#### 4.2. Assessment of the readiness of a country/sector to implement PPPs

Apart from project feasibility and country confidence issues, implementation of PPPs is most impacted by the readiness of the institutional structure of the government to deal with PPPs. To assist with this the PPIAF has designed a PPP Readiness Assessment diagnosis. Although aimed at the staff of the MDBs, and specifically the World Bank, with small changes it can be used by governments to assess their own readiness, and based on its outcomes, determine the best path to becoming ready. Another perhaps more useful tool for self-diagnosis of readiness to implement PPPs is provided by UN ESCAP. LLDCs should take advantage of these tools that are available and adapt them to their own circumstances, if necessary.

<sup>48</sup> In this paragraph all the percentages refer to the share of private equity and loans in the overall capital investment of projects in the sector.

private sources (debt and equity). Similarly, commercial debt providers were also the most active in East Asia and the Pacific, contributing to 61% of the upfront capital costs. Only 13% of the investment commitments were funded by public sources and 4% by DFI sources.

<sup>&</sup>lt;sup>49</sup> Bolivia's category changed from blend countries to IBRD for the fiscal year 2018.

<sup>&</sup>lt;sup>47</sup> The regions are based on World Bank definitions.

#### Figure 6: Approach to the Country PPP Readiness Diagnostic

Desktop preparation	<ul> <li>Preparatory work to establish status quo</li> <li>Initial baseline of the country's PPP framework</li> </ul>
On-site due diligence	<ul> <li>Confirm existing baseline</li> <li>Explore possibilities to improve identified gaps in the PPP framework</li> </ul>
Drafting a strategy	<ul> <li>Identify options to structure a robust and sustainable PPP program</li> <li>Recommend a customized option based on country needs and circumstances, to be contained within a PPP Strategy Note</li> </ul>

Source: PPIAF Country Readiness Diagnostic

#### i. PPIAF Readiness Assessment Tool 50

The PPIAF Country PPP Readiness Diagnostic tool assesses "readiness" by determining the status quo and comparing the status quo or baseline with best practices to determine gaps. Closing the gaps will be based on country circumstances and the relevance of a gap, leading to a customized PPP strategy for the country, as shown in Figure 6.

The end goal of the Diagnostic is to provide strategic, customized understanding of whether a country or specific sector within a country, is ready to undertake PPPs, and if not what is the most plausible operational plan to bring this about, including the choice of public investment vis-à-vis PPP, and the type of PPP (Figure 7).

#### Figure 7: Objectives of the process to determine readiness and to develop a PPP strategy

![](_page_25_Figure_7.jpeg)

Source: PPIAF Country Readiness Diagnostic

The Diagnostic starts with a "country snapshot" capturing some macroeconomic data and business climate ratios. Following that, it is structured around key themes that are relevant in the assessment of the PPP readiness of a country with related key questions, as

#### Table 12: Key questions for a PPP assessment

Theme	
PPP experience	Does the governme
Stakeholder support	Does the governme
and ownership	Do the general publi
	Is the legal and regu
	Do legislation and re unsolicited proposa
	Do other legislation
	Are legislation and r
Institutional framework	Are there institution and implementation
	Are there processes and implementation
	Are there standardiz
	Is there a governme strategy on PPPs?
	Do the government to implement PPPs
	Does the budgetary
	Is there funding ava and implementation
Funding and managing fiscal risk	Is there a framewor
	Is there a frameworl and contingent liabi
	Is there a framewor
Access to finance	Are the necessary P
Transparency and disclosure	Are there oversight,

Source: PPIAF Country Readiness Diagnostic

presented in Table 12. Each key question is further broken down into more questions, differentiated at high and detailed levels. As PPP readiness may vary widely by sector, sector-specific questions are also provided, wherever relevant.

#### Key question

nt have any experience implementing PPPs?

nt support PPPs?

ic and other key stakeholders support PPPs?

latory environment sufficiently conducive to PPPs?

egulations provide clarity on the management of ls?

and regulations support the implementation of PPPs?

regulations functioning well in practice?

s in place to support the preparation, procurement, of PPPs?

in place to guide the preparation, procurement, of PPPs?

zed PPP documents and templates?

ent communication strategy and stakeholder engagement

and the industry have (access to) the skills and expertise successfully?

system support PPPs?

ilable for robust PPP project preparation, procurement, ן?

k for government financial support to PPPs?

k for assessing and managing fiscal commitments lities?

k for project-level financial and economic assessments?

PP project finance structures and sources available?

audit, and disclosure procedures and institutions in place?

<sup>&</sup>lt;sup>50</sup> This section is based on World Bank (2016b). Country Readiness Diagnostic for Public-Private Partnerships report.

Making infrastructure projects particularly appealing to private finance involves ensuring that the following conditions are in place:

- Having professional staff in the government that know how to, and have experience of, implementing PPP projects. Preferably these staff are in a central PPP unit, so that procedures for implementing PPPs are standardized through the different infrastructure agencies. With these procedures in place, potential bidders for PPP projects are more likely to become actual bidders;
- Preferably there should be a PPP law, but this is not always possible given public resistance to the concept of PPPs in some sectors (such as schools, hospitals and prisons). But as a minimum, there should be regulation issued under one of the existing laws that makes transport infrastructure PPPs feasible. This regulation should include procedures for dealing with unsolicited proposals;
- The presence of an established and largely independent concession regulator (or a legal process that achieves the same outcomes) will give bidders more confidence that any disputes between them and the government will be settled equitably.

All the major MDBs have experience of advising on and supporting the creation of these conditions, but they can only do this once the concept of PPPs has been broadly accepted as a component of public policy, which is almost exclusively a matter for the LLDCs themselves.

#### ii. UN ESCAP Public Private Partnership Readiness Self-Assessment<sup>51</sup>

The aim of the UN ESCAP PPP Readiness Self-Assessment is to provide a diagnostic tool for identifying the key areas that governments need to address in order to involve the private sector more actively in the infrastructure development process. The Assessment is to be used to diagnose the main problems in attracting private investment for infrastructure development, rather than to develop benchmarks against which different sectors or countries could be compared. It can also help in preparing detailed action plans and identifying relevant authorities to address.

The intention of the Assessment is to serve as a questionnaire in which all the questions could be answered by small informed groups that have understanding of the overall investment environment including institutional and administrative arrangements in a country, in half a day. Ideally, the groups should comprise of stakeholders with common interests. For example, a public-sector group with representations from each infrastructure sector (as normally the institutional arrangements are different) and a private sector group. When possible, the private sector group can also be divided separately into domestic and foreign private sector groups to consider the difference of their views and concerns. The questionnaire is separated into five main parts trying to capture the key elements that can have an impact on building an enabling PPP environment. An answer sheet as well as guidelines are provided to support respondents in marking their reply.

#### Figure 8: UN ESCAP PPP Readiness assessment process

![](_page_26_Figure_9.jpeg)

Source: UN ESCAP Public Private Partnership Readiness Self-Assessment Form

Having filled out the guestionnaire and results tabulated, the groups can discuss the commonality and difference in their perceptions of the PPP environment. If the difference in perception in an area is significant, the groups should discuss the reasons and reconcile their differences. Based on their final assessment after reconciliation of any major differences in evaluation, action plans can be prepared. The whole assessment process is summarized in Figure 8.

## 4.3. Indirect private infrastructure investment<sup>52</sup>

Institutional investors such as pension funds, insurers and sovereign wealth funds, due to the longer-term nature of their liabilities, represent a potentially major source of longterm financing for illiquid assets such as infrastructure. Over the last decade, these investors have been looking for new sources of long-term, inflation-protected returns. Recent asset allocation trends show a gradual globalization of portfolios with an increased interest in emerging markets and diversification into new asset classes.

The willingness of institutional investors and the private sector in general to finance major investment projects in any given country is heavily influenced by the perceptions of the country's investment climate and the broad suite of policy settings and institutions that underpin a country's economy and political processes. Through structural reforms, governments need to create a more favourable investment climate, build private sector confidence to invest and ensure that global savings are channelled into productive investments.

The role of institutional investors in long-term financing is also constrained by the shorttermism increasingly pervasive in capital markets as well as structural and policy barriers such as regulatory disincentives, lack of appropriate financing vehicles, limited investment and risk management expertise, transparency, viability issues and a lack of appropriate data and investment benchmarks for illiquid assets.

Moving from the current mind-set to a longerterm investment environment requires a transformational change in both government and investor behaviour. Promotion of a public-private dialogue, ensuring a coordinated approach between investors, the financial industry and the public sector will be a key element in developing this new "investment culture".

Transport infrastructure more often than not possesses the following characteristics that are sought after by private investors:

- It has low volatility and a protected downside, stable cash flow profile-meaning "low risk" (comparing to traditional private equity). Even in the worst-case scenario cases, the investment still tends to return around 3-5% IBB
- It can provide a strong cash yield–Although this is not an absolute necessity, the vast majority of infrastructure assets being purchased by financial investors have some current dividend yield. It is quite different from conventional equity investments where much of the return comes on the last day from exit, maybe boosted by one-off dividend recap in the middle, and in this respect it resembles real estate private equity where current yield is more often a requirement than not.
- Its asset performance is often implicitly or explicitly linked to macro indicators such as inflation, GDP, population growth etc-Many investors naturally see infrastructure as a hedge. For example, if inflation or population increase, public pension plans see the pension payments to people increasing. At the same time, if this pension plan is invested in CPI-linked infrastructure (e.g. regulated gas distribution utility) or population-linked infrastructure (e.g. toll road) it helps to offset the increasing pension liabilities.
- It has a resilient performance profile and low correlation with other asset classes-Transport infrastructure provides good diversification benefits to investors' portfolios.

Infrastructure consists of physical assets so in many instances it resembles real estate and hence there are many similarities between private equity for infrastructure and for real

<sup>&</sup>lt;sup>52</sup> This section makes much use of Wall Street Oasis (2017); Overview of Infrastructure Private Equity.

<sup>&</sup>lt;sup>51</sup> http://www.unescap.org/resources/ppp-readiness-self-assessment

estate (for example, both can be brownfield i.e. for buying operating business, or greenfield for a new construction). Infrastructure investors use a similar classification of assets as real estate investors:

- Core infrastructure: operating assets with most/all of the returns coming from cash revenues with limited revenue risk but with little potential for growth. Examples include regulated electricity distributors in the US or Western Europe. For these assets, investors would expect equity IRRs of less than 10%-but this is still higher than fixed income investments often considered as the alternative, and with revenue risks much lower than other infrastructure categories. Public Private Partnerships (PPP) are often considered "core" assets even when they involve greenfield construction-as many of the risks are still low and are often covered by guarantees.
- Core-plus infrastructure: somewhat more risky than core assets, and typically include those with some revenue growth potential. This category also includes those that would otherwise be core assets but are weakly or poorly managed (for example, the same regulated electricity distributor as above, but in an Eastern Europe or Central Asian country). These assets would expect to earn an equity IRR of perhaps 5% higher than a core asset, to cover the higher risk. If the guarantees were particularly strong, the premium might be lower.
- Value added infrastructure: this category does not have the assured revenue stream of core or core-plus assets, and requires significant operational experience to ensure the revenue stream. An example would be a regional airport expecting to become a regional hub, or a feeder container port trying to become a hub port. This category would expect to earn an additional equity IRR premium of up to 5% higher than a core-plus asset, again depending on the guarantees given, and the reliability of the source of the guarantees.
- Opportunistic infrastructure: this is the highest risk category and includes most potential infrastructure assets in LLDCsperhaps toll roads or national airports in

these countries with little potential revenue gain beyond their current markets. These are the assets at the boundary of where private equity investors might be interested and considered the riskiest of all, with a high downside revenue risk. Even the revenue guarantees for these assets might be of less value than for other categories unless given by an established international guarantee agency. The sought for equity return could be 25% or even higher.

Typically, infrastructure investors-banks, investment funds or pension funds-spread their investments among the asset categories, with the particular spread depending on the investment objectives. The last category, that for most LLDC-transport infrastructure assets, is unlikely to figure prominently for any type of equity investor. Few investors would include both extremes of the asset categories as the investment objectives and expected rates of return are so different (the expected IRR for the last category could be more than twice that of the first).

Unlike traditional private equity or even real estate private equity, that for infrastructure is relatively new. Some twenty years ago it was almost unheard of to seek private financial capital for large infrastructure assets. Most of such assets belonged to governments or to corporates who once built them. Infrastructure private equity simply didn't exist. In the last decade of the previous millennium, following a start made with the concessioning of ports, railways and later airports (many urban bus services were concessioned at the same time, but they were more for operations than infrastructure), a few countries such as Australia and Canada pioneered attraction of private financial capital for both construction of new infrastructure and monetisation of existing assets. Australian bank Macquarie is widely credited as being the first-mover in raising private equity funds to invest exclusively in infrastructure.

Currently infrastructure is a crowded space with many funds competing for deals in all global regions and in many developing countries. Since much transport infrastructure already exists and most of it that can be concessioned has already been privatized, the supply of new infrastructure is not growing as fast as the supply of finance.

Within infrastructure, financial investors can be divided into two broad groups: independent fund managers and institutional investors. Until recently the sector was dominated by fund managers, with institutional investors passively providing them with the investment funds. There is now a trend for the larger institutional investors to operate independently without going through fund managers—they build their own direct investment teams that can end up competing with the same fund managers on whom they once depended. Given that some of them, particularly pension fund managers, have ready access to large no-cost investment resources, they can be very competitive.

The Independent fund managers are themselves of three types:

- Pure infrastructure fund managers, who create funds specifically to invest in infrastructure assets, many of which are large, managing several US\$ billions of equity;
- Broader based fund managers, that often include real estate as well as infrastructure assets;
- Diversified asset managers that include infrastructure as just one broad spectrum of assets under their management;
- Large banks with a merchant banking or private equity businesses that have infrastructure private equity franchises; for example:
  - Goldman Sachs (named West Street Infrastructure Partners, third vintage at US\$ 3 billion)
  - Morgan Stanley (named North Haven Infrastructure Partners, second vintage at US\$ 3.5 billion)
  - JPMorgan Asset Management (investing primarily through their open-ended JPMorgan Infrastructure Investments Fund and separately-managed accounts. It is hard to estimate the amount of infrastructure capital they manage.)
  - Deutsche Asset and Wealth Management (on track to close their second vintage of Pan-European Infrastructure Fund II at US\$ 2+ billion)

• Macquarie Infrastructure and Real Assets (With some US\$ 100 billion of infra assets under management, they are probably the largest infrastructure private equity firm currently operating. Unlike many other fund managers, they prefer to raise regional or national funds that tend to be small in size.)

The institutional investors include pension funds, sovereign wealth funds and insurance companies.

## Pension funds

Canadian pension funds were the first to recognize the compatibility of returns on infrastructure assets with their own revenue objectives, but have now been followed by those in several other countries. They have strong teams and fairly low return requirement. They tend to focus on a few large assets that are kept for the long periods needed for them to mature to provide the needed financial returns, whereas the fund managers have a much shorter time perspective.

Based on a survey of 72 pension funds across 21 countries, the average holdings in infrastructure assets averages 5.6%, heavily influenced by Canada and Australia (Alonso, Arellano and Tuesta 2015). There are a dozen pension funds which invest between 10% and 31% of their portfolios in unlisted infrastructure assets. It was separately estimated that the world's 10 largest pension funds had increased their allocation in infrastructure assets to 19.5%. There is much variation in the ways that pension funds from different countries approach infrastructure investment in third countries. For example, Canadian pension funds combine direct investment in infrastructure assets with indirect investment in infrastructure funds and invest a significant proportion of their infrastructure portfolio abroad. In contrast, Australian pension funds have developed expertise in packaging the risks in special financing vehicles managed by infrastructure funds, and recently have been investing more actively in unlisted assets.

Given the perceived high risk of infrastructure investment in developing countries, it could be more productive (that is, lower risk premiums might be sought) for LLDCs to approach their infrastructure investment via indirect sources (such as pension funds) before seeking direct investment in specific projects.

#### Sovereign Wealth Funds (SWFs)

These have followed a similar pattern of evolution as pension funds-relatively slow to appreciate the compatibility of infrastructure assets with their own investment objectives and also slow to mature into developing their own direct investment teams. The most active SWFs in infrastructure are those from Middle East, China and Singapore.

SWFs have a rapidly expanding value of assets under management (AUM), which reached US\$ 6.51 trillion by 2016, over double the aggregate assets held in 2008 (US\$ 3.07 trillion) (Pregin 2016). The long-term stable yields offered by infrastructure investments can help explain their appeal to SWFs and their ability to withstand illiquidity, making them particularly suited to the asset class. In addition, many funds have an explicit mandate to help develop local economies and infrastructure investment. The proportion of SWFs investing in infrastructure has increased steadily to reach 62% by 2016. This is the same proportion as those that invest in real estate, and together these two asset classes are the most commonly targeted by SWFs.

SWFs are typically larger than other private investing institutions and have greater assets available for infrastructure investment. The average AUM held by SWFs investing in infrastructure is US\$ 116 billion, compared with US\$ 25 billion for other long-term liability investors such as pension funds. As a result, SWFs are more likely to have a dedicated allocation to the asset class; 75% of SWFs that invest in infrastructure do so from a separate infrastructure allocation, compared with only 36% of other long-term liability investors.

Although SWFs are themselves akin to financial intermediaries, they are more likely to invest directly in infrastructure projects. Due to their larger AUM, SWFs typically have the investment expertise and resources required to make direct investment in infrastructure projects. They are less reliant on the diversification provided by infrastructure fund managers within the context of their overall portfolio. Forty-two percent of

SWFs invest in infrastructure solely through direct holdings, while a further 49% combine direct and indirect investments. By contrast, 79% of other long-term liability investors access the asset class solely indirectly, with only 3% investing exclusively through direct holdings.

#### Investment arms of insurance companies

Because of relatively low risk, resilient performance and link to macro indicators. insurance companies also have come to understand the advantages of infrastructure assets. Insurance companies, especially life insurers, are facing challenging times. The long-term nature of insurance companies, especially life insurers and the general low and even negative yield environment for Government bonds puts life insurers under pressure to seek alternative investment options to generate the guaranteed rates needed by their policyholders. The investment objectives of insurance companies are very similar to those of pension funds, but they have been much slower to realize the correlation between their objectives and the benefits available from infrastructure investments.

Some invest only their own funds while others have some set up fund management platforms that also manage funds from third parties. In 2014, insurance companies had about US\$ 362 billion invested in infrastructure assets, about one third of which was controlled by specific infrastructure managers.

#### Private equity perception of PPPs

Public-private partnerships is a category of its own in terms of infrastructure assets. They involve a need for upfront investment, often for several years, before any revenues are generated. In the early years of operation, their revenues are often insufficient to cover operating and maintenance costs, let alone fully finance debt or give a return on equity. To cover this period, and to give an assurance of future revenues, the private sponsor demands some form of government guarantee of revenue or a guaranteed rate of return on equity or construction costs. Although they are the most common form of private investment in transport infrastructure, PPPs still only make a small share of private infrastructure equityand for the largest construction companies that **5**. **Development financing solutions** equity comes from their own revenue.

Given the high costs of preparing proposals for PPPs, it is rarely worthwhile for serious investors to consider deals where their equity participation is less than about US\$ 250 million. In addition, taking account of the management fees and high returns on equity expected, particularly from PPPs in LLDCs with little or no track record in similar deals, private investment through PPPs might be considered only as a last resort when all other funding and financing options are closed off. However, they do have the important advantage that any public funding that can be avoided releases those funds for projects for which private finance could never be an option (mostly those that are not revenue earning).

#### Global Infrastructure Facility (GIF)

Although not itself a source of finance, the Global Infrastructure Facility, which became operational in 2015, is a partnership among governments, multilateral development banks, private sector investors, and financiers. The GIF helps prepare infrastructure projects of developing countries for potential private financing, particularly institutionally complex projects that no single institution could handle on its own.

It draws on the combined expertise of its technical and advisory partners, focusing on financial structures that are able to attract appropriate private investors. Its main advantage for LLDCs is in making sure that any infrastructure projects presented for private financing, especially cross border projects that require collaboration between an LLDC and a transit neighbour, have a good chance of attracting more than one source and that the LLDC and its neighbour will be in as strong a position as possible in any negotiations with the potential private partners.

The GIF partnership is overseen by a Governing Council comprising representatives of funding and technical partners and representatives of emerging markets and developing economies, and is co-chaired by the World Bank Group and a Funding Partner. This enables it to represent the interests of both governments and potential investors.

There is no unique source that advises countries on what is necessary to prepare projects for funding or finance as well as for locating and assessing their potential sources. Much of the initial planning and preparatory work that is needed to be done before a project is identified needs human resources and skills that few LLDCs have in abundance. MDBs and bilateral sources, through their various forms of technical assistance can provide training and even learning experiences for staff in other countries. But the most practical forms of technical assistance should involve hands on support to LLDCs for the preparation of actual projects.

Once some of the basic technical assistance has been provided, there is still no overall source of information on all the potential funding and financial resources. Knowledge of potential domestic resources is very specific to each country, but in each global region there are agencies of the MDBs that can identify potential regional and global funds. As with any other source of advice that is also a source of the services on which advice is being sought, it is advisable to seek that advice from more than one source to stand a better chance of learning of the whole range of opportunities available.

Although not a source of advice, a catalogue of all the then available lending products from the MDBs and the IMF was made available for the Third Financing for Development Conference in Addis Ababa in 2015 (World Bank, IMF and MDBs 2015). Given the rapid evolution of new financing sources and the transformation of existing sources, there would be great merit in this catalogue being updated and expanded to give insight into how each could best be used by the LLDCs for their transport infrastructure projects.

Multilateral Development Financial Institutions (MDFIs) have helped shepherd the growth of development financing solutions, including innovative finance, providing both intellectual and operational capacity. They are well placed to engage at the nexus of public and private financing for development, which is the focus of many innovative finance initiatives. They have provided advisory and design services to help interested parties understand the obstacles and assets that exist. MDFIs have financial expertise, on-the-ground operational knowledge, and the ability to work with clients and partners to structure cutting edge initiatives. The IMF catalogue attempted to pull together all the then available information on development financing solutions. It remains by far the best guide to what financing solutions are available.

Development finance traditionally is delivered primarily in the form of concessional and marketrate loans, grants, and occasionally guarantees. The provision of financial support through means other than these fundamental instruments is often referred to as innovative finance.

Development financing solutions enhance development impact in different ways. "Additional" finance provides more money for development, generating a distinctly new flow of funds for a development program or purpose. "Efficient" financial mechanisms are used to change the characteristics of cash flows to align them with program needs. For example, uncertainty and risk can be reduced by changing the currency of cash flows, the timing of receipts and payments, and/or the reliability of the cash flows. PPP Financial mechanisms can be designed to be more "Effective"-providing more development impact for the money-with the incorporation of incentive structures that increase resources available or increase the purchasing power of funds.

Financing solutions are not always new, experimental, or game changing: many of the successful concepts deployed to date use an existing finance instrument in a novel way. For a foundation that extends grants, for example, innovative finance may mean the use of loans that elsewhere are considered the workhorse of development finance. Instruments that have been around for a long time can be applied to new circumstances and for new purposes, such as the application of a microscopic fee to an extremely high-volume activity. Nor is innovative finance unique, as the same economic result-for example, establishing a floor price to try to build a carbon market-may in specific circumstances be achieved through a number of different financial instruments (e.g. put options, auctions, bonds). The financing solutions listed in the catalogue are grouped in four broad categories, as shown in Figure 9.

#### Figure 9: Range of financing solutions covered by IMF catalogue

Adding, Pooling,	Debt-Based,	Risk	Results-Based
Enabling	Right-Timing	Management	Financing
<ul> <li>Co-Investment Platforms/Pooled Vehicles</li> <li>Equity Investment</li> <li>Investment Climate/ Regulatory Advice and Policy Lending</li> <li>Local Currency and Domestic Capital/ Bond Market Building</li> <li>New "Global" Taxes, Solidarity Levies</li> <li>Public-Private Dialogue- Platforms/Information Facilitation</li> </ul>	<ul> <li>Bond Issuance</li> <li>Bridge Financing</li> <li>Debt Conversions</li> <li>Frontloading</li> <li>Islamic Finance</li> <li>Line of Credit</li> <li>Long-Term Finance</li> </ul>	<ul> <li>Blended Finance/PPPs</li> <li>Derivatives/Swaps</li> <li>Guarantees/Insurance</li> <li>Indexed/Performance Based Bonds</li> <li>Local Currency Debt Finance</li> <li>Market Data/ Benchmarks</li> <li>Project Preparation Facilities</li> <li>Risk Sharing Vehicles</li> </ul>	<ul> <li>Advance Market Commitments</li> <li>Buy-Downs</li> <li>Performance-Based Funding/Payment for Results</li> <li>Pull Mechanisms</li> <li>Prizes/Competitions</li> </ul>

#### Source: Catalogue of the MDBs and the IMF Financing Solutions

#### i. Adding, Pooling, Enabling Instruments

This category of solutions covers new flows, such as taxes or fees, as well as policy-driven "flows" that are not traditional finance instruments/ investments but do generate economic or financial value. Policy guidance and lending support the strengthening of the domestic policy, legal, tax, regulatory and institutional environment for many purposes: to increase a country's available resources and creditworthiness; enhance development impact (more results for the money), and to encourage and attract private investment.

One of the many examples is the Asset Management Company (AMC) of the International Finance Corporation (IFC), which offers significant mobilization and scale-up opportunities, using a strong governance structure and innovative business model to match commercial capital with development finance. As of December 2014, AMC had approximately US\$ 7.8 billion of assets under management in seven funds and had committed approximately US\$ 4.5 billion in 58 emerging market companies and six private equity funds. AMC's investors include sovereign wealth funds, pension funds, bilateral and multilateral development finance institutions and other investors.

AMC's global Infrastructure Fund has raised US\$ 1.2 billion in equity commitments from commercial investors which will support an estimated US\$ 18 million of infrastructure projects in developing countries over the fund's five-year investment period. AMC's investors include sovereign wealth funds, pension funds, bilateral and multilateral development finance institutions and other investors. AMC will continue to build out its portfolio of regional, sectoral and specialist funds, bringing additional capital to developing countries in an effective, efficient and sustainable manner.

#### ii. Debt-Based, Right Timing Instruments

These instruments help to transform cash flows from infrastructure assets to provide a steady, predictable stream for development programs based on their liquidity needs and time horizons. Issuers and financial intermediaries, including the MDBs, have developed a range of new instruments targeted to specific markets and financing purposes, ranging from green bonds and vaccine bonds to the fast-growing Islamic Finance market. Different instruments have been designed to provide long-term flows, predictability, flexibility, or short-term bridging, to meet specific development finance needs.

An example is EIB's Europe 2020 Project Bond Initiative, which is a joint programme between the European Commission and the EIB. It is designed to stimulate capital market financing for infrastructure in the transport, energy and information and communications technology sectors. A pilot phase was activated in 2013 to test the project bond concept. The testing phase is funded by EUR 230m of EU budgetary resources from unused budget lines for existing programs. This should enable the EIB to provide finance to infrastructure projects worth more than EUR 4bn across the three sectors. Depending on their particular circumstances, LLDCs have access to many of these instruments.

#### iii. Financial Risk Management Instruments

These are initiatives which leverage public funds to create investment incentives for the private sector, through mechanisms that correct market failures, reduce sovereign risk and/or macroeconomic and climate driven vulnerabilities. Various forms of risk management approaches, including guarantees, derivatives, blended finance, pooled vehicles, project preparations facilities, etc., provide insurance protection for risk sharing or full risk transfer. An example is the EU-Africa Infrastructure Trust Fund (EU-AITF) which aims to increase investment in infrastructure in Sub-Saharan Africa by blending long term loans from participating financiers with grant resources. EU-AITF funding is available from two different envelopes: (1) A regional envelope promotes projects with a demonstrable regional impact, and (2) A Sustainable Energy for all (SE4ALL) envelope which supports regional, national and local projects targeting sustainability-related objectives. The AfDB is using blending resources through the EU-Africa Infrastructure Trust Fund.

#### iv. Results-Based Financing Instruments

Two benefits occur when funding is reserved until results are delivered. First, the risk of success/ failure may be transferred in part or in full to the entities conducting the work. This promotes accountability, ownership, improved management, and effectiveness of service providers. Second, it may help crowd in additional funding toward

the development objective. Results-based instruments include conditional cash transfers, pull mechanisms, performance-based funding, and impact investment. An example is the Global Partnership on Output-Based Aid (GPOBA). This is a multi-donor trust fund established in 2003, and administered by the World Bank, to develop output based aid (OBA) approaches across a variety of sectors including infrastructure, health and education. OBA subsidies are performance based and are designed to create incentives for efficiency and the long-term success of development projects. GPOBA's current donors are UK's Department for International Development (DFID), IFC, the Directorate-General for International Cooperation of the Dutch Ministry of Foreign Affairs, the Swedish International Development Agency and AusAid of Australia. Several LLDCs have benefitted from this Trust Fund already, including Armenia, Bolivia, Central African Republic, Chad, Lao PDR, Lesotho, Mali, Moldova, Mongolia, Nepal, Uganda, Uzbekistan, Zambia and Zimbabwe. However, the projects were not in the transport sector, but rather in IT, energy, water and sanitation and health.

#### 6. Outline of the process for seeking funding and financing for transport infrastructure projects

The project preparation process for LLDCs is not so different to that for other developing countries. In the first stage, an explanation is needed of why more roads and railways are needed in an LLDC, which is usually based on comparisons of national situation with global benchmark standards of density. For roads, railways, ports, airports and urban transport, connectivity and accessibility standards are also sometimes used, but these indicators are more difficult to specify and measure.

If a multi-variate analysis is being used, project viability needs to be based on the role of the

specific infrastructure in the national transport (and perhaps trade) strategy and the extent to which it is expected to increase volumes of projected traffic (and perhaps trade) flows. Their operating and maintenance costs, and the costs of servicing any debt and giving a return on investment are needed. Whichever assessment method is used, some form of prioritization of projects will need to be done, since they cannot all be implemented at once. The main prioritization constraint is financial, but human resources also impose constraints on how much can be done at the same time.

The way that a project is expected to be financed cannot be separated from the prioritization process, as each potential method of financing has different costs and is subject to different financing constraints. Even before a project has been subject to all the normal feasibility assessments (economic, social, environmental and financial) and has been deemed to be a priority, the outline consideration of how it might be financed will need to have started. It is this process which could be guided by the earlier sections of this report.

While private investment can be useful in releasing public funding for other projects, it tends to have higher overall costs and it also has its own set of financial constraints (most governments are subject to borrowing limits, and even the private investors have exposure limits to most types of investment).

If financing from one of the MDBs is expected to be used, preliminary contacts will need to have been made about five years in advance of any funds being released. This time is needed for the project to be included in the medium-term lending program of the chosen MDB and for the staff of the MDB to assess considered it would be a good use of time to undertake an assessment of the country and transport sector's readiness to undertake PPPs, as presented above.

#### Box 3: Comparison of financing strategies for two new airports in LLDCs

Two landlocked countries of comparable total GDP are close to opening new international airports for their capital cities, Bugesera International Airport (BIA) for Kigali, **Rwanda** and Khöshig Valley Airport (KVA) for Ulaanbaatar, **Mongolia**. Construction of both airports was envisaged as a priority in the national transport strategy and both had been under consideration for decades, KVA for rather longer than BIA.

Both proposals were subject to feasibility studies. That for KVA being undertaken by a member of the consortium involved in its subsequent design, and was updated when the design was substantially changed. That for BIA was undertaken by an independent consultant, and does not appear to have been updated when the cost significantly increased. KVA is designed to have 67% more passenger capacity (3 million compared to 1.8 million) at its opening than BIA. Both airport designs envisage two runways.

**Rwanda:** BUI is located 25km southeast of Kigali and has a connecting rail line proposed. It is designed and is being implemented with an aim of generating socio-economic development in Kigali, and other parts of the Eastern Province. The airport is further aimed at sustaining the development of Rwanda's aviation sector by backstopping the growth of RwandAir with new facilities and training opportunities. Passenger demand at the current airport was about 0.7 million per year in 2016, but increasing at about 10% per year.

Source: Various

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![](_page_30_Picture_14.jpeg)

BIA has an estimated cost of US\$ 818 million. A private company, Mota Engil Engenharia replaced China State Construction Engineering Corporation (CSCEC) as the key contractor for the project and later was awarded a 25-year concession to complete construction, finance and maintain and operate the airport.

Mongolia: The new airport for Ulaanbaatar was needed not due to lack of capacity but due to operational safety at the current airport (it has only a single 1300m runway), which is hemmed in on three sides by mountains and has frequent visibility and high wind closures (25% closure in peak month compared to International Civil Aviation Organization (ICAO) standard of maximum of 10%). Passenger demand has stagnated at about 1m passengers per year.

KVA construction has been completed 52 km south of the city. Originally hoped to open in 2016, the airport is now expected to receive its first air traffic in August 2018. It has two runways, road and rail terminals and a new 'airport city' with an envisioned population of up to 100,000.

In May 2008, a US\$ 385 million 40-year soft loan agreement (with 0.2% interest) was signed between the Government of Mongolia and the Japan Bank for International Cooperation (JBIC) to build the airport, but the final amount of the JBIC loan is US\$ 600 million and finances 90% of the total cost (the land access costs are not covered by this loan). Box 4 presents a strategy for the LLDCs for the process of optimizing the funding and financing lof their transport infrastructure projects.

## Box 4: A strategy to optimize the funding and financing of transport infrastructure in LLDCs

#### a. Clarify project objectives

- i. Confirm issues that the project will address, or which opportunities it will take advantage of
- ii. Confirm that the project is the most cost-effective way to achieve its objectives
- iii. Ensure that all interested agencies and transport operators are on-board with the project

#### b. Minimize costs of proposed projects

- i. Use appropriate design standards
- ii. Optimize routes and alignments
- iii. Optimize procurement methods
- iv. Integrate projects into corridors

#### c. Be very selective in which projects are proposed for funding and financing

- i. Only propose those with high potential to achieve national objectives
- ii. Start with those that have potential for private funding
- iii. Make sure that logistics of corridor of which project is part of will function well
- iv. Make sure that all complementary policies have been addressed
- v. Start preparing financing as soon as project is identified

#### d. Prioritize funding and financing sources

- i. First look to domestic funding
  - Use domestic private finance where possible and not prohibitively expensive, releasing public funding for non-commercially viable but economically justified projects (based on new 'Cascade' approach of MDBs)
  - If domestic private finance is not feasible, consider other domestic funding sources
  - Where possible, maximize leverage with international private and ODA finance
- ii. Consider international private finance
  - Create conditions necessary to attract international private finance:
    - A PPP unit in government or at least PPP policy guidance, a PPP law with supporting regulations, and technical support for preparation are needed
    - Where possible, use ODA to leverage private finance
- iii. Look to regional integration funds to help with project preparation
- iv. Be selective in the use of IFIs, MDBs and bilateral sources
  - Each has its own strengths and weaknesses; each has its development strategy for each borrowing country, and each has a lending limit; therefore select one where the project is compatible with the agency's strategy and the cost is within the lending limit
  - Bilateral sources tend to have more restricted objectives, but can be useful in supporting project preparation as well as investment
  - Some bilateral sources have a cultural history with the LLDCs which can be to the advantage of both
  - Often bilateral sources will finance projects that for one reason or another are not acceptable to IFIs and MDBs

#### e. Have all financing arrangements in place before implementing the project

Source: Various

#### 7. Assistance from the international community in the process of optimizing funding and financing of LLDC transport infrastructure projects

There are at least three concrete ways that the international community can further support LLDCs in their quest for funding and finance for their transport infrastructure projects.

## *i.* Update and expand the IMF sourcebook on sources of funding and finance

The sourcebook that the IMF provided in the lead up to the Third Financing for Development Conference in Addis Ababa, July 2015 recognized that MDFIs have "helped shepherd the growth of development financing solutions, including innovative finance, providing both intellectual and operational capacity. They are well placed to engage at the nexus of public and private financing for development, which is the focus of many innovative finance initiatives". It also found that they have the "ability to work with clients and partners to structure cutting edge initiatives."

The focus of the advice in the sourcebook is on private sector financing sourcing, and within those, innovative financing sources. What is less comprehensively covered in the sourcebook are the rapidly changing sources of the more conventional sources of funding and finance through concessional and market-rate loans, grants, and occasionally guarantees, from MDBs and bilateral official sources.

The IMF, or another IFI or NGO, should expand the sourcebook to cover more conventional sources and periodically update it. Further effort could be made to provide suggestions of how the various sources of funding and financing can best be utilized by the LLDCs.

# *ii. Provide training courses on the preparation of infrastructure projects and create a database*

Knowing how to design transport infrastructure projects to attract funding is a critical first step. However, there is a lack of specialized knowledge in LLDCs and other developing countries on how to do this. Although there are many courses in development finance, these are mostly trainings for analysts working for private financing sources or their advisors (investment banks and management consultants) rather than for advisors to governments, or staff of the governments themselves, of developing countries, including LLDCs, on how to design projects in such a way that they have a high probability of being funded, whether from public or private sources.

A valuable service that the MDBs, or even NGOs, could perform would be to compile a database of the few courses that are available for government officials on how to prepare bankable projects. The database could include certification and other relatively short courses, preferably including some form of practical experience.

Financing solutions are not always new, experimental, or game changing. Many of them involve the application of an existing finance instrument in a novel way. Instruments that have been around for a long time can be applied to new circumstances and for new purposes, such as the application of a microscopic fee to an extremely high volume activity. Nor is innovative finance unique, as the same economic result–for example, establishing a floor price to try to build a carbon market–may in specific circumstances be achieved through a number of different financial instruments (e.g. put options, auctions, bonds).

It is difficult for staff of governments of LLDCs to keep abreast of these innovative adaptions of conventional sources. One way that this knowledge could be better disseminated is for IFIs to provide periodic courses on financing of transport infrastructure and preparing bankable transport projects. Universities, or other institutions that provide trainings in public finance could also create and provide such courses.

Topics that could be looked for in such courses include:

- a. Determining objectives of transport infrastructure development
- b. Establishing a prioritized pipeline of viable projects
- c. Sources of finance for transport infrastructure projects
- d. Specific requirements of different funding sources
- e. Design of projects to maximize its chances of being funded
- f. Presentation of projects to potential funding sources
- g. Selection of funding source(s)

- h. Negotiating best financial and implementation terms for the project
- i. Implementing, monitoring and adapting project progress

#### iii. Advise on how to increase efficiency of infrastructure planning and investment and support experience sharing

As described in Section 2, the IMF demonstrates the potential for making public investment in transport infrastructure more efficient and provides descriptions of a number of measures that can be taken to achieve this. However, there is a wide gulf between reading what can be done and actually doing it. The measures proposed are largely based on what has long been known, whereas for many LLDCs the problem has been, and still is, being able to design and implement the measures. Given that this skill is present in some developing countries, there would be much to be gained from this experience being passed on to officials in LLDCs. International organizations can help support the sharing of experiences and successful practices with and amongst the LLDCs.

As presented earlier in this report, the scale of funding and financing that most will need to close their transport infrastructure gap and bring it to comparable global standards is daunting. To come anywhere close to reaching these standards, they will need to implement all of the cost-reduction procedures and project prioritization measures proposed here, together with maximizing the use of all available funding and financing resources.

The measures to address the funding gap are of two types: i) making better use of what domestic funding and finance is already available, and ii) making best use of the many international financial resources that are now available, mostly from various forms of ODA but increasingly from the private sector, as well as the IFIs and MDBs and new innovative funds and financing solutions. The extent to which an LLDC can access the many funding and financial resources depends, among many factors, on the global region in which it is located; the stage of development of its financial sector; and its per capita income and total GDP.

The principal recommendation in relation to making better use of funds is to:

- i. Apply the IMF approach to Making public investment more efficient. If LLDCs could reach best practice standards, this could increase the quantity of transport infrastructure than can be built with current funding and financial resources by up to 30%.
- ii. Improve the institutional processes on the selection and implementation of infrastructure projects, with the view to optimize the allocation of road investment between new construction and maintenance to avoid accumulated deferred maintenance that results in more costly reconstruction.
- iii. Consider reviewing national trade strategies, with the view to include trade diversification to products that can tolerate the cost of air transport and/or to those that can be traded regionally, and then choosing the most costeffective transport projects that will support that strategy.

Depending on the circumstances of each LLDC, there are several ways that domestic financing could be increased. The main recommendations are to:

![](_page_32_Figure_12.jpeg)

# CONCLUSIONS & RECOMMENDATIONS

- iv. Allocate greater share of public revenue to infrastructure, if possible.
- v. Make better use of road funds and transport user charges (such as tolls), so that there is less need for public revenue to maintain road infrastructure and keep it in good condition therefore releasing funds for new investment, and increasing transport revenues for selffinancing of investment where appropriate.
- vi. Consider making infrastructure investment attractive to national pension funds, sovereign wealth funds (and possibly diaspora funds if they exist).

Similarly, to attract more international financing, the main recommendations are to:

- vii. Implement a project prioritization process, so that the projects presented to bilateral and multilateral finance institutions are those that already have a strong economic, social, environmental and political justification.
- viii. Consider private financing as an option before public funding. Increasingly MDBs will only finance viable projects for which full private funding is not feasible, therefore more projects will be financed as PPPs.
- ix. Where appropriate, implement system of corridor management, to improve coordination between bilateral and multilateral sources and through this, eventually, make corridor investments more attractive to them.
- x. Draw on resources of regional development banks and regional integration funds. To take advantage of most of these funds, any LLDC project needs to have regional benefits beyond its own borders and preferably beyond its transit neighbour.
- xi. Review carefully the obligations resulting from using regional integration funds to complement MDB funding.
- xii. Maximize the use of technical support from specialized agencies and funds, including the Global Infrastructure Facility, for project preparation with a view to project design being more acceptable for private investors and enhancing their negotiating position with private partners.

- xiii. Review all the potential sources of multilateral and bilateral funding. In addition to traditional sources, there are now many specialized funds with specific social or environmental objectives, that can be used to supplement financing from conventional sources.
- xiv. Before considering PPPs for specific projects, undertake a diagnostic of country's readiness to implement PPPs (PPIAF and UN ESCAP offer examples) and implementing the measures indicated therein.
- xv. Make investment climate for transport infrastructure more attractive to PPP investors. This can be done by creating a PPP unit in government, developing PPP policy guidance, and/or adopting a PPP law with supporting regulation.
- xvi. Approach and involve potential new bilateral and multilateral sources (such as the AIIB, Silk Road Fund, South-South Cooperation funds) as early as possible in project identification and preparation, to increase the chances of making the projects attractive to them.
- xvii. Take into account potential climate change impacts to ensure the environmental sustainability of the transport infrastructure projects and consider climate finance to cover any additional incremental costs.

In addition to the measures that can be taken by the governments of the LLDCs themselves, MDBs, bilateral and multilateral lending agencies and other international organizations also have a fundamental role in making funding available to them for infrastructure projects and providing technical assistance and supporting capacity building in LLDCs. This includes the following:

- xviii. Give prominence to the facilities provided to support project preparation, such as technical support and tools towards development of bankable projects in LLDCs.
- xix. Support experience sharing amongst LLDCs and with other developing countries on how to develop bankable infrastructure project and access innovative financing mechanisms.
- xx. Expand and maintain updated the catalogue of all the various financing solutions that are available to developing countries, including LLDCs.
- xxi. Disseminate information on academic and training courses on the design and funding and financing of infrastructure projects in developing countries, with special reference to LLDCs. Given the large potential demand, the focus should be on bringing that demand to the attention of universities and training agencies with the potential for offering such courses.

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#### Annex A: Categorization of LLDCs

	Country	Region	Income Group
1	Lao PDR	East Asia	Lower Middle
2	Mongolia	East Asia	Lower Middle
3	Armenia	Eastern Europe and Central Asia	Lower Middle
4	Kyrgyzstan	Eastern Europe and Central Asia	Lower Middle
5	Moldova	Eastern Europe and Central Asia	Lower Middle
6	Tajikistan	Eastern Europe and Central Asia	Lower Middle
7	Uzbekistan	Eastern Europe and Central Asia	Lower Middle
8	Azerbaijan	Eastern Europe and Central Asia	Upper Middle
9	Kazakhstan	Eastern Europe and Central Asia	Upper Middle
10	Macedonia, TFYR	Eastern Europe and Central Asia	Upper Middle
11	Turkmenistan	Eastern Europe and Central Asia	Upper Middle
12	Bolivia	Latin America	Lower Middle
13	Paraguay	Latin America	Upper Middle
14	Afghanistan	South Asia	Low
15	Nepal	South Asia	Low
16	Bhutan	South Asia	Lower Middle
17	Burundi	Sub-Saharan Africa Eastern and Southern	Low
18	Ethiopia	Sub-Saharan Africa Eastern and Southern	Low
19	Malawi	Sub-Saharan Africa Eastern and Southern	Low
20	Rwanda	Sub-Saharan Africa Eastern and Southern	Low
21	South Sudan	Sub-Saharan Africa Eastern and Southern	Low
22	Uganda	Sub-Saharan Africa Eastern and Southern	Low
23	Zimbabwe	Sub-Saharan Africa Eastern and Southern	Low
24	Lesotho	Sub-Saharan Africa Eastern and Southern	Lower Middle
25	Swaziland	Sub-Saharan Africa Eastern and Southern	Lower Middle
26	Zambia	Sub-Saharan Africa Eastern and Southern	Lower Middle
27	Botswana	Sub-Saharan Africa Eastern and Southern	Upper Middle
28	Burkina Faso	Sub-Saharan Africa Central and West	Low
29	Central African Republic	Sub-Saharan Africa Central and West	Low
30	Chad	Sub-Saharan Africa Central and West	Low
31	Mali	Sub-Saharan Africa Central and West	Low
32	Niger	Sub-Saharan Africa Central and West	Low

Source: World Bank country classification, 2018 fiscal year

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#### Annex B: List of Transit Developing Countries

	Country	Region
1	Algeria	Middle East and North Africa
2	Angola	Sub-Saharan Africa Central and West
3	Argentina	Latin America
4	Bangladesh	South Asia
5	Benin	Sub-Saharan Africa Central and West
6	Brazil	Latin America
7	Cambodia	East Asia and Pacific
8	Cameroon	Sub-Saharan Africa Central and West
9	Chile	Latin America
10	China	East Asia and Pacific
11	Congo, Dem. Rep.	Sub-Saharan Africa Central and West
12	Cote d'Ivoire	Sub-Saharan Africa Central and West
13	Djibouti	Middle East and North Africa
14	Eritrea	Sub-Saharan Africa Eastern and Southern
15	Ghana	Sub-Saharan Africa Central and West
16	Guinea	Sub-Saharan Africa Central and West
17	India	South Asia
18	Iran, Islamic Rep.	Middle East and North Africa
19	Kenya	Sub-Saharan Africa Eastern and Southern
20	Mozambique	Sub-Saharan Africa Eastern and Southern
21	Myanmar	East Asia and Pacific
22	Namibia	Sub-Saharan Africa Eastern and Southern
23	Nigeria	Sub-Saharan Africa Central and West
24	Pakistan	South Asia
25	Peru	Latin America
26	Senegal	Sub-Saharan Africa Central and West
27	Somalia	Sub-Saharan Africa Eastern and Southern
28	South Africa	Sub-Saharan Africa Eastern and Southern
29	Tanzania	Sub-Saharan Africa Eastern and Southern
30	Thailand	East Asia and Pacific
31	Тодо	Sub-Saharan Africa Central and West
32	Turkey	Eastern Europe and Central Asia
33	Uruguay	Latin America
34	Vietnam	East Asia and Pacific

## Annex C: Funding and financing for LLDCs in different regions

How LLDCs in each region, and even each LLDC, make use of the many funding and financing sources mentioned in the main text depends to a large extent on the current state of development, funding and financing of their transport infrastructure. While Section C of the main text gives indications of the main sources of funding and financing, this Annex gives some detail at the country level of how LLDCs have been making use of the various sources of funding and financing. The Annex is not intended to be comprehensive but indicative.

#### East Asia

Mongolia has the benefit of being included in Central Asia Regional Economic Cooperation (CAREC) corridor 6 which includes its main trade corridor linking Ulan Bataar south via Zamiin Uud to Beijing and Tianjin and north via Altanbulag–Kyakhta to Russia and Europe. These main trade corridors have both road and rail infrastructure, most now in good condition (the paved road from Ulaanbaatar was financed through a loan from ADB, which also financed upgrading of the paved road north from Ulaan Bataar to the Russian border. The connecting roads in China and Russia are both paved. There is a change of rail gauge at the Mongolian border with China. China has invested heavily in other rail accesses to the Mongolian border for the import of Mongolian coal and iron ore, and Mongolia has recently changed its law to allow the construction of standard gauge (the same as Chinese gauge) railways in Mongolia (previously only Russian broad gauge was allowed). The expectation is the mostly Australian and Canadian mining companies will finance the construction of lines to connect their mines to the Chinese railways that reach the Mongolian border. Mongolia also benefits from competition between China and Japan for funding of its infrastructure, with Japan providing finance for the new international airport for Ulaanbaatar, almost ready to open and potentially for a second rail access to the 6 billion tons of coal at Tavan Togoi. It also benefits from support from the ADB in developing its trade corridors.

Lao PDR currently depends almost exclusively on road transport, supported with inland waterway transport on the Mekong and its tributaries, but as yet no railway. Several road projects have been proposed as PPP projects and Lao has a broadly positive experience of PPPs in energy and other sectors. Lao has been progressive in its approach to transport funding and financing, with only about 7% of the road sector investment and maintenance coming from the national budget, with 22% coming from the road fund and 71% from ODA. Several highway projects including upgrading of the main national highway 13 have been proposed as PPPs, building on positive experiences of PPPs in other sectors.

Financing of a long-awaited US\$ 6 billion rail link to China was agreed at the end of 2016 (Janssen 2017). It will be built and operated by a joint venture Lao-China Railway Company in which the Lao government has 30% equity share. The initial investment of US\$ 2.38 billion will be funded in the same proportions as the equity shares, but Lao will borrow 65% of its share through a loan from the Export Import Bank of China. The Chinese share of construction costs will be financed by Chinese banks. This arrangement is typical of many of the rail projects throughout the world (including several in LLDCs) that are being supported by China.

There is no equivalent of the road fund to support development of the inland waterways network and until now MDBs and bilateral donors have not seen this as an important part of the transport sector. The volumes of current and potential waterway transport are not enough to support full private investment in the waterway or river ports, but some form of PPP with substantial public investment and strong guarantees for private investors might be feasible given Lao's well developed PPP sector.

#### Eastern Europe and Central Asia

Six of the nine LLDCs in this region (Azerbaijan, Kazakhstan, Kyrgyz Republic, Afghanistan, Tajikistan, Turkmenistan and Uzbekistan; plus Afghanistan and Mongolia from other parts of Asia) are CAREC countries and benefit from the support this gives them in accessing financing of their transport projects. This support applies to the infrastructure of the CAREC corridors but not necessarily to their transport infrastructure outside of those corridors. Some LLDCs have greater domestic resources and can better afford financing from MDBs, as well as the newer bilateral sources and private investors. The other LLDCs will need to continue relying on MDBs for most of their transport investment and although the lending conditions from some of the newer bilateral sources are not as stringent as those from more conventional sources, the financing will still have to be amortized.

About half of the region's LLDC have road funds, but they have not been as successful as their promise and some (such as Azerbaijan) have been discontinued. Unlike road funds in most countries that are financed through a fuel surcharge, those in Central Asia tend to be sourced from a turnover tax on transport companies and/or a sales tax on vehicle and spare parts sales. In September 2017, the ADB and the World Bank proposed establishing a municipal infrastructure fund in Kazakhstan. This will supplement the country's Infrastructure Fund established in 2015 with mostly private equity.

What the funds in Asia do have in common with the rest of the world is that when they are well managed, they cover most of the costs of road maintenance and release funds for new construction.

These LLDCs will be able to use their access to the new bilateral (mostly Chinese) sources to supplement that from their own budgets and MDBs to bring their national transport networks to benchmark standards. So far little advantage has been taken of these new resources other than for railways. However, **Tajikistan** was the recipient of one of the firs AIIB transport loans (US\$ 27.5 million) to support its Dushanbe Uzbekistan Border Road Improvement project (co-financed with US\$ 62.5 million from EBRD). The road is part of the CAREC Corridor 3 that spans almost 7,000 km from the Russian Federation in the north to the Persian Gulf in the south, its two branches crossing six LLDCs.

Kazakhstan has benefited from a China Development Bank load for its Astana light rail system and from private Chinese equity investment (24%) from China Ocean Shipping (Group) Company (COSCO) to develop a Special Economic Zone on its border with China at Khorgos. Progress on a China-Kyrgyzstan-Uzbekistan railway has been delayed not by finance but by lack of agreement on the gauge. Building a railway from China to Uzbekistan through Kyrgyzstan has been discussed for decades. A recent Chinese proposal was to build it at standard gauge (1435mm), with the Kyrgyz section being 268km. The Kyrgyz proposal was for a longer route of 380km through its country but at a lower cost by avoiding so many tunnels and viaducts-and all at broad 1520mm Russian gauge.

Azerbaijan which has about a 26% share of the AIIB equity has not benefited from the Bank's funding for a transport project (although it did receive US\$ 600 million towards a gas pipeline project). However, Turkmenistan, which on principle of neutrality has not yet become an equity holder, was one of the first countries in Central Asia to benefit from one of the Bank's transport loans.

These six LLDCs all have substantial railway networks that are close to or already above the density per km<sup>2</sup> of their income per capita peers. They also have higher than benchmark road networks in terms of length per km<sup>2</sup>, but not in terms of capacity or quality. Finance from new bilateral sources tends to be for network expansion or upgrading, therefore funding for improving quality will need to come mostly from domestic resources.

The other three LLDCs in the region have close associations with the EU and benefit from that status. **Armenia** has a cooperation agreement. It does not yet have a road fund but is planning to introduce one in the near future.

**Moldova** has an association agreement with the EU through which it has access to financial support of EU institutions and banks. As an example, with support from the EBRD, a PPP joint venture logistics hub has been created at the international free port of Giurgiulesti on the river Danube. The hub provides waterway, road and rail access to much of Europe and Russia. In 2017 Moldova revised its road maintenance fund to allocate more resources to rehabilitation.

Former Yugoslav Republic of Macedonia is a

candidate EU country and as such is receiving substantial financial support to bring its transport infrastructure to EU standards. Its only experience so far of a PPP in transport is the concession for airport development and operation. In Macedonia, public expenditure on transport infrastructure (including construction and maintenance) averaged only 1% of GDP between 2005 and 2013, but in 2014-2018, it is expected to reach 2% to 3% of GDP. Funding for road maintenance comes from the revenue of tolls charged on all major highways, from the state budget and from an income tax levy. Despite this revenue, only about one third of national roads are in good condition and the World Bank recently estimated that recovering the maintenance backlog would cost almost US\$ 100 million. PPPs have been used for airports, but as of 2016 no other transport PPPs had been implemented. Three major on-going transport investments are mostly financed by the EBRD, the EIB and the China EXIM Bank.

These three LLDCs have good access to European and MDB funding but also have experience of PPPs

even though the latter have not been much used. For future major transport investments PPPs provide the greatest potential, and road maintenance should continue to be funded by user charges that feed into road funds.

#### South Asia

The three LLDCs in South Asia are very different to each other and do not fit easily into a common framework of transport infrastructure financing. Bhutan has a small area (only 38,900km<sup>2</sup>), Nepal is three times larger and Afghanistan is five times large. Afghanistan has a relatively low paved road density (18km per 1,000km<sup>2</sup>) while Bhutan and Nepal have densities about four times higher. As with the LLDCs in Eastern Europe and Central Asia, although the road network density of **Bhutan and Nepal** comes close to the benchmark density standards, they are far from capacity and quality benchmarks. Nepal has had a road fund for about a decade and Bhutan is in the process of creating one.

An **Afghanistan** Infrastructure Trust Fund was set up in 2010. It provides an opportunity for bilateral, multilateral and individual contributors to partner with the ADB in financing infrastructure investments. So far the fund has received bilateral support from Japan, the UK and the US but not any identified private investors.

**Nepal** has an advanced PPP framework in place and has implemented 32 PPP projects, but only one in transport (for a road tunnel). A proposed PPP for the Kathmandu-Tarai Fast Track highway is progressing very slowly and faces many remaining obstacles before it can be implemented. **Bhutan** has only implemented one PPP project and that was for an electricity not a transport project.

Given the low level of transport demand density, PPP projects are unlikely to be viable in these LLDCs other than possibly in urban areas. With the possible exception of airports, transport infrastructure investment is likely to continue to depend on credits and loans from MDBs for the foreseeable future.

#### South America

Both Bolivia and Paraguay have experience of private operation of transport infrastructure and services. **Bolivia's** state owned and operated railway was privatized in the mid-1990s and its airports concessioned at about the same time. All are still operating, although the network lengths have been significantly reduced. A private mineral ore railway linking Bolivia to the Chilean port of Antofagasta has been in continuous operation since 1873. Its current river port of Quijarro has always been private. Bolivia has not yet used PPP for a road project.

**Paraguay's** short railway link to Argentina was closed when part of the route was submerged following the construction of the Yacyretá dam. A new alignment was built by the binational dam operating agency and opened to freight traffic in 2012. Three railway PPPs are under consideration in Paraguay (as of end 2016). A concession for the international airport at Asuncion was due to be awarded in 2017 but has been delayed. Paraguay's river ports are now all privately funded and operated as are the river services that use them. In 2016 Paraguay awarded its first concession for a toll road, and is likely to use the same method of financing for future road projects.

Both countries make extensive use of inland waterways for their international trade, so their transit and infrastructure investment issues are rather different to those of most other LLDCs. Investment in upgrading and maintaining inland waterways is much less costly per kilometer than equivalent investment in road or rail infrastructure, and investment in river ports tends to be similar to that for rail terminals performing similar functions. Road transport terminals are rather different as they do not generally deal with the same bulk products in the same volumes as waterways. Container handling equipment is similar for all three modes, but storage costs tend to be lower for river ports as they are usually in locations where land costs are lower. However, volumes transported by inland waterways are generally less than for rail although the tons per consignment (per train load or per barge load) are comparable. The Paraguay river in South America is one of the exceptions as it can accommodate barge trains of 10,000 tons or more for long distances, much larger than the largest trains operating to any LLDCs. One of the main disadvantages for inland waterway transport is the cost of connectivity of river ports to the locations where freight originates (mostly agricultural production and mining areas) or is consumed (mostly large urban areas) and the river ports. A recent study for the World Bank found that the cost of an average of 160kms of land access to the river ports in Paraguay was higher than the cost of river transport for the 1,600km to the deep-water ports of Rosario in Argentina and Nueva Palmira in Uruguay (Gauthier, Carruthers and Placci 2016).

**Paraguay** has significant pension fund assets, representing more than 14% of GDP that could be utilized to help finance transport infrastructure (Keim 2017). The revenue from these investments not only pays pensions but also part of the costs of a national health service. The pension funds primarily hold deposits in the banking system, where their investments in certificates of deposit investments are a major source of long-term liquidity to the banks. To a lesser extent, they have other investments, including bonds issued by the Agencia Financiera de Desarollo (AFD)<sup>53</sup>. One pension fund, for example, only invests in these bonds. Smaller pension funds have various investments in the banks and loan portfolios. Through the AFD, the largest pension funds make some contribution to transport infrastructure, but it mostly invests in small and medium enterprises, education and industrial equipment.

LLDCs in South America have a greater experience of private investment in transport than other regions, and with few exceptions it is now the preferred source of financing for their transport infrastructure. Other sources will continue to be the MDBs, supplemented by regional funds such as CAF (Development Bank of Latin America) and national budgets, for projects that cannot be made commercially viable.

#### Sub-Saharan Africa East

As with other regions, there is a wide variation in GDP per capita, geographic size and population between the eleven LLDCs in this region. Botswana has the highest per capita GDP but has the third smallest population while being of about average geographic size; Ethiopia has the largest population but less than half of the regions average per capita GDP; Swaziland and Rwanda have about the same size, but Swaziland has a GDP per capita four times greater. Swaziland is less than 200km from a deep-water port while Zambia and Rwanda are ten times further; six of the eleven have a railway, the other five do not; Burundi and Swaziland have paved road densities almost 200 times greater than South Sudan; seven of the eleven have road funds, the other four do not.

These differences impact on the LLDCs' need for investment in their transport infrastructure and their access to different sources of finance to meet those needs. For example, **Swaziland** has the highest density of roads and railways and it also has the All eleven have access to MDB finance but the six with low per capita income have access to concessionary finance; those with mineral resources are more attractive to some new bilateral sources. The four LLDCs that are covered by TradeMark East Africa have additional access to technical assistance for assessing trade facilitation (including transport investment) which can make it easier for them to access some bilateral and MDB funding. Despite Botswana's good access to private sources, the government remains the primary financier of this infrastructure.

Some transport infrastructure projects in the LLDCs of the region have been subject to PPPs and concessions, including railways in all those LLDCs that have railways other than **Botswana**<sup>53</sup> and the new airport for **Rwanda**. In 2016, **Uganda** started the process for concessioning its Port Bell and Jinja port on Lake Victoria under PPPs using a 'landlord' port model.

China has made financing available for airport expansion in **Uganda** and **Zambia** (both via Exim Bank of China) and for railways in **Ethiopia**, **Uganda** and **Zambia**. As an example, Uganda's Standard Gauge Railway (SGR) is receiving a loan of about US\$ 2.9 billion from the state-financed China Exim bank for a railway linking Kampala to join with the Kenya SGR at the border town of Malaba.

Chinese finance is also responsible for construction of the recently opened SGR Addis Ababa to Djibouti line; 85% of the Ethiopia portion and 70% of the Djibouti portion were funded by loans from the Exim Bank of China. Additional finance came from the China Development Bank and the Industrial and Commercial Bank of China. This line was constructed by the China Railway Construction Corporation (CRCC) and the China Railway Group (CRG). The total cost of the line has been variously estimated at between US\$ 3.2 billion and US\$ 5.9 billion, much of the difference possibly attributable to the exclusion of traction and rolling stock from the first estimate and its inclusion in the second.

The US\$ 4.4 million 912km binational (Malawi and Mozambique) integrated Nacala Logistics Corridor Project has been largely financed by the Brazilian mining company (Vale) with support from Mitsui of Japan (which will be the eventual user of the coal transported through the corridor). The AfDB is also investing in the corridor, including border crossings and training and facilitation for small businesses so they take advantage of the opportunities offered by the new railway.

LLDCs in East Africa benefit from the efficient functioning of trade corridor management committees, such as those for the Northern and Central Corridors. In addition to overseeing corridor operations, they are able to prioritize corridor investment projects, and be the recipient of grants from MDBs to support the functioning of the corridors. CAREC performs a similar function in Central Asia, but with a rather different perspective as it is more concerned with overall regional integration and does not work at such a detailed operational level as the management committees of East Africa. However, CAREC does have the direct institutional participation of MDBs and so is in a better position to determine financing sources (Kunaka and Carruthers 2014).

The five LLDCs in the Sub-Saharan Africa West in a better position to determine financing sources have the smallest within-group variation of all the (Kunaka and Carruthers 2014). regions. They have the lowest average per capita GDP of all six regions. As a group, they have the Since Botswana's law was changed in 2001 to create next lowest density of paved roads of all the regions a fully funded compulsory civil service pension fund, after East Asia, and only one of them has a railway, its assets have increased to almost US\$ 7 billion. the lowest percentage share of all the regions. This with most of this invested outside of Botswana. is therefore the region in which the LLDCs face the Supporters of the use of part of these assets to be greatest challenges in financing their infrastructure invested in domestic infrastructure argue that this development and bringing the quantity of their would allow the pension funds to better contribute to transport infrastructure to global benchmark the development of the country without putting the standards. pensions themselves at risk.

**Zimbabwe** continues with efforts to improve road and rail infrastructure at the national level through rehabilitation and construction of new ones. In 2017, the government commissioned the dualization project of the Beitbridge-Harare-Chirundu route. This is a project that is estimated to cost more than US\$ 1 billion and is being implemented by Geiger International of Austria, which has been contracted by the government through a 25-year build, operate and transfer model. All of the infrastructure projects that Zimbabwe is implementing are largely financed by domestic resources. The Zimbabwe National Roads Administration (ZINARA) is responsible for managing the Road Fund established by the Roads Act of 2001. The Road Fund resources come from road user charges, appropriations from parliament and grants. The main source of ZINARA funds are the vehicle licence fees (30%), fuel levy (28%), toll roads (21%) and transit fees (19%).

Although East Africa has been slower to upgrade its transport infrastructure, the mineral boom and its associated trade growth has made many projects feasible for private investment that governments did not have the resources to fund. The presence of road funds helps release government funding for the public equity contribution to the concessions. The new transport infrastructure projects being funded from new bilateral sources will also contribute to trade and economic growth, but the financial consequences are largely unknown as with few exceptions, the terms of the finance and the projected operating costs and revenues are not known. Private funding is likely to become the preferred source of financing transport investment, but with support from MDBs as the AfDB has done for the Nacala Corridor.

#### Sub-Saharan Africa West

The trade profile of West Africa (as represented by Economic Community of West African States (ECOWAS) is little diversified, as the region primarily exports a limited number of raw materials, and imports industrialized products and, increasingly, food items from outside the region (Torres and Seters 2016). Intra-regional trade in ECOWAS is low. The low level of regional trade within West Africa makes its LLDCs more dependent on access to deep-water ports for their international trade. As with other regions, it has the potential to increase to the

second highest per capita GDP in the group-and it is the closest to a deep-water port. Ignoring the capacity and quality of transport networks and based only on the density and distance criteria, it has the lowest need to invest in transport infrastructure and it depends least on its transit neighbors to access a deep-water port. In contrast, **Rwanda** has no railway and only average paved road density, is the second furthest from a deep-water port and has less than half the regional average GDP per capita.

<sup>&</sup>lt;sup>53</sup> Development Finance Agency

benefit of its LLDCs which are most prejudiced by the current trade profile.

With the exception of the Abidjan Lagos Corridor (and then only to a limited extent), West African LLDCs do not benefit from the presence of corridor management committees, or of an agency such as CAREC that is specifically charged with supporting regional economic cooperation through expanding trade and improving competitiveness through programs of regional projects and initiatives in economic corridor development. Where the corridor management role has been provided by a broader regional agency (such as CEMAC and the CEMAC Transport-Transit Facilitation Project)<sup>54</sup>, the outcome has not been as successful as when the role has been played by a management committee. The disadvantages of not having a corridor agency are apparent in the functioning of many of the regional trade corridors, for which the many MDBs and bilateral contributors tend to work to their own agendas, without the day to day coordination that specific corridor management committees or regional corridor agencies such as CAREC can provide (World Bank 2015).

The lack of coordination is also apparent in the attempts to build a new 2,700km regional rail network, that would link three of the region's LLDCs to five deep-water ports. The current version of the project

would make use of existing narrow-gauge track combined with more than 1,000km of new track. The project has stalled as a result of conflicts between the seven participating countries and the mining companies that would mostly benefit over how it would be financed, contracted and operated. A recently proposed solution to break the impasse on progress is that it would be an all new standard gauge track financed from Chinese sources. Another solution is to build separate railways, with Burkina Faso coordinating with Cote d'Ivoire and the concessionaire of the current railway linking the two countries (Sitaral) to upgrade and extend the current railway.

Most of the finance for transport infrastructure in these LLDCs still comes from the MDBs and conventional bilateral sources, supplemented by allocations from national budgets. Four of the five have road funds, releasing some budget allocation for new investment. China is making significant investment in West African railways, not only those in its LLDCs and not only in freight railways. A major upgrade of the 1,200km railway linking Mali to the deep-water port of Dakar in Senegal is being financed through Chinese agreements with both countries for a total cost of about US\$ 1.5 billion, after several attempts to revive the existing line though conventional concessions failed.

#### Annex D: Trade corridors

It is easier to attract support from regional integration funds for projects that form part of international trade corridors. For projects in these corridors it is relatively straightforward to demonstrate that they comply with the conditions for regional integration funds, including the number of countries directly involved in the project, and the distribution of the project benefits between various countries.

Four groups of trade corridors provide connectivity to groups of LLDCs in West Africa, East Africa, Central Asia and South-East Asia. LLDCs in South Asia and South America are also linked to ports by trade corridors but these do not have the formal institutions of those in other regions.

West and Central Africa: The six main trade corridors of West and Central Africa give access to Mali, Niger, Burkina Faso, Chad and Central African Republic (Figure 10). There are no formal estimates of the total investments made in these corridors as there is no agency with responsibility for all the corridors.

#### Figure 11: East Africa Trade Corridors

![](_page_39_Figure_10.jpeg)

Source: Stratfor Global Intelligence and Hispano-African University of International Business

![](_page_39_Picture_14.jpeg)

#### Figure 10: West and Central Africa Trade Corridors

Source: Logistics Cost Study of Transport Corridors in Central and West Africa, Nathan and Associates for World Bank, 2013

**East Africa**: The main trade corridors of East Africa (Figure 11) are the Northern Corridor from Mombasa via Nairobi (Kenya) to Kampala (Uganda), Bujumbura (Burundi) and Kigali (Rwanda), with South Sudan becoming part of the Northern Corridor Agreement in 2012; and the Central Corridor from Dar es Salaam via Dodoma (Tanzania) to Bujumbura and on to Kigali and Uganda. Both corridors also give access to Kivu province in DRC. There is third North South Corridor that links the port of Durban to DR Congo and the Copperbelt in Zambia and has spurs linking the port of Dar es Salaam and the Copperbelt and Durban to Malawi. The corridor links seven countries: South Africa, Botswana, Mozambique, Zambia, Zimbabwe, Tanzania and Malawi.

<sup>&</sup>lt;sup>54</sup> http://documents.worldbank.org/curated/en/622731468194327747/pdf/38463.pdf

**Central Asia**: CAREC designated six corridors, each with several route variations (Figure 12). They link the region's key economic hubs to each other, and connect the landlocked CAREC countries to other Eurasian and global markets. The Implementation Action Plan for the CAREC Transport and Trade Facilitation Strategy presented an investment plan to upgrade all six transport corridors to international standards by 2017.

CAREC is a development partnership of eleven countries, seven of which are landlocked (and an eighth, China, has a large landlocked province) and six multilateral institutions. While not a regional fund, it acts as the main center for coordinating and facilitating the funding of regional transport infrastructure in Central Asia. The main purpose of CAREC Program is to promote economic development through cooperation, and thus accelerate economic growth and reduce poverty.

Development of the region is based on six CAREC corridors that link the region's key economic hubs to each other, and connect the landlocked CAREC countries to other Eurasian and global markets.

#### Figure 12: CAREC Trade Corridors

The Action Plan of the first development phase included investment plan to upgrade the 'hard and 'soft' infrastructure of all six transport corridors to international standards by 2017.

The corridors were selected based on assessment of:

- current traffic volume,
- prospect of economic and traffic growth,
- capacity to increase connectivity between economic and population centers,
- potential to mitigate delays and other hindrances, and
- economic and financial sustainability.

By the end of 2016, more than US\$ 22.6 billion had been invested in the six CAREC trade and transport corridors, more than 77% of the total CAREC investment. By 2020 the CAREC road network is expected to reach almost 30,000km.

Looking beyond 2017, the CAREC Transport and Trade Facilitation Strategy 2020 (TTFS 2020), focuses on the development of an effective, efficient, sustainable, safe, and user-friendly multimodal corridor network to expand trade and accelerate economic growth.

![](_page_40_Figure_13.jpeg)

Source: CAREC Corridors

The TTFS 2020 recognized that fully developing the CAREC transport infrastructure will continue well beyond the 2020 planning horizon, given the large investments required. In this new phase of development there is evidence of a changing focus towards private project finance, but a recognition that many proposed road and particularly railway projects, are not yet capable of attracting financing from purely commercial sources. They continue to depend on funding from governments and ODA.

Their formal access to financing of its member MDBs gives the CAREC LLDCs an advantage over those in other regions which have to address the funding of each project from the ground up.

South East Asia: Corridor development in South East Asia has followed a rather different path, largely through the presence of strong regional agencies such as ASEAN and the Greater Mekong Subregion program under the auspices of the ADB. The six Greater Mekong Subregion (GMS) countries adopted the economic corridor in 1998 to accelerate subregional development. Three corridors were designated as flagship programs under the Ten-Year GMS Strategic Framework, 2002–2012.

This framework was designed to ensure complementarity of measures related to trade and transport facilitation, border and corridor towns development, investment promotion and enterprise development. Priority road projects served as the backbone of the corridors, which progression over time from transport to economic corridors.

![](_page_40_Figure_20.jpeg)

## Figure 13: Greater Mekong Subregion Economic Corridors

![](_page_40_Figure_22.jpeg)

Source: Review of the Configuration of the Greater Mekong Subregion Economic Corridors, 21st GMS

The GMS Transport Sector Strategy proposed expansion to network of nine corridors, but with the original three remaining the priority. Priority infrastructure projects worth around US\$ 11 billion have either been completed or are being implemented.

![](_page_41_Picture_0.jpeg)

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![](_page_41_Picture_2.jpeg)

![](_page_41_Picture_4.jpeg)

![](_page_41_Picture_5.jpeg)