Scaling Up Private Sector Participation in Road Asset Management in Sub-Saharan Africa

November 25th 2019

Foreword

This report is based on Road Fund (RF) data collected between October 2018 and May 2019 – these data have been compiled in a digital folder available separately. The data collection process has been difficult and time-consuming, except for the information regarding the few Road Funds that timely publish an annual report on their website. The authors are confident, however, that the data obtained are representative and support the conclusions and recommendations of the report. This report addresses two distinct but intersecting agendas: (1) how to strengthen RFs, and (2) how to scale up private sector financing in the road sector in Sub-Saharan Africa.

Acknowledgments

This study was conducted by a team of consultants led by Alain Labeau and comprised of Julien Morel, Gilles Veuillot, Pablo Goulemot, and Youssouf Sakho. The Team benefited from the input of Eunice Wahome, World Bank intern. The Team worked under the guidance of a WBG steering committee led by Federico Antoniazzi (WB). The Team would like to acknowledge the assistance of, and comments and suggestions made by Pierre Pozzo di Borgo, Daniel Pulido, John Graham, and Elsabeth Tedros (IFC); Nicolas Peltier, Daniel Benitez, Pankaj Gupta, Jean-François Marteau, Ben Gericke, Mustapha Benmaamar, Danye Aboki, Marc Navelet, Kulwinder Rao and James Markland (WB); Patrick Rugumire and Jean Kizito Kabanguka (AfDB); Ibou Diouf (SSATP) and Philippe Neves (PPIAF). The report was edited by Adam Jankowski (WB). This work would not have been possible without the collaboration of the African Road Maintenance Funds Association (ARMFA) whose President, Souleymane Traore, kindly invited the Team to their 17th General Assembly held in Namibia. The team wishes to express its gratitude to the many heads of Road Funds who shared information at this venue. Finally, the Team would like to acknowledge Abiy Woretaw, Deputy General Manager of the Ethiopian Toll Roads Enterprise, and Allan Munyua, East Africa Director of Meridiam for their time and sharing of insightful information. The views expressed are those of the authors and not necessarily those of the WBG.

Table of contents

List of abbreviations

AADT	Average Annual Daily Traffic
BNDES	Banco Nacional de Desenvolvimento Econômico e Social
DBFOMT	Design Build Finance Operate Maintain and Transfer
DFI	Development Finance Institution
EPC	Engineering Procurement and Construction
GDP	Gross Domestic Product
HGV	Heavy Goods Vehicle
LIC	Low-Income Countries
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFC	International Finance Corporation
IMF	International Monetary Fund
MIGA	Multilateral Investment Guarantee Agency
MDB	Multilateral Development Bank
MFD	Maximizing Finance for Development
NPV	Net Present Value
OPRC	Output and Performance-Based Road Contracts
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
RA	Road Agency
RF	Road Fund
RMI	Road Maintenance Initiative
RRW	Road Restoration Window
RUC	Road User Charge
SOE	State-Owned Enterprise
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
VOC	Vehicle Operating Cost
WBG	World Bank Group

Glossary of terms

Maintenance (periodic): The planned resurfacing of a paved road or the scheduled placement of more gravel on the wearing course of an unpaved road to account for that lost due to vehicle usage.

Maintenance (routine): The work that is planned and performed on a routine basis to maintain and preserve the condition of the road.

Milestone Payments: In this report, Milestone Payments are understood as payments made by a contracting authority during the construction period of a PPP or an OPRC, to (partially) compensate for the cost of works. These payments are usually made as works are progressing based on the achievement of predefined milestones. Milestone Payments (also known as Investment Grant or Subsidy) are a form of Viability Gap Funding in a PPP[1].

Off-taker: Designates the entity that is committed to purchase the output of an electricity generation project. By analogy with the electricity generation sector, this term is used to designate the entity responsible for making Annuity Payments in a Government-Pays road PPP.

Output- and Performance-Based Road Contract: An arrangement whereas the Contractor is responsible for the design of the rehabilitation, improvement and emergency works required to reach and maintain specified service levels over the contract period (employer may provide design for improvement works). Rehabilitation and improvement works are executed upfront, followed by the operation and maintenance periods. It is part of the performance-based contracts and usually follows a publicly financed Design-Build-Maintain-Operate-Transfer format. The Contractor in an OPRC may, however, pre-finance a very limited portion of the capital expenditures (usually on its balance sheet).

Performance-Based Contract: Where payment is made based on the quality of the asset provided (e.g. US$ for having the road within a specific roughness limit). The Contractor takes the risks related to the resources, quality and quantity of work.

PPP: A long term contract between a public party and a private party for the development (or significant upgrade or renovation) and management of a public asset (including potentially the management of a related public service). Under such contract the private party bears significant risk and management responsibility throughout the life of the contract. It must provide a portion of the financing at its own risk while its remuneration is linked to performance and/or the demand for the asset and/or services it provides[1].

[1] APMG PPP certification guide. Chapter 1: Public-Private Partnership – Introduction and Overview. The APMG certification program is an innovation of most multilateral development banks (ADB, EBRD, IsDB, IADB, WBG), which was funded by PPIAF.

Government-Pays or Gov.-Pays (PPP): A sub-type of PPP in which the private party derives its revenues from payments made by the public party. When these payments are not linked to usage (i.e. the number of users of the public asset) but rather to the availability of the asset at a certain level of service, they are also known as Annuity Payments[1].

User-Pays (PPP): A sub-type of PPP in which the private party derives its revenues from payments made by the users of the public asset. User-Pays PPPs are also known as "concessions" in many jurisdictions[1].

Priority Alignment: In this report, priority alignments are understood as the main roads connecting national and international business/urban centers.

Project Company: In this report, a Project Company is understood as the contractual counterparty of the Contracting Authority in a PPP arrangement. A Project Company is constituted specifically for the purpose of signing and executing the PPP contract. It may also be referred to as Special Purpose Vehicle (SPV) or private party[1].

Restoration Contract/Road Restoration PPP: A typical restoration contract starts with roadway repairs, stabilization (resurfacing) and reconstruction works immediately followed by structural, safety, traffic, and climate change-related improvement works. As soon as rehabilitation and improvement works are completed (2-3 years), operation and maintenance activities can start for at least one cycle of periodic maintenance (>7 years). In the context of this study, a Restoration Contract is interchangeably used with Road Restoration PPP.

Road financing: How funds are raised at the outset of a project/program to meet investments and/or maintenance needs. The financing may flow from the public sector (either from cash reserve if any or debt raised by a public entity such as a Road Fund), from the private sector (either from equity or debt raised by a private entity such a Project Company in a PPP arrangement) or a combination of both[2].

Road funding: Who ultimately pays in the long term for the investments and/or maintenance of the roads. The funds may come from taxpayers and/or road users[2].

Road Agency: An agency created via enabling legislation or ministerial decrees. Road Agencies are intended to be leaner, more consumer-oriented and market-responsive than traditional Road Administrations. As independent legal entities, they can sign contracts.

Road Fund: Special account into which the proceeds of the collection of road users' charges (e.g. vehicle license fees, heavy vehicles license fees, international transit fees, fuel levy, bridge and ferry tolls) are deposited to pay for road maintenance expenditures.

[2] CEDR (Conference of European Director of Roads). Funding formulas of roads: inventory and assessment. March 2017.

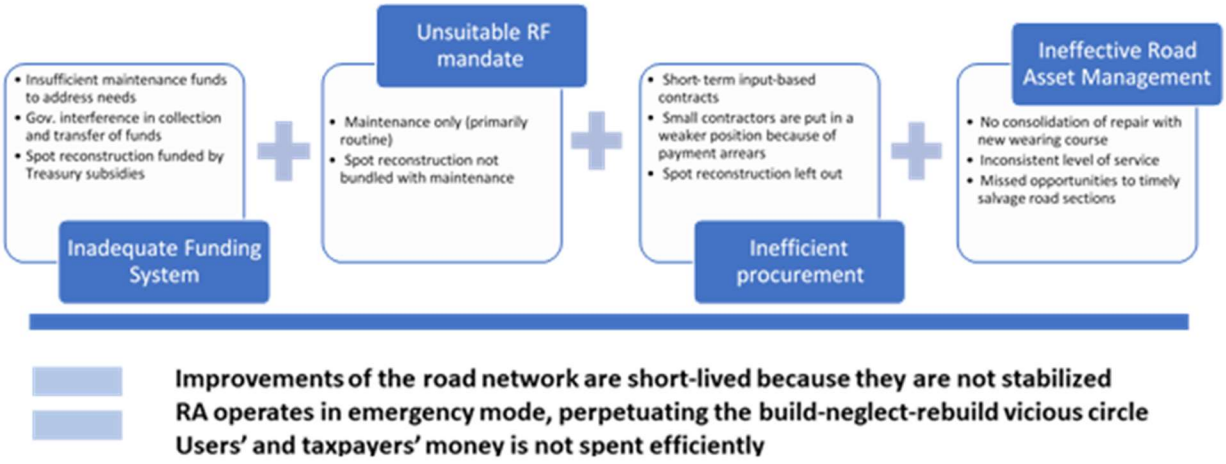
Executive Summary

The purpose of this study is to evaluate non-traditional means to raise additional private financing for the upgrade and maintenance of developing countries' road networks. To achieve this goal, it combines an in-depth review of Sub-Saharan Africa (SSA) countries' Road Funds' (RF) performance and Road PPPs to evaluate the potential for RFs to fund road PPPs when specific conditions are met.

Upgrading Sub-Saharan Africa countries' Road Funds to a 3rd Generation status

1. **Road Funds (RFs) were created as part of the Road Maintenance Initiative (RMI) in the late 80s. A performance assessment conducted in 2006 showed mixed results, although it recognized that the so-called 2nd Generation RFs were able to secure more resources for road maintenance.** A survey of RF performance over the 2013-2017 period shows that some RFs lost their 2nd Generation status, or never reached it, and only a few countries have been able to raise enough resources through RFs to fully cover their road maintenance needs. The same survey highlights the pervasive issues that currently perpetuate the Build-Neglect-Rebuild vicious cycle (see Figure A).

Figure A: The pervasive Build-Neglect-Rebuild vicious circle.



Source: Authors' analysis.

2. **There is a need to stress the importance of sustainable advancement of SSA country RFs towards 3rd Generation status, by first ensuring that the criteria for 2nd Generation status are met and upheld in a sustainable manner.** The 3rd Generation status is currently only achievable by some RFs and focus should be placed on the foundational importance of helping those funds that have yet to achieve 2nd Generation status to do so, and to assist the country RFs that have lost their 2nd Generation status to regain it. It also needs to be stated that this study proposes a country-specific approach rather than an abstract set of criteria, which led to the mixed success of the 2nd Generation RF initiative.

3. **Even though many of SSA countries' RFs may currently not be ready for the transition, there is already a potential to upgrade a few RFs to 3rd Generation status. This could allow them to leverage their resources to mobilize private financing**. The success

achieved by some RFs could pave the way to improving RFs' ability to generate substantial, stable and regular ring-fenced revenues and to use them to underwrite credit worthy road PPPs. Taking into account the lessons learned from the 2nd Generation exercise and the RF performance surveys, a selective pilot approach has been identified as optimal for the transition to 3rd Generation status This is set to tailor the approach to particular country conditions in order to ensure that the 3rd Generation status is reached and upheld by those countries in a sustainable manner. Based on a number of factors discussed in detail in the Annexes, the countries with the Road Funds with the highest potential to achieve 3rd Generation status have been identified as Kenya and Ivory Coast.

Attracting the private sector to road PPPs in Sub-Saharan Africa

4. **The necessary first step is to design and secure a sustainable funding system by raising, and adjusting for inflation, fuel levies to at least the recommended value of US$15c/l equivalent. Afterwards, reliance on complementing sources of revenue, such as inflation-adjusted tolls and other forms of distance-based charges (e.g. Heavy Goods Vehicles charges) should be investigated as well**. This study intends to present available solutions, without taking a stance on their appropriateness under country circumstances. The listing of the different funding systems' advantages and disadvantages does not signify the endorsement of some of the enumerated funding schemes over others. Tolling requires a sensitive approach with consideration for country specifics. Among all potential funding instruments, few present the most desired characteristics of a sustainable funding system: equity, yield potential, administrative simplicity, and consistency with user-pays principle. Fuel levies meet these characteristics. However, raising them presents some challenges (e.g. political resistance to de-funding fiscal resources any further, and the increasing share of fuel-efficient or electric vehicles). Distance-based charges, such as classic tolling or Heavy Goods Vehicle (HGV) charges, also possess the desired features. They have proved successful when adequately implemented (e.g. in the Polish experience). Access-based charges such as vehicle registration and licensing fees also meet most sought-after characteristics. However, their yield potential is lower, and they require a high level of administrative enforcement.

5. **The second step is to rethink how road PPPs are selected, structured and prepared in SSA**. Private sector participation in the road sector is low compared to the electricity generation sector in the region. This can be explained by factors inherent to the nature of road projects (e.g. the relatively long construction period, or the multiplication of technical, social and environmental issues), as well as the low level that user tariffs (i.e. tolls) must be set at to gain social acceptability. These issues can be somewhat mitigated if the appropriate projects are selected (i.e. those that present the least technical and E&S issues, which is naturally associated with brownfield/pre-existing roadways) and if the challenges linked to user charges are partially or fully eliminated (i.e. indirect user payments are replaced by a contracting authority's direct payments).

A Restoration Concept to lastingly improve high-demand roads and scale-up private participation in the Sub-Saharan African road sector

6. **The Restoration Concept proposes to anchor the benefits of the RMI by upgrading qualified RFs to a 3rd Generation status and using them as a creditworthy counterpart in a series of bankable Road Restoration PPPs meant to lastingly improve high-demand roads**. This approach could be based on the establishment of a ring-fenced Road Restoration Window (RRW) within RFs, which would be used to fund privately financed Restoration Contracts. These contracts would primarily target existing road network Priority Alignments. Over time, the

possibility to combine increased fuel levies with toll revenues from some sections of these alignments would promote the expansion and sustainability of the Road Restoration PPP program. This model is designed to address the impediments to attracting more private participation in the SSA road sector. It draws from lessons learned from the road PPP projects and programs analyzed as part of this study. The model comprises (1) a typical commercial structure where the Road Agency (RA) is the contracting authority and the RF is the authority responsible for making the Annuity Payments to the Project Company, and (2) an allocation of the key risks with an outline of their mitigation mechanisms. A simulation of the Restoration Concept over a period of 30 years highlights the growing impact of RF's increase in revenues over time. As the total length of restored high-demand roads expands, more funds will become available to carry out roadway maintenance financing as well as mobilize private sector financing.

Supporting client countries in implementing the Restoration Concept

7. **Implementing the Restoration Concept is expected to require a multidimensional support from the World Bank Group (WBG) to client countries**. Designing a WBG advisory and financial support for client countries, from a turnkey solution to a flexible one-stop-shop window, is beyond the scope of this study. However, the report proposes a checklist of appropriate and practical activities relating to the various phases of implementation, from upstream to downstream. These activities range from increasing the knowledge on road conditions and drafting standardized tender documents for the Road Restoration PPPs, to introducing sector reforms. The proposed activities would mobilize a large array of WBG non-financial (e.g. technical assistance, PPP advisory services) and financial instruments (e.g. credits/loans, guarantees). Collaboration with other donors (AfDB, UE, SSATP) is also essential to achieve a broad consensus and scale-up this approach.

I. Introduction

Until now, private sector financing in SSA has been mostly limited to a mix of green- and brownfield road projects, mainly executed in urban areas. The scale of these projects has been limited by: i) the ability of host nations to monetize road user demand (i.e. toll rates based on socially/politically acceptable prices rather than ability to pay), and/or ii) their fiscal credibility in providing long term, off-take, such as annuity payments to private operators/investors. Consequently, it is estimated that private financing in the road sector accounts for less than 10% of global road financing needs in emerging markets and even less in Sub Saharan Africa (SSA).

This lack of private funding for roads has left local Governments with the task of mobilizing enough money to carry out road networks preservation and expansion. In the former case, this has resulted in the establishment of intermediary public payment agents known as Road Funds (RFs), mostly in SSA. These RFs, which have been supported by Road Agencies (RAs), haven taken on the dedicated role to provide financing mostly for road maintenance activities. Some of them have evolved over time from structures located within the Ministries of Public Works or Transport to fully-fledged, separate public agencies. In this role, these RFs have so far been unable to play a credible role as an off-taker of public annuity payment obligations towards private operators/investors or to leverage their future funding streams into larger investment programs through the raising of long term, local or international, debt.

This report proposes to explore how, in few selected cases, SSA RFs could be reformed to substantially increase the amount of public and private monies flowing towards the maintenance and/or upgrade of the core road networks of SSA countries.

II. Road Funds in Sub-Saharan Africa: background and recent evolutions

1. Background on Road Maintenance Initiative in Sub-Saharan Africa[3]

8. **A ruinous road asset management legacy**. SSA countries expanded their road networks considerably from the moment they gained their independence until the 1980s. They failed to keep them in good condition, however, with too little spending allocated to both routine and periodic maintenance. By the early 1990s, nearly one third of the investment made in road assets had been lost and SSA road networks were mostly in poor condition. They had accumulated US$43 billion in deferred maintenance backlog.

9. **The Road Maintenance Initiative (RMI) was designed to remedy poor road network conditions through the creation of Road Funds (RFs of the 1St Generation).** The United Nations Economic Commission for Africa and the World Bank launched the Africa RMI in 1989 to identify the underlying causes of and remedies for poor road network maintenance policies in SSA. It concluded that road assets were managed within a disabling institutional framework whereby funding of maintenance activities depended exclusively on scarce and erratic general tax revenues. To correct this issue, it was recommended that SSA countries establish RF accounts which would be funded directly by road user charges to specifically pay for road maintenance activities. These RF accounts would be off-budget line items managed by the relevant line ministry. They did not involve the creation of dedicated entities. Sadly, they performed poorly due to a host of issues (e.g. absence of independent audits, use of funds for non-road related expenditures and weak oversight/financial management).

10. **The failure of 1st Generation RFs led to a recommendation for establishing 2nd Generation RFs.** To address 1st Generation RFs' weaknesses, the RMI suggested that road assets should be, to the extent possible, commercialized. This required undertaking reforms in four areas (referred to as the four building blocks):

a) Ownership: effectively involve road users in the management of roads to win support for increase in taxation, control potential monopoly power, and limit road spending to what is affordable;

b) Financing: secure an adequate and stable flow of funds;

c) Responsibility: clarify responsibility for fund collection, network to be maintained, size of annual work program, personnel hiring and firing; and

d) Management: as part of a stand-alone RF agency, strengthen financial management by using effective programming and performance monitoring systems, procurement and payment procedures and checking compliance through independent audits.

11. **RFs were complemented by the creation of Road Agencies (RAs) to execute road maintenance programs more effectively.** To reduce governance interference in the execution of road work programs, RMI suggested the creation of autonomous RAs under the oversight of the Ministry of Transport or Public Works. The role of RAs was going to: i) collect traffic data and

[3] Heggie I.G. Management and Financing of Roads - An Agenda for Reform. World Bank Technical Paper Number 275, Africa Technical Series, 1995.

monitor the condition of the road network, ii) prepare road work programs and execution plans underpinning the strategy adopted by the Government, and iii) use RF funds to implement and manage road maintenance work programs and contracts.

2. Main conclusions from the 2006 Performance Survey

12. **A review of the financing of road maintenance in SSA covering 27 active RFs in SSA was carried out in 2006[4] to assess the progress towards 2nd Generation RFs.** It concluded that:

- 2nd Generation RFs had become a significant feature of road sector reform programs in SSA but enabling reforms supporting them had led to mixed results;

- 2nd Generation RFs had secured a more stable flow of funds for road maintenance. In most cases, funds earmarked for road maintenance remained insufficient with only 11 out of the 27 RFs surveyed meeting their routine maintenance expenditure needs. Only 13 countries reported that direct funding for RF budgets was is in place; and

- Additional efforts were required to: i) diversify RFs' revenue sources (e.g. expand road user charges) and channel them directly to their accounts, ii) make better use of available financial resources by improving road management practices.

3. 2013-2017 Performance Survey

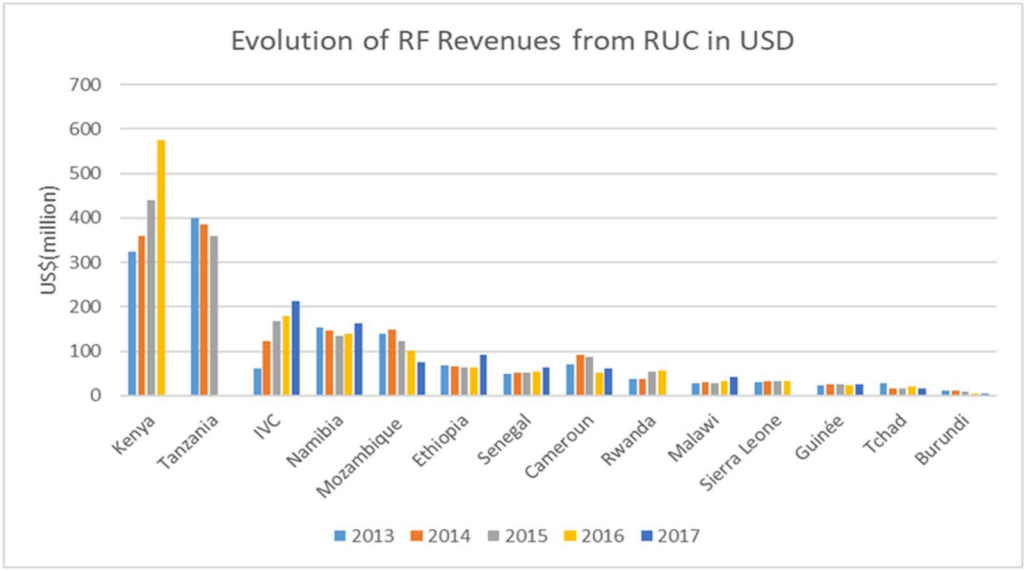
13. **RFs' levels of resources vary widely across SSA but remain insufficient to cover the cost of routine and periodic maintenance**. Total revenues from Road User Charges (RUCs) ranged in 2016 from US$5M equiv. in Burundi to about US$600M equiv. in Kenya. Relative to GDP, RUCs represent anywhere from 0.1% to 1.2%. The range among countries is narrower when considering the percentage of classified road network whose maintenance is covered by RFs mainly because of inherent differences in the size of each country's classified network (see Figure 1 and the updated RMI Matrix 2017 in Annex 1).

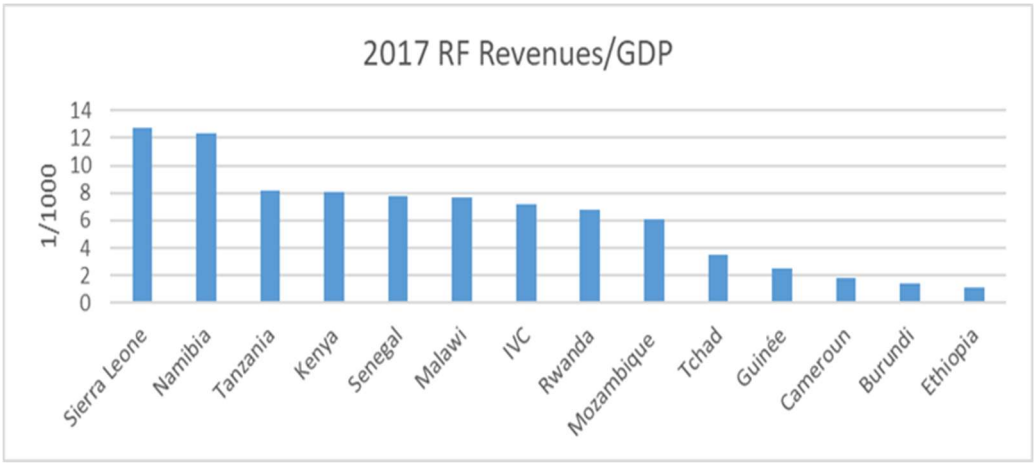
14. **The 2017 ranking of RF Revenues/GDP can be misleading.** Sierra Leone's ratio is overstated because of its low GDP. That of the Ivory Coast is overstated because its RF's revenues are artificially inflated by commercial loans, which conceal a low fuel levy. Ethiopia comes last because it has elected to invest massively in the expansion and development of its road network rather than its maintenance.

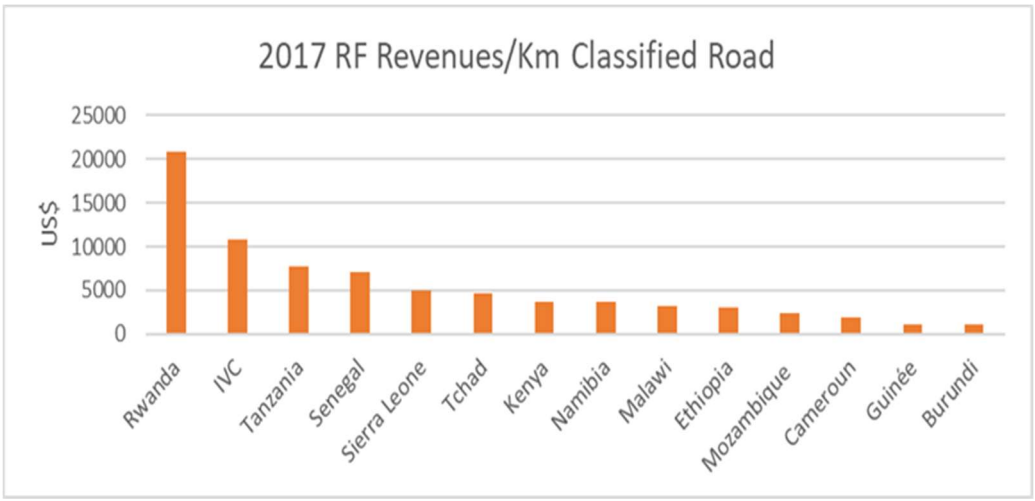
15. **The chronic maintenance funding gap forces RFs to fund investment works.** Constant maintenance backlog forces RAs to undertake spot reconstructions when sections of the road network have reached a condition when maintenance is no longer a viable technical solution. Conversely, RFs end up funding these activities rather than financing routine maintenance. This explains why a growing number of them have requested amendments to their articles of incorporation and by-laws to include these activities.

[4] Benmaamar, M. 2006. Financing of Road Maintenance in Sub-Saharan Africa, Discussion Paper No 6, Road Management and Financing Series, The Sub-Saharan Africa Transport Program.

Figure 1: RF revenues in a sample of SSA countries.







Source: Authors' analysis.

16. **Since most RFs do not fully spend their annual revenues, some can end up with large surpluses.** Unspent funds are either funds that were not released to the RF or funds released to but not spent by RAs. The former case is generally due to a delay in the collection and transfer of funds to the RF. The latter is a direct consequence of low financial execution rate by RAs. The percentage of unreleased funds is more difficult to track. In Kenya, it is estimated to have reached 21% of the total earmarked funding between 2015 and 2017. Meanwhile, the financial execution rates[5] across RAs ranges from 60% to 90%, which is mainly linked to a cumbersome procurement process and road works delays tied to unskilled local road contractors.

17. **RFs gather most of their resources from RUCs, and the highest share still comes from fuel levy revenues**. On average, RFs derive 80% of their resources from RUCs except for Senegal and Cameroon which receive a relatively low level of RUCs because of complementary Treasury financing. RUCs are comprised of fuel levies (a fraction of the excise duty on road fuels), vehicle license and registration fees, axle load tax, driver's license fees, load-distance charges for HGVs, international transit tolls, overload fines[6], road tolls and ferry/bridge tolls. The fuel levy is a funding instrument common to all RFs, contrary to the other abovementioned instruments (see Annex 2). On average, the fuel levy collection makes up 76% of RUC revenues, ranging from 100% in Senegal and Guinea to about 30% in Niger (see Annex 2). The second and third largest components of RUC revenues are vehicle license and registration fees and tolls. While tolls have the potential to generate substantial revenues, they are seldom used mostly because of the public's resentment against them.

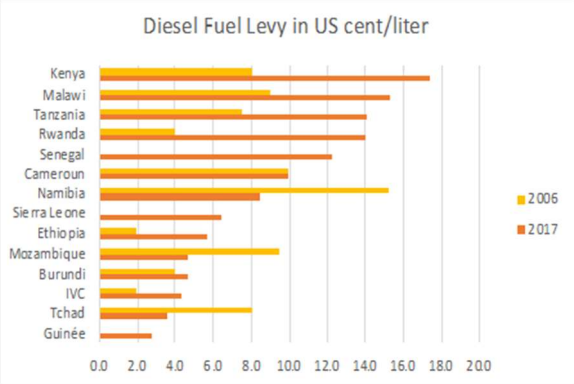
18. **While fuel levies vary widely among countries, they remain below levels necessary to fully fund road network maintenance needs**. Studies carried out, *inter alia* by RMI (PAM, 2004), suggest that the fuel levy should exceed US$10c/l to meet all road maintenance needs. In SSA the actual average is probably much higher at about US$13c to 15c/l, or equiv. to US$17.4c/l in 2017 when adjusted for inflation. These numbers are much higher than the median of about US$7.5c and the average of about US$9c/l recorded in 2017 in SSA (see Figure 2).

19. **Some RAs have gained experience in using long-term performance-based contracts (PBC) in lieu of traditional contracts which lessen the inherent drawbacks of classic contracting (i.e. underutilization of funds, better long-term planning and execution of road maintenance strategies, reduction in cost overruns, etc.).** Countries like Chad, Kenya, Tanzania, and Zambia have gained experience with the use of PBC. This welcome move is still modest and uneven in SSA countries because of the capacity limitations of the local contracting industry and the resistance of the finance ministries and central tender boards to long-term contracts.

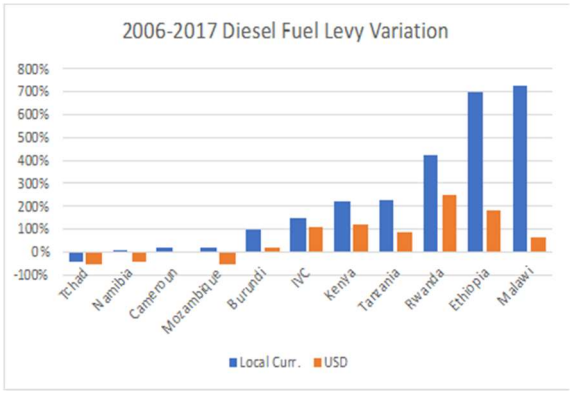
[5] A low execution rate means that the funds made available, possibly including funds carried over, cannot be spent entirely and leave an unused balance at the end of the fiscal year. These balances are added to possible unreleased funds and rolled over. Over time, if the financial execution rate does not improve, they can grow into significant surpluses. In countries where there is partial or no carry over, it is a net loss for road maintenance.

[6] These resources are expected to decrease over time thanks to a more effective enforcement of axle load regulation and increasing truck compliance.

Figure 2: Evolution of diesel fuel levy in a sample of SSA countries between 2006 and 2017.



Source: Authors' analysis.



Source: Authors' analysis.

20. **Finally, most RFs' annual reports lack clarity and simplicity when, and if, they are published.** The RFs' oversight function is not facilitated by reporting requirements whose format varies from one year to another. Introducing yearly independent road condition surveys combined with road traffic surveys would allow RFs and RAs to determine scientifically, and not politically, which sections of the road network should receive priority maintenance funding. Likewise, the production of standardized annual reports would enable government regulators not only to benchmark their own RFs and RAs' performance but also identify financial and performance issues early on. Detailed analyses of the RFs of Senegal, Tanzania, Kenya, Chad, Cameroon, and Ivory Coast (including an analysis of the legal and institutional framework applicable to the Ivory Coast RF) are provided in Annex 3.

4. Current RF grouping with reference to the 2nd Generation status

21. **RFs can be grouped according to their ability to reach, sustain and upgrade from the 2nd Generation principles**. The ability of RFs to play an efficient role is generally the result of a multitude of factors, often beyond their control: clarity of the legal and institutional framework and its proper application, operational autonomy and political interference, interaction with other institutions, etc. For these reasons, a ranking based purely on performance might not be relevant. What could be more telling is how RFs have evolved with respect to the 2nd Generation principles. This approach allows for the ranking of RFs into three broad categories:

a) 1st Generation RFs that have never reached 2nd Generation status;

b) RFs that have reverted from 2nd to 1st Generation status; and

c) RFs that have consolidated their 2nd Generation status and have the potential to upgrade to what could become a 3rd Generation status.

22. **This grouping is provided for comparison purposes only to highlight how similar the operational performance of similar institutions – namely Road Funds - varies and**

delivers different results. The RFs in the first group are: Cameroon and Senegal. The Gabon RF even disappeared completely recently. The RFs belonging to the second group are: Benin, Chad, Burundi and Mozambique. The RFs in the third group are Ivory Coast, Kenya, Zambia, Liberia, Malawi and Tanzania.

23. **The 3rd Generation status would be an upgrade/strengthening of the 2nd Generation status mainly in terms of funding sources and amounts, scope of works to be carried out (e.g. road rehabilitation works), governance and overall autonomy**. It would be designed specifically to address all the known shortcomings of current 2nd Generation RFs. As such it would:

- Meet all the 2nd Generation requirements, including collecting a fuel levy regularly adjusted and equivalent to at least US$15c/l in 2018;

- Fund road investment works, to administer distance-based charges (see Box 1), collect 100% of distance-based charges (net of collection costs) as part of the RUC resources, to invest its funds responsibly on the financial market;

- Raise long-term debt on favorable term from Governments or Multilateral Development Banks, and in the long-term raise commercial debt possibly without sovereign guarantee;

- Abide by stricter regulations and reporting and oversight functions[7]. The condition of the roads under their purview would be surveyed regularly by an independent party;

- Operate in a country where: there is a positive track record for implementation of RF legislation, a mature PPP Law and an experienced PPP Unit; where the Procurement Authority authorizes long-term contracting and has a good track record for procurement processing; where the convertibility restrictions on national currency are limited and where the national road construction industry comprises a reasonable number of experienced large contractors;

- Work in a team and under a clear separation of duties with a capable RA; and

- Fund, among others, Restoration Contracts (see Chapter IV).

[7] Oversight and regulatory functions of the government are often weak because of a lack of qualified staff and/or interest but can become over-prescriptive when financial transactions are ruled by a public accounting officer. Both situations are unhelpful. Adding to the problem, RF reporting can be complicated or obscure and lack simple score cards, and financial audits are often conducted mechanically with little understanding of the true mission of the RF. It looks like RFs, and their Board, self-evaluate and do not seem to be challenged often by their supervising authority. Conversely, there are cases where the supervising authority interferes in the RF's mission, e.g. by diverting funds earmarked for maintenance into new road investments (Cameroon, Sierra Leone).

III. Public-Private Partnerships in the Roads Sector

1. Road maintenance funding in Sub-Saharan Africa: progressively reducing the dependence on fuel levies and shifting toward more distance-based charges

24. **Before designing sophisticated road-financing schemes involving the private sector, the first necessary step is to design a sustainable road funding system**. The public road network has been identified as the largest public infrastructure asset, and SSA countries particularly have a higher value of road asset value to GDP ratio compared to world average[8]. SSA countries will need to spend more and better on their road networks to realize their economic potential and achieve the Sustainable Development Goals. To allow private investment to support the SSA road asset program, the funding structure will determine the financing options and the bankability of the program.

a. Overview of possible road funding instruments and criteria for suitability in the context of Sub-Saharan Africa

25. **Countries around the world usually rely on a mixture of instruments[9] to fund their road sector as depicted in Box 1**. The suitability of these instruments in the context of SSA countries may be assessed against a set of qualitative criteria/most desired features such as: i) affordability, ii) yield potential, iii) users' shared interests, and iv) administrative simplicity:

i. Affordability refers to the financial capacity of users. It varies widely and can be limited;

ii. The yield potential is linked to the revenue's generation potential of the asset under management. It needs to be predictable and stable over the long-term. It is a key feature of any project if private sector participation is sought after;

iii. Users' shared interest is predicated upon the implementation of the user-pays principle. It is important to ensure that different categories of road users pay their fair share of the wear and tear they cause to the road (particularly HGVs) in order to avoid socially unfair cross subsidies; and

iv. Administrative simplicity advocates for transparent, easy to understand and audit, rules to enforce assets operations and maintenance obligations in the context of limited institutional capacities.

Other secondary desired features (polluter-pays, beneficiary-pays and efficiency) are described in more details in Annex 5.

[8] Brushett S. Management and financing of road transport infrastructure in Africa. Sub-Saharan Africa Transport Policy Program (SSATP). Discussion Paper 4, March 2005.
[9] E.g. Acosta, L. National Funding of Road Infrastructure – comparative summary. The Law Library of Congress, March 2014.

Box 1: eight categories of road funding instruments

General all-purpose taxes[2, 10, 11]. They do not have a direct link to the road network use or development. They may consist in direct taxes (e.g. income tax) or indirect taxes (e.g. Value-Added Tax).

Non-recurrent access-based charges[12, 13]. They are related to the purchase of a motor vehicle. They are one-off charges paid to allow the use of a motor vehicle on the road network. They include a variety of charges e.g. Vehicle Registration Fee, Custom Duties for imported vehicles, Luxury Car Taxes.

Recurrent access-based charges[11, 13]. They are paid regularly by vehicle owners and users. These charges include for example: Vehicle Licensing Fee, Axle Tax, Insurance Contract Tax, Driver's License Fee.

Distance-based charges[2, 14]. They are paid directly by the user in exchange for the use of the road. They are usually based on a unitary tariff (e.g. US$ct/mil traveled). The tariff can be modified according to several parameters such as maximum authorized weight, number of axles, period of the day or even Green House Gas (GHG) emission class. These charges can be paid by the user either using cash or electronic fund transfer and consist in: tolls (on specific stretches and linked to the repayment of road investment, e.g. in a User-Pays PPP scheme[31]), international transit fees, HGV charges (on a network basis and not necessarily earmarked to repay a specific investment).

Time-based charges[2, 10, 14]. They are paid directly by the user in exchange for the right to use the road (or network) during a specified period. These charges are usually based on a unitary tariff (e.g. US$/day, week, month or year). The tariff can be modified according to several parameters such as maximum authorized weight, number of axles, period of the day or even GHG emission class. These charges include for example: vignettes and urban charges.

Fuel-consumption based charges[12, 15]. They are excise taxes, meaning that they are included in the price paid at the pump by consumers and the taxpayer is either the fuel producer or distributor. They consist in a unitary tariff (e.g. US$/gal), which can be modified depending on the fuel type. For example, less polluting fuels like Liquefied Petroleum Gas (LPG) or Compressed Natural Gas (CNG) may have a lower rate. The "fuel levy" which represents in average 80% of the RFs' resources (see para. 17) is usually carved out of the fuel excise tax.

Value Capture charges[16]. Value capture is defined as the public recovery of all or a portion of increased property value created because of public infrastructure investment, or that takes benefits from it. Subject to enabling conditions (e.g. real estate market vitality, zoning and land use entitlements), new road capacity and new road accesses can create business opportunities and value in the surrounding land and real estate. They include for example: Impact fees, Special Assessment Districts or Tax Increment Financing (see Annex 5).

Toward a Universal Road User Charge? [10, 12, 15]. Recognizing the limits of the current road funding system, the road maintenance and investment gaps, and the future shortcomings of fuel taxes as one of the main funding instruments, some countries have started considering a new road pricing scheme that would first complement and then replace current funding instruments. The related charging arrangements would apply to all motor vehicles and the entire road network. The concept is basically to charge users for the distance they travel on roads. In addition to distance the pricing could include: Vehicle weight class, Time of day, Location, Type of fuel (or GHG class).

Source: Authors' analysis.

[10] Ministry of Transport of New Zealand. Future Funding - Revenue tools for transport, November 2014
[11] Chen, C., and Bartle J.R. Infrastructure Financing: a guide for local governments managers. Prepared for International City/County Management Association and Government Finance Officers Association, 2017
[12] Deloitte. Road Pricing and transport Infrastructure funding: reform pathways for Australia – Discussion paper. 2013.
[13] Association Mondiale de la Route. Financement, dévolution et gestion des investissements routiers – Comité Technique A.2 de l'AIPCR, rapport 2012R08FR. 2012.
[14] Schwarz-Herda, F. Road pricing for heavy vehicles: a key for financing road infrastructure? A successful example in Austria. Route – Roads 2013, volume 358. www.piarc.org.
[15] Committee for a study of the future Interstate Highway System. Renewing the National Commitment to the Interstate Highway system: a Foundation for the Future. Transportation Research Board. 2018.
[16] Page, S., Bishop W.L., Wong W. Guide to value capture financing for public transportation projects. TCRP (Transit Cooperative Research Program Research) Report 190. National Press Academies. 2016.

b. Key lessons from the qualitative assessment of possible instruments to diversify Road Funds revenues

26. **Road funding systems are usually complex and opaque with associated public acceptance issues.** Countries generally rely on a combination of funding instruments which are by design earmarked for the road sector. The path of returning collected funds to investment, maintenance and operation of roads is complex, however. In some countries, revenues from road sectors subsidize other policies (e.g. some European countries) while in others it is the opposite that happens (e.g. USA)[17].

27. **In the short-term, fuel-consumption based charges (e.g. fuel levies) remain a pragmatic road funding instrument. A shift toward more distance-based charges might be necessary in the mid- to long-term as fuel consumption growth may temper off or turn into a decrease with the mass introduction of electric vehicle fleets**. Table 1 summarizes the qualitative assessment of possible road funding instruments conducted in the context of SSA countries against the most desired features outlined in para. 28. A more detailed assessment is provided in Annex 5.

Table 1: Assessment of the most desired features of road funding instruments in SSA countries

	Affordability	Yield Potential	Users' Shared Interest	Administrative Simplicity
General taxes	Low	Medium	Low	High
Non-recurring access-based charges	Low	Low	Low	medium
Recurring access-based charges	Low	Medium	Medium	Medium
Distance-based usage charges	Medium	High	High	Medium
Time-based usage charges	Low	Medium	Medium	Low
Fuel consumption-based user charges	Low	Medium	Medium	High
Value Capture	Medium	Medium	Low	Low
Universal Road User charges	Medium	High	High	Low

Source: Authors' analysis.

[17] Gomez, J., and J. Vassallo. 2014. Comparative Analysis of Road Financing Arrangements in Europe and the United States. Journal of Infrastructure Systems, Vol. 20, No. 3, Sept.

28. **To anticipate fuel levy shortcomings, Governments in SSA countries need to shift toward more distance-based charges as these charges present a significant yield potential.** Even if implementation and operation costs are higher than fuel consumption-based charges and can prove challenging, distance-based charges are generally accepted by road users when they translate into better road condition and increased road safety[18]. However, ensuring willingness to pay requires a strong political will and a relevant strategy to publicize benefits to overcome initial opposition.

29. **Preparing now the implementation of distance-based charges on a network basis (e.g. HGV charges) could pave the way to the implementation of a Universal Road Charging system in the long term as the sole road funding instrument**. In countries where enabling conditions are fulfilled (e.g. sophisticated fiscal administration, adequate institutional capacity, dynamic real estate market), value capture mechanisms could be introduced to fund targeted capital expenditures in the road network. These instruments require a high degree of sophistication in terms of fiscal management (e.g. proper land titles, and efficient property tax assessment systems) combined with the ability of public authorities to engage in transparent cooperation with private real estate developers. For these reasons, these mechanisms are probably out of reach for now for most SSA countries.

2. How to make road PPPs more attractive for the private sector in Sub-Saharan Africa – lessons from the electricity generation sector

30. **In SSA countries, private sector participation in infrastructure is concentrated in electricity generation projects**. The World Bank's Private Participation in Infrastructure[19] database shows that the electricity sector accounts for 51% of private sector participation whereas the road sector accounts for only 3%. This discrepancy is even more pronounced in LICs. Only one road PPP reached financial close during the last decade whereas 46 electricity generation projects did so. Moreover, during the 2011-2017 period, 41 projects (21 located in SSA), received private participation from institutional investors, but only one of them was a road project[20] (see Annex 6 for more details on private participation in the roads and electricity generation sectors).

31. **This failure to attract private sector participation can be explained by factors inherent to the nature of road projects**. As linear infrastructures, roads cross a variety of land, multiplying technical, environmental and social issues compared to the limited land-related challenges faced by electricity generation projects. Among these issues, right-of-way acquisition and clearing, and the associated resettlement of communities are probably the most prominent. Construction periods can also be much longer (as long as 5 years[21]), which is a challenge in project-financed projects such as road PPPs.

32. **Project preparation and structuring decisions made by contracting authorities also contribute to making road PPPs less attractive than electricity generation projects**. Road projects presented to the market in SSA countries are about 35% more capital-intensive than electricity generation projects (75% if only focusing on LIC in SSA). The capital-intensity can have adverse impacts on: i) affordability of the road PPP for users and the contracting authority, and ii) attractiveness for lenders and equity providers. In most countries, it tends to make financially weak local contractors' participation all but impossible. Most importantly in LICs, when 99% of the

[18] See the Polish Road Fund case study in Annex 3, and para. 39.
[19] https://ppi.worldbank.org/
[20] World Bank. Contribution of Institutional Investors – Private Investment In infrastructure 2011-H12017. 2017.
[21] The 4G road PPP in Colombia have for example construction phase lasting around 5 years.

Project Companies derive their revenues from payments from the Government or a public utility (under Power Purchase Agreements - PPAs), 75% of Project Companies operating road projects generate their revenues from tolls collected from road users. This implies that these companies are exposed to traffic risks that equity providers and lenders are averse to.

3. Lessons learned from road PPPs in Sub-Saharan Africa and Latin America

33. **The following key lessons are drawn from case-studies of road PPP projects and programs in Latin America (i.e. Brazil and Colombia) and SSA (i.e. Ivory Coast, Liberia, Kenya and Senegal)**. Three of these case-studies cover PPP projects (Henri Konan Bedie toll bridge in Ivory Coast, Ganta-Zwedru road corridor rehabilitation in Liberia, and Dakar-Diamniadio toll highway in Senegal), while the others cover PPP programs (4G road PPPs in Colombia, Federal highway concessions in Brazil, toll roads and roads annuity programs in Kenya). These projects and programs cover a wide range of features (e.g. brownfield vs. greenfield, User-Pays vs. Gov. Pays). Most of them benefitted from the support of the WBG. Only key lessons are highlighted in the main body of this report while additional details can be found in Annex 7.

34. **Lesson 1: Successful road PPP projects or programs require high-level government championing**. High-level government championing is a necessary condition at all phases of the project/program implementation. In the upstream phases, significant sector (in transport and finance) and cross-sector reforms (creating an adequate PPP framework) usually need to be implemented to enable the development of roads PPP project/programs. In midstream to downstream phases, potential investors need to be convinced, *inter alia*, that bidders' competition will be fair and transparent, that the government's objectives can be realistically achieved, and that the public funding mechanism that supports the PPP framework is creditworthy. Public sector entities need to be appropriately staffed and funded to face the high workload generated during the structuring and tendering phases as well as during contract management.

35. **Lesson 2: A programmatic approach with standardized documents generates many benefits, among which the reduction in transaction costs for both public and private stakeholders is the most notable**. Due diligence of different types (legal, technical or financial) and other transaction costs are significant and may not necessarily be fully recovered by losing bidders. Standardizing tender documents and preparing a pipeline of similar projects creates economies of scale for potential bidders. It can incentivize them to participate in several bids. For the public sector, even if preparation of standardized documents may take longer, a more streamlined tender phase can yield substantial gains (i.e. 4G road PPPs in Colombia). Moreover, ensuring maximum bidder participation increases competition, which in turn can help Governments achieve greater Value for Money for these projects.

36. **Lesson 3: Public authorities need to take a realistic look at the local road contracting industry before scaling their road PPP projects or programs**. When structuring tender documents (particularly Request for Qualifications and Request for Proposals), contracting authorities will need to define qualification criteria. These criteria will need to be balanced to enable a truly competitive environment while weeding out bidders with weak balance-sheet performance or technical skills, making it impossible for them to secure performance-based or concession type contracts. In many SSA countries, there is no proven track-record of road PPPs or other forms of performance-based contracts. This inevitably leads to looking to foreign contractors, at least in the short-term. If public authorities want to secure local contractors' participation to make road PPPs more politically appealing/acceptable, they can proactively favor local contractors through various

means, including by setting aside percentages of road works to be executed by local contractors under each contract or directly providing technical and/or financial support to these indigenous contractors.

37. **Lesson 4: The User-Pays PPP model is not easily replicable when scaling up private participation in the road sector in SSA**. The two SSA User-Pays PPPs reviewed (Dakar Diamniadio Toll Highway – DTH - and Henri Konan Bedie Toll Bridge - HKBTB) required considerable time to prepare. Reaching financial close required either substantial public upfront payments or the establishment of tailor-made demand-risk mitigation mechanisms. In both projects the private sector funded only a small portion of the investment financing needs (e.g. 42% of CAPEX for Dakar's DTH). In more mature investment markets, like Colombia, scaling-up private sector investment in the road sector required the adoption of a hybrid User-Pays and Government-Pays PPP model. The Brazilian exception to this lesson, where the "pure" User-Pays model is still widely used, has more to do with, among other factors, the subsidized long-term financing that was widely provided by Banco Nacional de Desenvolvimento Econômico e Social (BNDES, the State-Owned National Development Bank) until 2016.

38. **Lesson 5: Annuity Payments funded by a clear ring-fenced mechanism, independent from annual public budgeting cycle, can strongly enhance a project's bankability**. Some recent examples show Project Companies either derive their revenues from publicly funded Annuity Payments only (e.g. roads annuity program in Kenya, Ganta-Zwedru road corridor rehabilitation in Liberia) or a mix of tolls revenues and Annuity Payments (4G program in Colombia). In all these cases a dedicated ring-fenced mechanism, independent from public annual budgeting cycles, was established to fund each Government's Annuity Payments obligations. This approach gave extra comfort and visibility to potential bidders and played a central role in each project's marketability and bankability.

39. **Lesson 6: Tolls or other forms of distance-based charges can be successfully implemented.** They require strong political support, a transparent tolling policy and visible improvements for road users. Four of the cases reviewed involved tolling as a revenue stream for Project Companies. All raised user acceptance issues, triggering the need for public authorities, at some point of the project's cycle, to temporarily lower the tariffs or suspend tolling altogether. Users' willingness to pay did rise, however, as they experienced sustained improvements in road safety, travel time and comfort. This experience underscores the need for this type of projects to adopt and widely communicate a transparent tolling policy to all stakeholders [22]. Such a policy should, *inter alia,* govern toll tariffs (e.g. affordability) and their periodic adjustment (e.g. to reflect local inflation).

40. **Lesson 7: National Infrastructure Banks (NIBs), like BNDES in Brazil or Financiera de Desarollo Nacional (FDN) in Colombia can play a key role in assisting in the implementation of road PPP projects or programs**. BNDES in Brazil or FDN in Colombia acted as the financial arm of Governments during the roll out of each country's road PPP Program. These NIBs were either able to reduce projects' cost of capital, therefore increasing affordability for users and taxpayers, or helped crowding-in private investment by simply participating in each project. While a NIBs solution for the majority of SSA countries seems implausible because most

[22] The case-study of the Polish Road Fund (see Annex 3) delivers the same lesson. Poland has introduced HGV charges on selected sections of the national network in 2011. Despite initial opposition, the trucking industry accepted the principle of road charging. The revenues from these charges are steadily growing.

SSA countries are non-investment grade, the opportunity to use this approach can be examined, acknowledging the associated benefits and challenges[23].

41. **Lesson 8: Coordinated MDB support can be instrumental to the success of road PPP projects or programs**. Except for the Roads Annuity Program in Kenya, all projects or programs reviewed benefitted from some coordinated support from WBG entities. This support was predicated upon WBG availing a large array of non-financial (e.g. technical assistance to conduct reforms, implement E&S issues surrounding Right of Way issues, etc.) and financial (e.g. credit/loans, political risk insurances, and guarantees) instruments to each project. Similar MDB support will be necessary in SSA countries where there is little, if any, proven track-record of private participation in the road sector.

4. Key lessons to better prepare and structure road PPPs and scale-up private sector investment

42. **To enhance the appeal of road PPPs to debt and equity providers, right-of-way and resettlement issues should be settled before financial close, and related risks should be retained by the public sector.** In countries where there is no proven track-record of successful road PPPs, it is therefore recommended to initially focus on brownfield projects[24] for which right-of-way, resettlement and engineering issues are limited.

43. **SSA Governments and contracting authorities should prepare moderate-sized road PPPs focusing on brownfield projects**. Carefully designed strategies covering pipeline building, standardization of tender documents, bundling of several projects into a single contract, etc. are needed to lower transaction costs. It should make them more attractive to both local and international contractors.

44. **SSA Governments and contracting authorities should retain demand risk when structuring road PPPs as Government-Pays.** The funding mechanism of Annuity Payments needs to be carefully designed. Backstop payment guarantees from the Governments or MDBs are worthy safety nets, yet a funding mechanism with predictable and sustainable cash-flows is key to attracting the private sector.

45. **Annuity Payments should be linked to a creditworthy off-taker, a role 3rd Generation RF could play.** In addition to traditional RF resources (e.g. fuel levy), distance-based user charges (e.g. tolls) collected on the roads after works completion could contribute to funding the public authority's Annuity Payments obligations. RFs' creditworthiness could be enhanced with Government and WBG support (e.g. payment obligation guarantees).

46. **In the long term, other private sector participation models like road asset recycling could be introduced in SSA countries**. Road asset recycling requires transferring the demand risk to the private sector (see Annex 6). The feasibility of private sector participation in road projects needs nevertheless to first be demonstrated through the implementation of successful Gov.-Pays road PPPs.

[23] Global Infrastructure Hub. Guidance note on National Infrastructure Banks and similar financing facilities (consultative draft). April 2019.

[24] In SSA countries, almost ¾ of the active road PPPs are brownfield according World Bank's PPI database.

IV. Restoration Concept: a novel road PPP promotion instrument

1. Restoration Concept

47. **The Restoration Concept combines the following features: i) consolidating multiple road improvement projects under a single contractual umbrella, ii) increasing RF revenues by increasing traditional RUCs (namely the fuel levy), and c) introducing tolls or other forms of distance-based charges on sections of restored road networks.** Restoration Contracts would bring the entire length of selected national Priority Alignments to good condition and improve and maintain them as necessary[25]. Tolls or other forms of distance-based charges could be raised on suitable sections of the restored Priority Alignments when and if traffic volumes are sufficient and a sound toll policy is in place. These users' revenues would be earmarked to the RF and used to pay, partially or fully, for the cost of Restoration Contracts, including the associated future routine and periodic maintenance contracts. Over time, any cash surpluses would be used to fund additional Restoration Contracts and, possibly, cross-subsidize the maintenance of other national roads and/or lower category roads.

48. **Privately financed Restoration Contracts (implemented using the PPP model outlined previously) would be funded by a Road Restoration Window (RRW) carved into a qualified RF whereas publicly financed contracts (i.e. OPRC and performance-based contracts - PBCs) would remain financed from the RF's general fund**. The RRW would be carved into the funds earmarked for national roads maintenance which represent about 80% of RF resources in SSA. A notional percentage of about 20% of the funds allocated for the maintenance of national roads could be transferred into the RRW (or about 16% of RF revenues[26]). As a result, funding assigned to the maintenance of national roads would be reduced from 80% to 64% of RF revenues while the portion of its resources allocated to the maintenance of local roads would remain unchanged (see Figure 3 below).

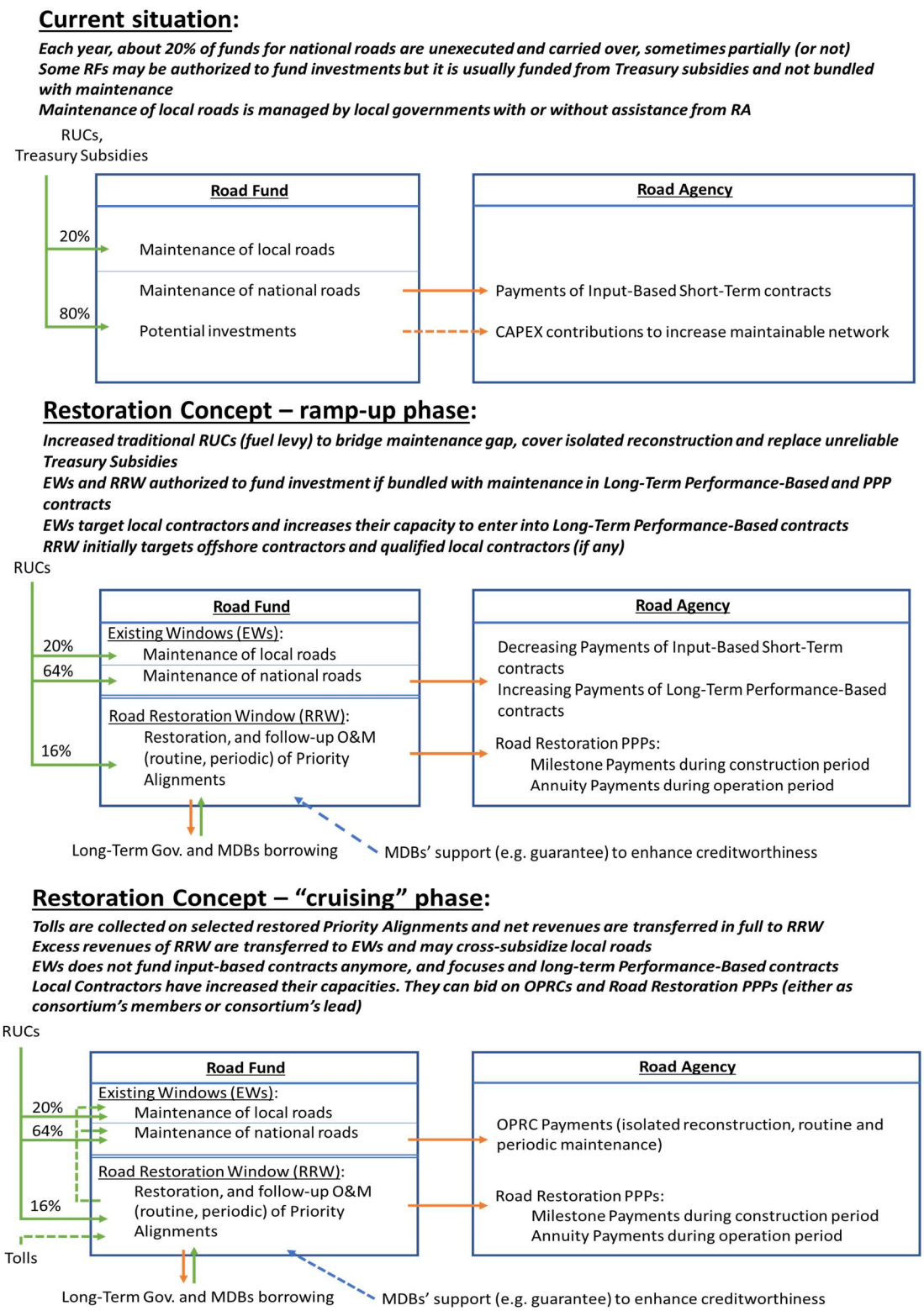
49. **During the ramp-up phase of the Restoration Concept, RFs' existing financing Window (EW) would gradually move away from funding short-term input-based maintenance contracts to funding long-term PBCs.** This change would require that: i) RFs' statutes be amended to enable them to fund spot reconstruction works[27], ii) training programs for local road contractors be carried out and, iii) procurement legislation be amended as needed.

[25] Improve the service level to address safety and climate change requirements as well as increased traffic volume. These improvements should be designed with the intention of staying as close as possible to the maximum marginal benefit, i.e. avoiding overdesign. Improvement works can comprise localized structural strengthening; installation of guard rails, proper marking and signaling, pedestrian protection, bus lay-bys, separate parking and loading areas, removal of black spots; construction of overtaking lanes, crawling lanes on steep slopes, strengthening of the wearing course in hairpin turns; and increased drainage capacity, protection against flooding, reinforcement of slope stability, etc.

[26] On average 80% of the RF resources are earmarked for the maintenance of national roads and about 10% to 40% of these resources are unused every year. The unused resources are generally carried over to the next year but in some countries, the carry-over is not authorized, and funds are lost to the RF. In this respect, sizing up the RRW to 20% of the funds earmarked for the maintenance of national roads is reasonable. Another point of comparison is the Kenya Roads Annuity Fund which represents about 16% of the RF resources.

[27] As opposed to the entire reconstruction of long road segments funded under the government budget.

Figure 3 – Development of the Restoration Concept



Source: Authors' analysis.

50. **Fuel levy as well as other user charges would need to be raised and adjusted for to increase RFs' resources during the ramp-up phase.** On average, the fuel levy represents 76% of RF revenues in SSA. Raising the fuel levy to at least US$15c/l equivalent would lift annual RF revenues significantly in many countries: they would reach US$600M in Ivory Coast and about US$300M in Namibia, Ghana and Cameroon (see Annex 9). Vehicle registration fees contribute to about 10% to 20% of RF revenues but are not common in all SSA countries. Raising them or introducing them would also increase RFs' revenues significantly.

51. **During the cruising phase of the Restoration Concept, EW would only fund long-term OPRCs as local road contractors improved capabilities would enable them to successfully implement this type of contracts. Meanwhile, RRW could collect additional revenues from tolls (or other forms of distance-based charges) derived from suitable restored Priority Alignments**. As shown by the qualitative assessment of road funding instruments (see Section III.1. and Annex 5), road tolling represents a promising revenue generation tool for RFs. The Brazilian, Colombian and Polish case studies (see Annexes 4 and 8) show that initial resistance against new tolls can soften if road users associate tolls with the direct benefits they accrue from using better roads. While tolling systems should be administered by RFs/RRWs, it is recommended that their operations be outsourced. Toll revenues (net of collection costs) should be retained in full by the RRW and potentially be tax-exempt. Over time, as the combined traditional toll revenues exceed the costs borne by the RRW, excess revenues could overflow to the EW and cross-subsidize the maintenance program of local roads.

52. **The Toll Policy adopted should aim at setting affordable, consistent, transparent and fair pricing of road usage. It should also regulate tariff revisions.** Since tolls would be collected by the public sector, their pricing system would need to be designed to be welfare-oriented, contrary to a private concession scheme where it is profit-oriented[28]. The Toll Policy should address, *inter alia*: the pricing formula that should consider the differentiated wear and tear caused by different types of road users (e.g. HGVs vs. light vehicles); the type of roads targeted for tolling, the method to adjust tariff rates to account for price escalation, congestion pricing, etc. Currently in SSA, HGVs rarely pay their fair share of road user charges, although some countries started experimenting with HGV charges[29].

53. **For obvious economic reasons, a selection system based on road condition and demand must be set to prioritize where restoration financing is implemented in SSA**. The road sections targeted for restoration should be part of the national paved Priority Alignments and regional trade corridors where higher traffic volumes occur. Most of these Priority Alignments are bituminous two-lane roads connecting larger urban centers. Their traffic volume varies between 4,000 and 12,000 vehicles per day (vpd), while their condition ranges between 20% to 60% in good condition, 30% to 50% in fair condition, and 10% to 30% in poor condition. They often lack adequate safety infrastructures, have not been adapted to climate change, and their original design has not incorporated the need to accommodate increasing traffic volumes. RFs must commission regular independent road condition and traffic volume surveys to be knowledgeable about evolving road demand and conditions. This will allow them to target the right Priority Alignments.

[28] Bonnafous, A. The economic regulation of French highways: just how private did they become? Transport Policy, 41. 2015.

[29] Namibia for example recently started experimenting with the satellite-based tracking systems for HGVs, already in use in Europe; with the collaboration of ICT firms, this development could be within the reach of many African countries sooner than later.

54. **A pipeline of Restoration Contracts should be prepared and then implemented at a pace commensurate with the level of RRW resources so that the cumulated RRW's cash-flow balance stays positive at all times**. The financial simulation model presented in Annex 8 shows that there is a significant difference between the number of restoration contracts that can be funded solely with traditional resources versus traditional resources magnified by toll revenues.

55. **Preparation, awarding and management of Restoration Contracts will require significant efforts from the RAs with support from a PPP Unit**. The RAs should be tasked with the preparation of the pipeline of Restoration Contracts. It should team up with a PPP Unit since these contracts would be implemented as Road Restoration PPPs. Preparing and implementing PPPs can prove considerably time-consuming for contracting authorities, particularly when they have no prior PPPs expertise. Substantial pre-tender work (e.g. Priority Alignment selection, robust feasibility studies including traffic forecasts, standardization of tender documents, appropriate bundling of Priority Alignments, etc.) will be needed from RAs to reduce transaction costs, secure bidders' interest and foster maximum competition among them. Private Sponsors will be more likely to participate in a bidding process if the tendering system enables scalability (enough investment to justify the sunk costs) and offers a prospect for replicability (bidding for similar projects).

56. **Accordingly, Restoration Contracts should first be piloted with RFs that present the potential to transition to a 3rd Generation status and generate at least the equivalent of US$100m in annual revenues**.

2. Restoration Concept financial modelling impact

57. **A customizable Excel financial model was developed to test the impact and limitations of the Restoration Concept for various plausible scenarios.** The model is provided separately as an Annex to this report. The user can test a large set of financial and technical assumptions against a Restoration program and the follow-up maintenance contracts over a 30y period and by extension simulate the total length of roads restored and fully maintained thereafter. Among the key assumptions are: i) the RF's level of resources; ii) whether tolls would be raised and under what terms (e.g. tariffs, and their coverage of the restored Priority Alignments); iii) the road condition; iv) the contract duration; and v) the mix of debt and equity and associated costs. The model is adjusted for a customizable inflation and denominated in USD. The depreciation of RF and toll revenues is incorporated and covered by customizable catch-up mechanisms. A description of the model and instructions on how to use it are provided in Annex 8.

58. **The cost of Restoration Contracts has been assessed for scenarios associated with the typical condition of national priority roads in SSA countries and other logical and realistic assumptions.** Based on road conditions described previously, unit rehabilitation costs derived from known studies, and financing assumptions drawn for recent PPP schemes in SSA, ten scenarios were established for a nominal 100km stretch of roads[30]. Four of these scenarios were computed in the financial model[31]: two high-case and two low-case scenarios based on the

[30] Other notable assumptions: direct O&M costs increased by 15% to consider the Project Company's own costs (staff, headquarters, taxes and insurance) in case of privately financed Restoration contract, and reserve accounts waived for government loan to the RRW. Moreover, the cost of installation and operation of the tolling system is included in the restoration contract. As a conservative estimation, it is assumed that the toll operator will be hired during the last year of the construction period. Another year is then allowed to train the work force and test the equipment. Hence, assuming three years for the construction period, tolling could become effective 5 years into a restoration contract on the entire or selected sections of the restored road.

[31] The financial model built in an Excel spreadsheet is provided with the report.

volume of works implied, respectively labeled A1, B1, C3 and C4 (see Annex 2 and the "Assumptions" sheet in the model provided with this report). A1 and B1 restoration contracts were structured as 15y Government-Pays PPPs and C3 and C4 as 10y OPRCs owing to their lower estimated cost[32]. The respective nominal non-discounted costs from the public sector's point of view amounted to about US$117M for A1, US$113M for B1, US$68M for C3 and US$65M for C4.

59. **Assuming no tolls are raised, a RF collecting about US$125M equivalent in annual revenues[33] would only be able to fund 4 Road Restoration PPPs over a period of 30 years (i.e. would be able to restore and fully maintain 400 km of Priority Alignments). An RF collecting US$625M of annual revenues would be able to fund 23 of these contracts or restore and fully maintain 2,300 km of Priority Alignments over the same period.** RFs collecting annual amounts between these two limits would be able to restore a proportional length of roads as shown by the linear relationship between RF revenues and km restored. The results, the underlying assumptions, and the corresponding countries can be found in Annex 8.

60. **Assuming that (1) tolls can be raised on 50% of the length of all restored Priority Alignments, (2) the average toll is equivalent to US$5c/km and (3) the AADT is 8,000 vpd, then a RF collecting US$125M per year would be able to restore 10,000 km of Priority Alignments over 30 years.** This figure is to be compared with the mere 400 km that could be restored in the absence of tolls. It shows how the outcome of the Restoration Concept (total length of restored and thereafter fully maintained Priority Alignments) increases linearly with traditional resources and exponentially if tolls are collected on some sections of the restored Priority Alignments. In the case of the Kenya, whose RF collected US$625M in 2017, an increase of the toll coverage from 20% to 30% of the Priority Alignment network would induce a leap from 5,000 km to 10,000 km of restored and maintained priority roads over 30 years (see Annex 8). Despite the challenges associated with any tolling program, these numbers illustrate the need for SSA Governments to seriously consider the tolling option.

61. **If SSA countries agree to raise the fuel levy to the minimum recommended level of US$15c/l and adjust it regularly to account for inflation, Ivory Coast and Mozambique would join Kenya among the RFs collecting more than US$500M annually while Namibia and Ghana would collect about US$300M annually.** Consequently, Mozambique, Kenya, and Ivory Coast could restore 2,800, 2,300, and 2,200 km of Priority Alignments over 30 years without raising any toll. If tolls were raised using the assumptions previously described, these countries would be able to restore and maintain nearly all of their national road networks.

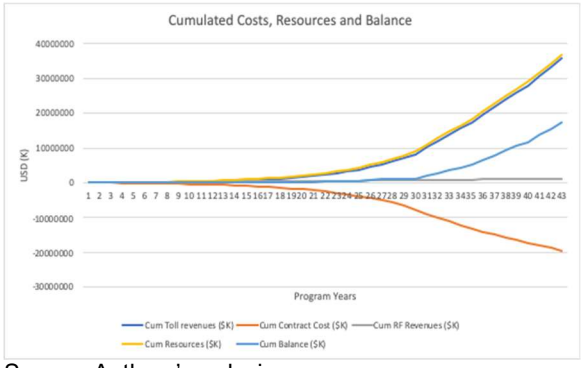
62. **Figure 4 presents the output of the simulation model using the average revenues of US$115m currently collected by SSA's RFs. It also assumes that tolls would be collected**. If tolls were raised on 50% of the restored Priority Alignments, a typical RF would be able to implement over 30 years up to 100 restoration contracts (52 PPPs and 48 OPRCs)[34], 36 follow-up maintenance contracts, and restore 10,000 km of Priority Alignments. The number of Restoration Contracts would gradually ramp up from an average of 1 per year during the years 1-10, to 3 per year during the years 11-20 and then to 9 per year the during years 21-27[35]. This

[32] The simulation model allows testing a restoration program composed of a mix of Government-Pays PPPs and OPRCs. Conversely, lower cost scenarios can be bundled and treated as PPPs.
[33] In 2017, eight SSA countries had a RF collecting that amount or more. However, none of these RF had automatically adjusted resources.
[34] Ideally, all contracts should be structured as PPPs. The simulation can be computed accordingly but we chose to use a combination of both that looks more realistic in our view.
[35] the restoration program is suspended in year 27 because the restored network nearly covers the common length of the national networks

snowball effect type of growth would give RFs, RAs, and their associated PPP Units time to upgrade their skills and management capacity. This simulation also quantifies the magnitude of the tolling effect: after 30 years, the cumulated traditional adjusted RF revenues would reach about US$750M annually, whereas the cumulated toll revenues would top US$8bn.

Figure 4: Cumulated Restored roads. Contract costs and resources.

Source: Authors' analysis.



Source: Authors' analysis.

3. A Road Restoration PPP model to scale-up private sector participation in Sub-Saharan Africa[36]

a. Typical features of a Road Restoration PPP

63. **The proposed model of Road Restoration PPP addresses the identified impediments to more private sector participation and leverages lessons learned from the analyzed road PPPs. It is intended to be adapted and replicated in various SSA countries.**

64. **A Road Restoration PPP would be structured as a Government-Pays PPP with demand risk retained by the public sector. Annuity Payments would flow from the RRW carved into the RF**. Milestone Payments could be made during the construction period covering a portion of CAPEX. The Project Company would finance the remaining CAPEX with a mix of debt and equity. The share of CAPEX covered by private finance and Milestone Payments would need to be adjusted to consider an RF's RRW capacity to pay.

65. **A Road Restoration PPP would focus on the reconstruction and improvement of existing Priority Alignments with a possible capacity increase. It would include operations and maintenance**. The whole duration of the PPP would be no less than 15 years, including a 3-year construction period, but could be longer (e.g. 20 to 25 years) to optimize life-cycle management or increase affordability (for example, if the project includes significant capacity increase or upgrading) among other factors[37].

66. **A typical Road Restoration PPP would not necessarily be CAPEX-intensive**. A Road Restoration PPP would entail minimal upgrade works as it would target brownfield sections of the road network's Priority. Despite this relatively low risk profile, these projects would still need to

[36] More details on the proposed Road Restoration PPP model are found in Annex 9.
[37] ADB, EBRD, IDB, IsDB, MIF, PPIAF and WBG. The APMG Public-Private Partnership certification guide. Chapter 5: Structuring and drafting the tender documents and contract. 2016.

benefit from scalability and replicability to lower their transactions costs, both for the RA/RF and the sought-after private sponsors. Additional strategies designed to make these contracts more attractive to private sponsors could entail bundling several Priority Alignments into a single Road Restoration PPP.

Table 2 provides a summary of Road Restoration Contracts' main features.

Table 2: Proposed typical features of a Road Restoration PPP.

Feature	Description
Type of PPP project	Brownfield DBFOMT linked to Annuity Payments. Demand risk retained by the public sector. Private Sector to take works completion risks and/or maintenance risks (i.e. Annuity Payments can be reduced if road condition falls below a certain threshold).
Scope	Rehabilitation/reconstruction of existing paved roads, including bridges, culverts, roads intersection, etc. Localized upgrading (from gravel to pavement) and capacity increase. Operation and maintenance, including periodic maintenance and renewal.
Length	Length to be determined, but should cover a significant portion of a Priority Alignment
CAPEX	To be determined regarding affordability for the public sector. Possibility to bundle several Priority Alignments under the same contract to make contract sizeable and if practical from a technical point of view
Milestone Payments	To be determined regarding affordability for the public sector
Contract Duration	Not less than 15 years and up to 20-25 years, including a construction period of about 3 years.
Contracting Authority	Road Authority
Project Company Revenues	Annuity Payments (twice a year or quarterly) made by the Road Fund
Gov. Support	As owner of both the RA and the RF, the Government would be expected to step-in in case of revenue shortfall regarding Annuity Payments or early termination payments.
Potential WBG Support	See Annex 9 for more details.
Other Support	Application for Global Infrastructure Facility funding to fund advisory services (either project definition or project preparation and structuration activities).

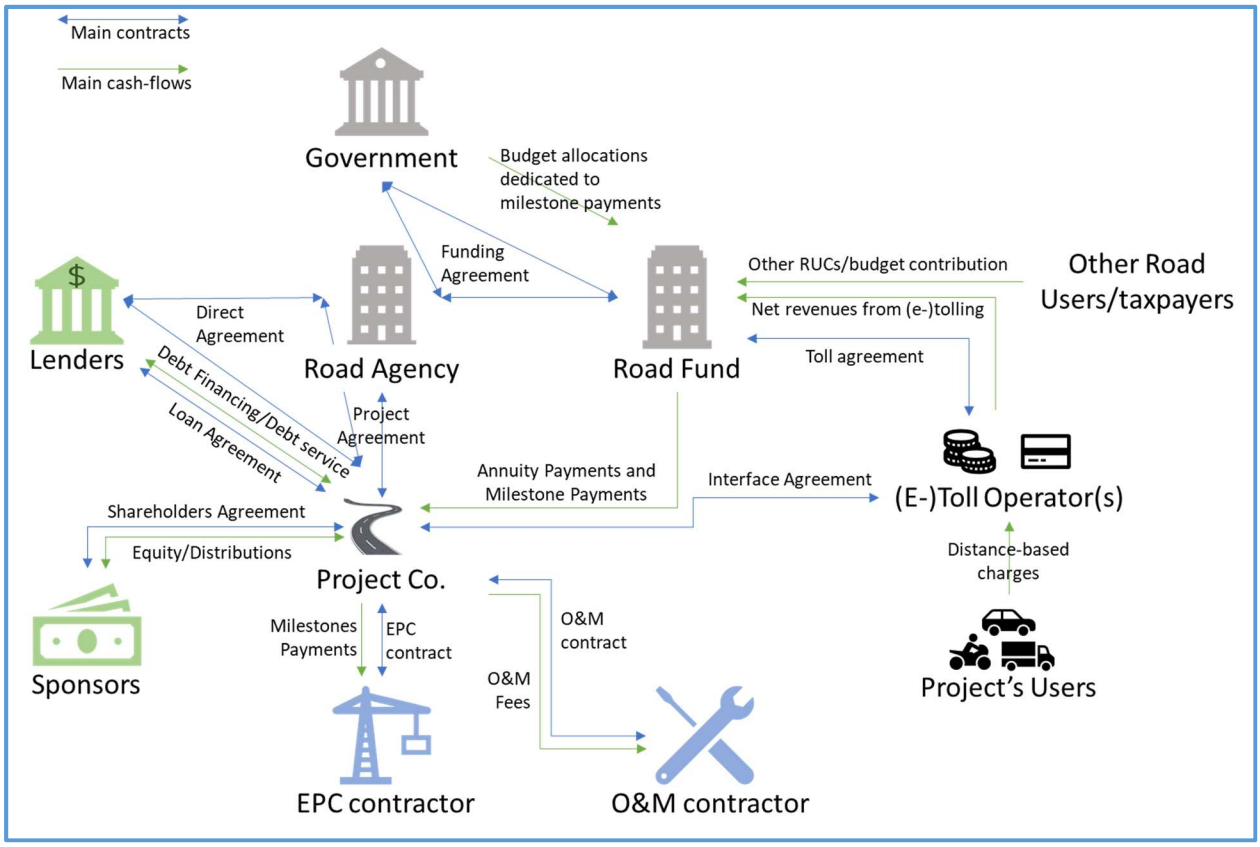
Source: Authors' analysis.

b. Typical commercial structure of a Road Restoration PPP

67. **The proposed commercial structure is derived from a typical PPA with the RA acting as Contracting Authority while the RF is the designated "off-taker" tasked with making annuity payments to the private Project Company**. The RF would shoulder the payment risks in this structure, including Milestone Payments during the construction period. These payments would be made from the RRW using a mix of revenue sources as described previously. RRW's capacity to pay for these PPPs could be further buttressed by the RF's ability to contract long-term

commercial loans from local and/or international banks (i.e. using its future revenue flows as collateral as shown in Figure 5).

Figure 51: Proposed typical commercial structure of a Road Restoration PPP.



Source: Authors' analysis.

68. **Alternative commercial structures could be adopted without substantially changing the envisioned PPP structure**. These could be tailored to countries with different institutional frameworks (e.g. no RA, or PPP Unit as the Contracting Authority), alternative toll operation schemes, or even alternative funding mechanism for Milestone Payments during the construction period.

69. **Other contracts could be specific to the proposed structure**:

- **The funding agreement**. This agreement would be signed between the Government, the RA and the RF. It would be part of the tender documents to give visibility to bidders on how payments to the Project Company would be governed. Its purpose would be to give enough confidence to private sponsors that RF's payments would carry acceptable credit risks. This contract would address, *inter alia*: the responsibilities for making Milestones Payments for works, Annuity Payments, Early Termination Payments and Payment Procedures including, but not limited to, Payments' approval process.

- **Toll agreement.** Some of the Priority Alignments could be tolled once restored. Whether there will be only one or several toll operators depends on the Government's decisions. The toll agreement would be signed between the toll operator and the RF. It would govern, *inter alia*: the technical specificities to ensure interoperability in case several toll operators

co-exist on the tolled network, performance objectives in terms of toll collection and organization of flows from the users to the RF. The toll system could be developed and managed under various schemes (from traditional public procurement to PPP schemes).

- **Interface agreement**. Based on the assumption that the tolling system would be developed and managed by a third-party (i.e. not the Project Company itself). This interface agreement, would govern, *inter alia*: technical issues like access to the site to install the system and/or to operate/manage the system, mutual liquidated damages, etc.

c. Key risks allocation for the proposed Road Restoration PPP

70. **The key risks allocation proposed below is intended to guide the structuring of balanced and bankable Road Restoration PPP program**. Some of these risks should be mitigated during project preparation. For the risks that will be dealt with after financial closing, mitigation mechanisms would be reflected in the project agreement. A more comprehensive risk allocation matrix is proposed in Annex 9.

71. **Key risks include**[38, 39]:

- **Land availability (risk of delay and cost overruns in the acquisition of the land necessary to develop the project.)**. This risk is mitigated by the fact that Road Restoration PPPs focus mainly on the restoration of existing Priority Alignments. However, Right-of-Way should ideally be fully cleared before financial close. Any remaining Right-of-Way (e.g. for service areas proposed by bidders) should be cleared within a specified timeline. In case of WBG support (e.g. IDA/IBRD credit/loan), Right-of-Way clearance could be a condition precedent for drawdown;

- **Environmental and social risks (i.e. delays and/or cost overruns in obtaining environmental clearance and conducting resettlement/compensation of impacted population)**. The Resettlement Action Plan defined and approved by the Government as part of the full ESIA (Environmental and Social Impact Assessment) study should be implemented before commercial close by the Contracting Authority. However, the Project Company would be responsible to implement the agreed environmental action plan during the entire contract duration;

- **Demand and "off-taker" risks (i.e. when resources collected from project users are below forecasted revenues and/or RF is not able to meet its payment obligations)**. Annuity Payments will be made by the RF irrespective of whether the forecasted revenues from the tolled sections are met or not. The funds available in the RRW will be mobilized to that aim. To help bidders assess the off-taker risk, the funding agreement, as well as the last financial and annual reports of the RF should be part of the tender documents. Since the concept of carving out an RRW will be a novelty, a payment guarantee from the Government, possibly counter-guaranteed by IBRD/IDA, could be included in the tender documents; at least until the RF has gained sufficient market credibility to free itself from this requirement;

[38] https://ppp-risk.gihub.org/risk_category/road/
[39] PPP in Infrastructure Resource Center for Contracts, Laws and Regulations (PPPIRC). Matrix of risk distribution for roads. March 200

- **Maintenance and operation costs (i.e. project maintenance - routine and periodic - and operation costs are higher than expected)**. As this refers to life-cycle management of the road, this risk should be transferred when possible to the Project Company. Bidders will make their own traffic studies that will be reviewed by their lenders to determine the cost of maintenance (particularly the share of HGVs). To face the periodic maintenance costs, Lenders will require the Project Co. to use a portion of the Annuity Payments to flow into a specific reserve account. Since axle load regulation enforcement in SSA often represents an unmitigated risk; specific contractual clauses might be inserted in the PPP documentation to address this risk;

- **Availability and performance risk (i.e. road condition becoming sub-par)**. From the Project Company's point of view, this risk can materialize through Performance Deductions and/or Liquidated Damages that will be deducted from its Annuity Payments. RA/RF will seek to limit this risk since a well-maintained roadway will increase and preserve users' willingness to pay a toll whenever the road is tolled. The selection of adequate and reasonable Key Road Performance Indicator targets will be the basis of a balanced risk allocation between the Project Company and the RA/RF;

- **Foreign exchange risk (i.e. currency mismatch between revenues and debt/equity)**. Depending on country context, there are different options to mitigate this risk. The Contracting Authority may wish to propose in the tender documents that a percentage of Annuity Payments (capped and to be proposed by bidders) be denominated in a hard currency. If that percentage does not fully cover debt service and equity distributions, then the Project Company can investigate securing financial hedging products (i.e. foreign exchange swaps) for the unsecured portion of its revenues/payment obligations;

- **Currency convertibility and transferability (i.e. inability to legally convert local currency into hard currency and/or transfer converted currency - cross-border investments only)**. Depending on country context, Lenders and Equity Investors in the Project Company may wish to contract a Political Risk Insurance (PRI) that can provide coverage against this risk.

72. **Other key "acceptability" clauses and an example of payment mechanism are detailed in Annex 9**. The so-called "acceptability" clauses are related to the public sector's rights and aim at increasing political acceptance of the PPP scheme. These clauses include, *inter alia*: refinancing gain sharing mechanisms, social inclusion targets, control and auditing of the contracting authority over the Project Company's activities.

V. SSATP and World Bank Group assistance to implement the Restoration Concept

1. A checklist of activities to implement the Restoration Concept

73. **The following recommendations aim at guiding the implementation of the Restoration Concept in SSA countries where RF exhibits a potential for 3rd Generation status**. Since many RFs in SSA have slid back from 2nd Generation Status or have never reached it, Annex 10 provides recommended technical assistance to invert this trend.

74. **Depending on country context, the implementation of the Restoration Concept is expected to require a multidimensional WBG support to client countries**. This support would range from increasing knowledge (on national network condition and traffic; on local contractors and financiers' skills and capacities, etc.) to Road Restoration PPP programming, structuring, tendering and further management as well as passing potential reforms (national procurement framework, RF's mandate and/or legal nature, tolling policy, PPP framework, restructuring of an existing National Infrastructure Bank, etc.).

75. **Regarding Road Restoration PPPs only, entities of the WBG can provide a range of financial (loans/credits, guarantees and insurance products) and non-financial (technical assistance, advisory services) aiming at increasing affordability and attractiveness of Road Restoration PPPs[40, 41] to either the Contracting Authority or the Project Company.** IBRD/IDA loans/credits provided at favorable or concessional terms to the Government can co-finance Milestone Payments, thus lowering the cost of capital and increasing affordability for the public sector. IFC loans to the Project Company can help mobilize the private financing needed, increase affordability through longer tenors and favorably impact the PPP structure. IBRD/IDA guarantees to the Project Company can mitigate the off-taker and early termination payment risks while helping attract Lenders and Equity Investors. MIGA Political Risk Insurance products can insure cross-borders investors (either lenders or equity providers) against some political risks (e.g. currency convertibility) and thus help mobilize private finance.

76. **The timing and mobilization of WBG financial and non-financial instruments to implement the Restoration Concept and Road Restoration PPPs should be optimized and coordinated to ensure client countries buy-in**. These instruments are either tailored to the Public Sector or future Project Companies (as well as its Lenders and Equity Providers). They are likely to be mobilized at different phases of the Concept implementation timeline. For example, IBRD/IDA Technical Assistance would likely be needed during upstream phases to help client countries assessing Priority Alignments or identifying gaps in their institutional/legal frameworks that may prevent or hamper the implementation of Road Restoration PPPs. IDA/IBRD credits/loans and guarantees would likely be discussed with client countries during the Project's appraisal phase so that guarantees can be proposed as part of the tender documents[42]. Finally, during the tendering phase, bidders may request MIGA Political Insurance Products and IFC loans.

[40] World Bank Group. Maximizing Finance for Development in Transport. Getting from concept to investments. Report 2: Operational Guidance. 2019.
[41] World Bank Group. World Bank Group Guarantee Products, Guidance note. April 2016.
[42] As was the case for the Ganta-Zwedru road corridor rehabilitation PPP in Liberia.

77. **Designing WBG support to client countries for implementing the Restoration Concept, whether a replicable and standardized turnkey solution[43] or a flexible one-stop-shop window[44], is beyond the scope of this study. Nonetheless, Table 3 provides a checklist of activities that could use the support of the WBG**.

Table 3: Checklist of activities to perform to implement the Restoration Concept.

Surveys and data analyses
Upstream phases of implementation. - Independent survey and assessment of the national road network to (1) improve knowledge of road condition and traffic levels and (2) select Priority Alignments to be restored and, further on, potentially tolled; - Appraisal of the road contracting industry to assess local contractors' ability to participate in PBCs, OPRCs and Road Restoration PPPs; - Appraisal of the financial industry to identify (1) local commercial banks and local institutional investors (e.g. pension funds) and assess their capacity to provide long term-financing and (2) any existing National Infrastructure Bank and assess its capacity to address long-term financing gaps; - Legal and institutional gap analysis to identify (1) areas for improvement in the road asset management ecosystem, (2) necessary improvements to the RF legal mandate, structure and legal status (e.g. moving from an administration to an SOE), (3) areas for improvement in the PPP framework, and (4) areas for improvement in the public procurement framework[45]
Institutional and legal reforms as appropriate
Upstream phases following the outcomes of data analyses. - Road Fund reform e.g. changing RF legal status, creating an RRW, enabling the funding of spot reconstruction bundled with maintenance in long-term contracts; - Financial sector reform e.g. enabling local institutional investors to provide long-term financing for public infrastructure projects, reforming/restructuring an existing National Infrastructure Bank; - Toll policy elaboration; - PPP framework adjustment as required;
Capacity building
Upstream and midstream phases of implementation. - road contractors: Advertise and explain the Restoration Concept, organize classroom and on-the-job training programs on PBCs, OPRCs and Road Restoration PPPs to improve their capacity to qualify and bid successfully; - financiers: Advertise and explain the Restoration Concept, improve their project finance skills and capacity to provide long-term financing; - public sector institutions: Assistance to RFs (e.g. management of resources, disbursement processes, reporting and auditing) and RAs (e.g. additional skills and staff needed to manage the PPP contracts);
Road Restoration PPP programming and implementation
Midstream phases of implementation.

[43] See for example the scaling solar initiative (https://www.scalingsolar.org/).
[44] See for example InterAmerican Development Bank's PPP framework (https://blogs.iadb.org/bidinvest/en/support-structuring-public-private-partnerships/).
[45] A more detailed checklist on legal and institutional aspects is provided in Annex 4.

- Fundraising for advisory services: prepare and manage application for Global Infrastructure Facility funding[46]. Funding may support programming as well as transaction implementation activities and is compatible with advisory mandates executed by either an independent advisor or by IFC;
- Preparation of a pipeline of Priority Alignments to be restored using Road Restoration PPPs based on surveys and data analyses;
- Drafting of standardized tender documents (Request for Qualifications, Request for Proposal, project agreement, direct agreement, funding agreement, toll agreement and interface agreement);
- Market sounding in order to (1) collect private sector stakeholders' feedback on standardized tender documents and improve them as appropriate, and (2) identify market gaps requiring WBG financial instruments (e.g. payment guarantees, Political Risk Insurances);
- Tendering the Road Restoration PPPs. If the market sounding reveals that WBG financial instruments will be necessary to support bankability, these instruments should be made available as early as possible in the tender process.

Source: Authors' analysis.

2. Next steps

78. **Activities that could be undertaken promptly by the WBG are proposed below:**

- Collect private stakeholders' feedback on the proposed Road Restoration PPP model;
- Initiate the design of WBG support to be presented to client countries;
- Prepare pitchbooks and business cases to canvass potential pilot countries (e.g. Ivory Coast and Kenya); and
- Organize a workshop during the next SSATP annual meeting to discuss and elicit feedback on the Restoration Concept.

[46] https://www.globalinfrafacility.org/

Scaling Up Private Sector Participation in Road Asset Management in Sub-Saharan Africa

Annexes

September 10th, 2019

Table of contents

List of abbreviations

ANI	Agencia Nacional de Infraestructura
ANTT	Agencia Nacional de Transportes Terrestres
BNDES	Banco Nacional de Desenvolvimento Econômico e Social
DBFOMT	Design Build Finance Operate Maintain and Transfer
DFI	Development Finance Institution
EPC	Engineering Procurement and Construction
EPL	Empresa de Planejamento e Logística
GoC	Government of Colombia
GoK	Government of Kenya
GoL	Government of Liberia
GoIC	Government of Ivory Coast
GoS	Government of Senegal
GDP	Gross Domestic Product
HGV	Heavy Goods Vehicle
LIC	Low-Income Countries
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFC	International Finance Corporation
IMF	International Monetary Fund
KeNHA	Kenya National Highways Authority
MIGA	Multilateral Investment Guarantee Agency
MDB	Multilateral Development Bank
MFD	Maximizing Finance for Development
NPV	Net Present Value
OPRC	Output and Performance-Based Road Contracts
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
RA	Road Agency
RF	Road Fund
RFP	Request for Proposals

RFQ	Request for Qualifications
RMI	Road Maintenance Initiative
RRW	Road Restoration Window
RUC	Road User Charge
SOE	State-Owned Enterprise
SPV	Special Purpose Vehicle
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
WBG	World Bank Group

Annex 1 Road Maintenance Initiative Matrix

Contents of Annex 1

I. Road Maintenance Initiative Matrix 2006

Countries	Transport Policy(1)		Long term road investment program		Road Fund											Allocation of RMF resources		
	Cabinet-adopted?	Adoption Date	Adopted?	Period Covered	Established?	Creation Date	Has a Board?	Board with Private majority?	% Share of Road Fund resources from user charges	% Share of road user charges from Fuel Levy	% Coverage of routine maintenance needs from all	% Coverage of Total Maintenance needs (3)	Fuel Levy Gas	Fuel Levy Diesel	Direct channeling of Road user charges?	Main network	Rural network	Urban network
Angola	yes	1999	yes		yes	-	no	-	-		yes				no	70%	20%	10%
Benin	yes	1993	yes	1997-2001 (5)	yes	1997	yes	no	90		yes				no			
Burkina Faso	yes	2000	yes	2000-2005 (6)	no	(4)	-	-	-	-	-	-	-	-	-	-	-	-
Burundi	yes	2001	yes	2003-2006	yes	2001	yes	no	95	80	no	no	2	2	yes	80%	20%	-
Cameroun	yes	1996	yes	2003 - 2005	yes	1998	yes	yes	90	93	no	no	4	8	no	75%	12%	13%
Cape Verde	yes	2003	yes	2003-2007	yes	1999	yes	no	100	100	no	40	50% of the taxes		no			
CAR	yes	1990	yes	1990 -2005	yes	2000	yes	no	80	80	no	no	9	9	yes	90%		10%
Chad	yes	1999	yes	2000-2009	yes	2000	yes	yes	90	70	70	no			yes	90%	0%	10%
Cote d'Ivoire	yes	1998	yes	1998-2005	yes	2001	yes	no	30	100	60	no	7	2	yes	100%		
Ethiopia	yes	1998	yes	1997-2007	yes	1997	yes	no	40	8	100	80	1.50	1.03	yes	70%	20%	10%
Gabon	yes	1998	yes	2002-2012	yes	1997	yes	yes	46		no				no	-	-	-
Ghana	yes	2000	yes	2002-2007	yes	1997	yes	yes	100	95	80	40	4	4	yes	47%	23%	25%
Guinea	yes	2001	yes	1998-2007	yes	2000	yes	yes	100	60	no	no	2.6	2.6	yes	68%	25%	7%
Kenya	yes	1997	no	-	yes	2000	yes	yes	100		yes		7	7	yes	57%	40%	-
Lesotho	no (4)	-	yes	2003-2007	yes	1996	yes	no	100	60	yes	30			no	(5)	80%	20%
Madagascar	yes	2000	yes	2003-2008	yes	1997	yes	no	50	50	100	50	5	5	yes	80%	5%	15%
Malawi	yes	2002	no	-	yes	1997	yes	yes	80		50		6	5	yes	60%	20%	20%
Mali	yes	1993	no	-	yes	2000	yes	yes	19	81	75	52	0.6	0.6	yes	80%	20%	-
Mozambique	yes	2002	yes	2001-2010	yes	1999	yes	no	>95	90	yes	85	9	8	no	70%	20%	10%
Niger	yes	2003	no	-	yes	1999	yes	yes	20		no	no	6	6	no	90%		10%
Nigeria	no	-	no	-	no	-		no	-		-				-			
Rwanda	no	(4)	no	(4)	yes	2000	yes	no	100	80	no	30	3	3	yes	100%	0%	0%
Senegal	yes	1999	no	-	no	-	-	-	-		yes	no						
Tanzania	yes	2002	yes	2002-2011	yes	1998	yes	no	90	90	90	50	9	9	no	70%	20%	10%
Togo	yes	1996	yes	1997-2011	yes	1997	yes	yes	80	-	60	50	7	7	yes	70%	10%	20%
Uganda	yes	2001	yes	2002-2011	no	-					100	60			-			
Zambia	yes	2002	yes	1997-2007	yes	1994	yes	yes	95	100	35		8	8	no	33%	55%	12%
Zimbabwe	yes	1997	no	-	yes	2001	yes	yes					2.5	2.5	yes	39%	45%	16%

II. Road Maintenance Initiative Matrix updated 2017

Country	Long Term Road Investment		Road Fund								
	Adopted	Period covered	Created?	Act?	Reference	Creation Date	Designation	Legal Status	Accounting System	Reporting Ministry(ies)
Benin	yes	2016-21	yes	Decree	n° 96-373 of 29 August 1996	1996	Road Fund	Public Interest Grouping (GIP)	SYSCOHADA	TP+Fin
Burkina Faso	yes	2016-20	yes	Decree	n°2016-180/PRES/PM/MINEFID/MTMUSR of 11 April 2016	2016	pecial Burkina Faso Fund: Fonds Spécial Routier du Burkina (FSR-B	Public Entity (EPE)	SYSCOHADA/Public	TP+Fin
Cape Verde	yes	2003-07	yes			1999				
Côte d'Ivoire	yes	2018-22	yes	Decree	n°2001-593 of 19 September 2001	2001	Road Maintenance Fund; Fonds d'Entretien Routier (FER)	Société d'Etat	SYSCOHADA	TP+Fin
Gambia	yes	2016-20	yes	Law		2003				PW
Ghana	yes	2018-21	yes	Decree	Act 536 as amended by Act 909	1985, 97, 2016	Ghana Road Fund (GRF)	State Enterprise	Public	Roads and Hwys
Guinea	yes	2016-20	yes	Decree	n° 114/PRG/SGG/00 of 24 November 2000	2000	Fonds d'Entretien Routier (FER)	State-owned public industrial and commercial institution (EPIC)	SYSCOHADA	TP
Guinea-Bissau			yes	Decree	n°19/84 of 25 July 1984	1984 &1997	Fonds d'Entretien Routier (FER)	Public Financing Institution	SYSCOHADA	
Mali	yes	2015-19	yes	law	Law n°051 of 04/12/2000	2000	Autorité Routière (AR)	dministrative Public Authority (EPA	Public and Private	TP+Fin
Niger	yes	2017-21	yes	law	N° 2017-37 of 22 May 2017	2005 & 2017	Fonds d'Entretien Routier (FER)	Public Land Institution (EPF)	SYSCOHADA	TP+Fin
Senegal	yes	2018-20	yes	Decree	n° 2007-1277	2007	Fonds d'Entretien Routier Autonome (FERA)	Public Body	SYSCOHADA	TP+Fin
Sierra Leone	yes	2008-28	yes	Decree	Act No. 3 of 9th April, 2010	2010	Road Maintenance Fund Administration (RMFA)	Public Body	Public audited by Auditor General	PW
Togo	yes	2018-22	yes	Decree	Decree n° 2012-013/PR of 26/03/2012	2012	Société Autonome de Financement de l'Entretien Routier (SAFER)	State-Owned Enterprise	SYSCOHADA	TP+Fin
Burundi	yes	2019-2015	yes	Law	Nr 100/117 of 27 October 2001	2001	National Road Fund - Fonds Routier National	Etabl. Public Caract. Admin.	Plan comptable national	PW
Djibouti										
Ethiopia	yes	1997-2012	yes	law		1997	Office of the Road Fund			Finance
Kenya	yes	-	yes	Law	Act No. 7 of 1999	1999	Keny Road Board Fund	State Corporation		Fin+MoTIHUD
Rwanda	yes	2018-24	yes	law	1998 and No.49/2013 of 28/06/2013	1998	Road Maintenance Fund (RMF)	Government Institution	Public audited by Auditor General	PW
Tanzania	yes	2012-17	yes	Law	Roads and Fuel Tolls Act CAP 220 revised 2006	1998	Roads Fund Board	Government Institution	Public audited by Auditor General	PW
Uganda	yes	2002-11	no							
Zanzibar										
Cameroon			yes	law	Law n° 98/011 of 14 July 1998 and n° 96/07 of 8 April 1996	1998	Road Fund	Public Administrative Institution	OHADA	TP + Fin
Gabon	yes	2002-12	yes			1997				
R Congo	no		yes	law		1997				TP + F
CAR	yes	2017-2021	yes	law	n°05.001 of 15 November 2005	2005	Roads Maintenance Fund	Public Office	SYSCOHADA	TP+Fin
RDC										
Chad	yes	2011-2020	yes	law	014/PR/2000 of 17/08/2000	2000	Roads Maintenance Fund; Fonds d'Entretien Routier (FER)	Public Administrative Institution	OHADA	TP
Comoros										
Lesotho										
Madagascar			yes	law		1997				TP + F
Malawi		-	yes	law		1997				
Mozambique	yes	2002-11	yes	decree	Road Fund Decree 22/2003	2003	Road Fund "Fundo de Estradas"	Public Institution	Primavera and e-Sistafe	PW+MEF
Namibia	yes	2003-23	yes	law		1999				Finance
Zambia	yes	2013-16	yes	law	National Road Fund Act 13 of 2002	1994				Finance
Zimbabwe										

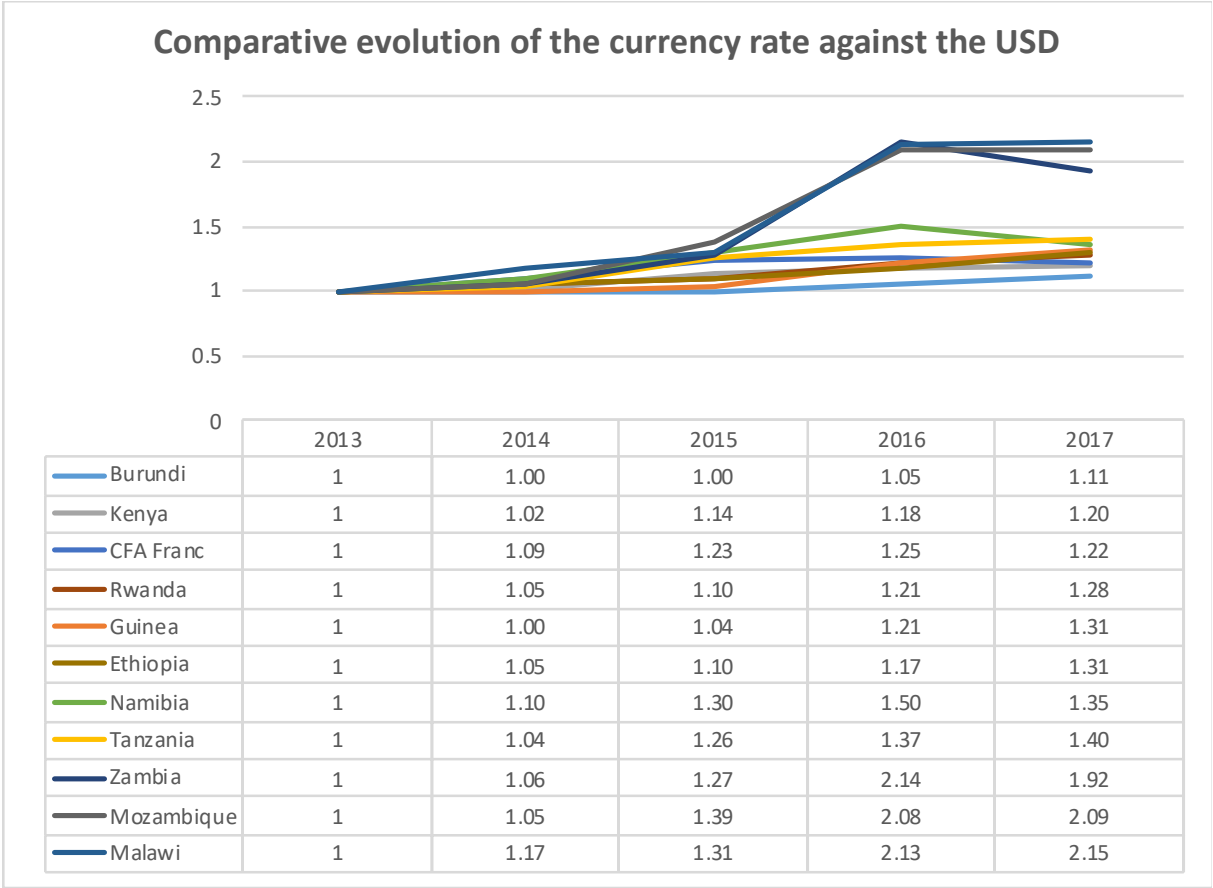
(1) At the date of publication of this report, data from some RFs have been found or received partially or not at all. The updating of the 2017 RMI matrix will require a continued effort and engagement with the related RFs.
(2) Data and information in red font have been updated to 2017
(3) Countries are grouped by regional focal group of West Africa, East Africa, Central Africa, and South Africa.

Country	Has a Board	No. of Board Members	Board with Private Majority?	% Share of Road Fund resources from user charges	% Share of road user charges from fuel levy	% Coverage of routine maintenance needs (2)	% Coverage of total maintenance needs (2)	Fuel Levy 2017 US Cents/litre Petrol	Fuel Levy 2017 US Cents/litre Diesel	% Direct channelling of Road user	% Share of Road Fund to Investment	Staff Size (No)	Resources 2017 USD (million)
Benin	yes	11	non	24	52	100	59	5.0	5.0	10		23	19
Burkina Faso	yes	9	non	16	84	100	50	20.8	8.3	50		19	51
Cape Verde	yes		non	100	100		40			0			
Côte d'Ivoire	yes	12	non	25	100	80	73	12.9	4.3	25		50	182.8
Gambia	no					50	-	2.0	2.0				2
Ghana	yes	13	yes	100	91	100	70	8.0	8.0	100		17	182
Guinea	yes	11	non	100	100	15	7	2.7	2.7	100		37	27
Guinea-Bissau	yes	10	non				70	2.2	2.2	0		45	2
Mali	yes	12	oui	98	83	75	40	6.1	6.1	100		35	101
Niger	yes	12	oui	66	33	26		4.0	4.0	100		10	17
Senegal	yes	11	non	50	100	100	53	11.0	12.2	100		19	127
Sierra Leone	yes	8	yes					6.4	6.4				25
Togo	yes	7	oui	80	-		35	7.0	7.0			406	28
Burundi	yes	8	yes	35	60			5.0	5.0	100		22	5
Djibouti													
Ethiopia	yes	16	no	7.3	99	100	65	6.9	5.7	100		35	92
Kenya	yes	13	yes	100	99	>100	100	17.4	17.4	100	23.3	72	686
Rwanda	yes	7	yes	100	72	100	60	13.0	13.0	100		10	11
Tanzania	yes	9	yes	100	97	>100	100	13.7	13.7	100		24	390
Uganda													
Zanzibar													
Cameroon	yes	11	non	99	86	60	40	13.0	10.0	94	0	23	100
Gabon	yes		oui	46									
R Congo	yes	9	non	76	100	80	30	4.0	3.0	75			17
CAR	yes	5	oui	90	90	70	20	10.0	10.0	100	77	23	
RDC													
Chad	yes	13	oui	100	72	43	22	4.0	3.5	100	0	22	36
Comoros													
Lesotho													
Madagascar	yes	9	non	76	100	80	30	4.0	3.0	75			17
Malawi	no	13	no	100	90	40	50	15.3	15.3	100			48
Mozambique	yes	5	yes	100	83	80	60	5.1	4.7	65	40	144	283
Namibia	yes	5	yes	75	75	80	65	15.4	15.4	100		16	164
Zambia	yes	11	no	100	100	100	30	5.0	4.5	0		136	173
Zimbabwe													

Annex 2 SSA currencies evolution and Road Funds revenues vs. expenses over the 2013-17 period

Contents of Annex 2

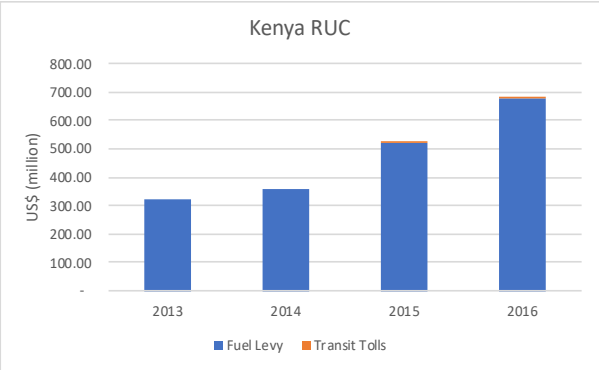
I. Comparative evolution of a sample of SSA currencies against the US dollar from 2013 to 2017

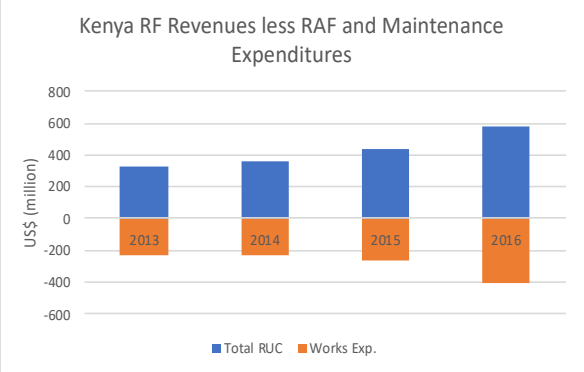


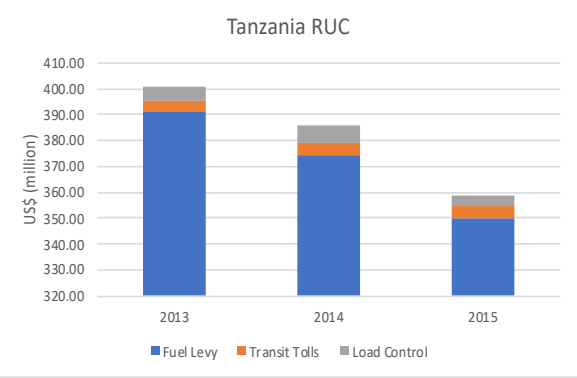
	2013	2014	2015	2016	2017
Burundi	1	1.00	1.00	1.05	1.11
Kenya	1	1.02	1.14	1.18	1.20
CFA Franc	1	1.09	1.23	1.25	1.22
Rwanda	1	1.05	1.10	1.21	1.28
Guinea	1	1.00	1.04	1.21	1.31
Ethiopia	1	1.05	1.10	1.17	1.31
Namibia	1	1.10	1.30	1.50	1.35
Tanzania	1	1.04	1.26	1.37	1.40
Zambia	1	1.06	1.27	2.14	1.92
Mozambique	1	1.05	1.39	2.08	2.09
Malawi	1	1.17	1.31	2.13	2.15

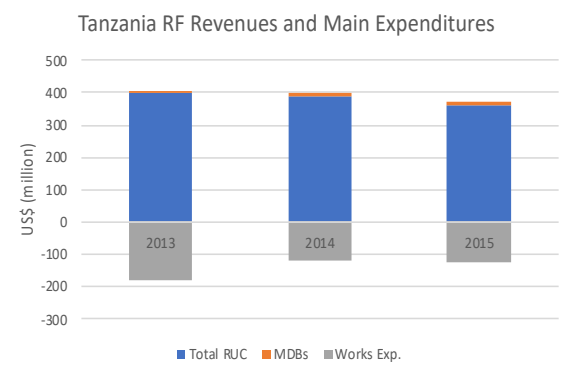
II. RUC composition, total revenues and main expenditures of Road Funds

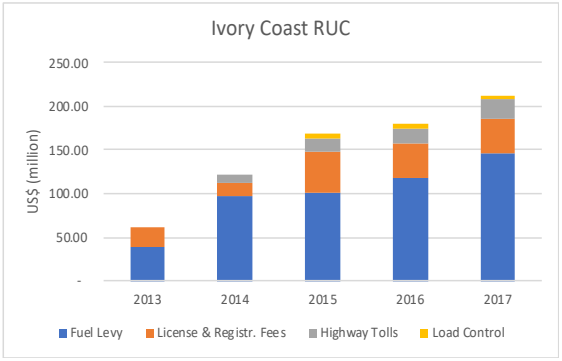
For some countries the data could not be obtained for the entire period. Kenya - Since 2015, 16% of the proceeds of the fuel levy are transferred to a Road Annuity Fund dedicated to investment works. The chart on the right-hand side shows the revenue earmarked for maintenance and the maintenance works expenditures. Cameroon and Ethiopia – The government has capped the transfer of fuel levy at about 50%. Burundi – The government has capped the transfer of fuel levy revenues at about 50% since 2015. Tanzania – the fuel levy was kept at TSH 263 over 2013-15 but in $ amount it went down from 15.8 to 12. The fuel levy was increased to TSH 315 or $ 14.1 in 2017; other data are not available for this period.

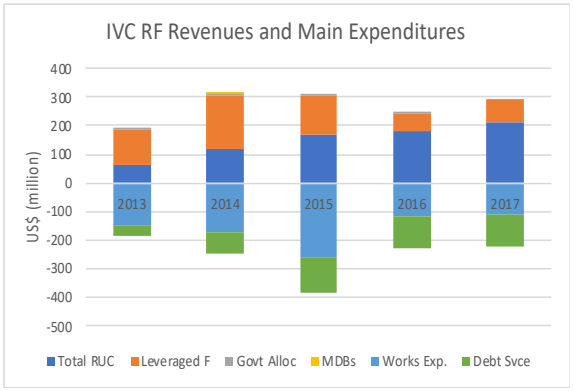


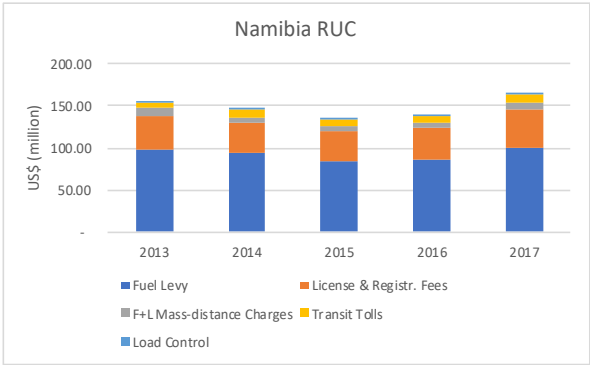


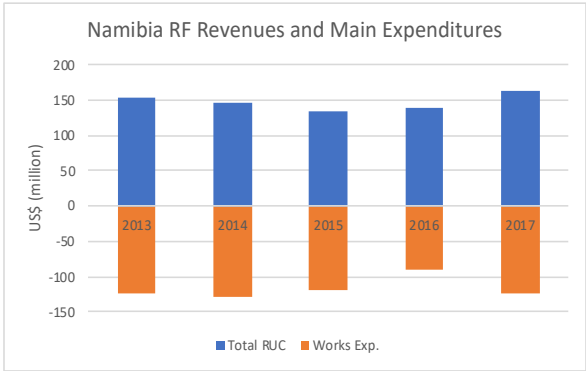


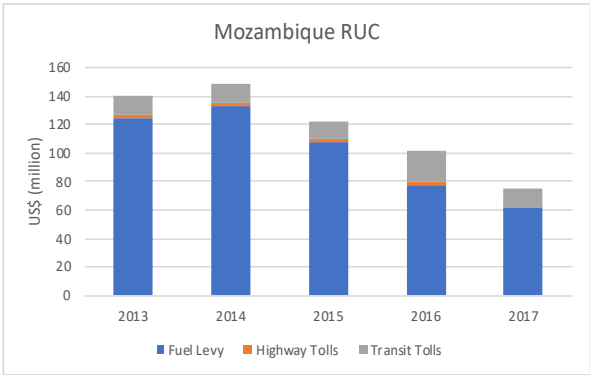


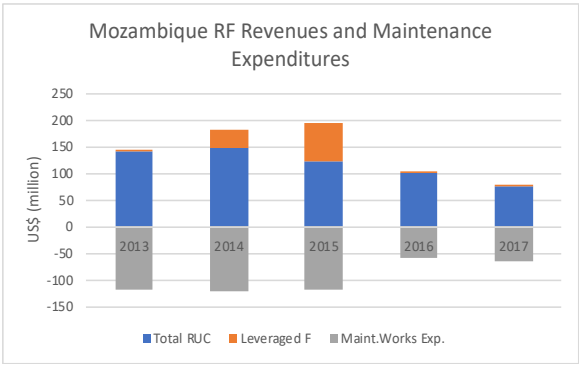

Ivory Coast RUC
250.00
200.00
150.00
100.00
50.00
-
US$ (million)
2013
2014
2015
2016
2017
Fuel Levy
License & Registr. Fees
Highway Tolls
Load Control

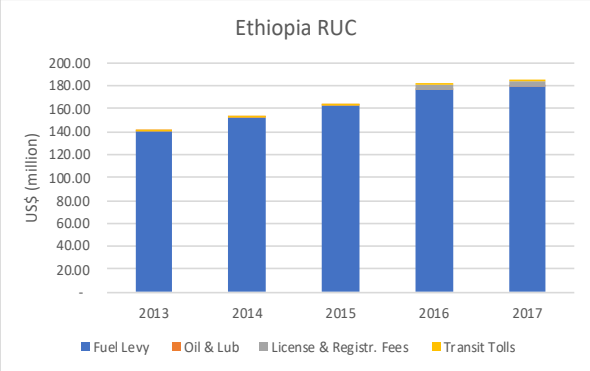

IVC RF Revenues and Main Expenditures
400
300
200
100
0
-100
-200
-300
-400
-500
US$ (million)
2013
2014
2015
2016
2017
Total RUC
Leveraged F
Govt Alloc
MDBs
Works Exp.
Debt Svce

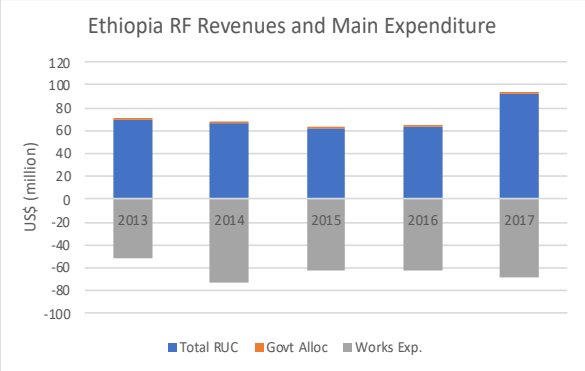

Namibia RUC
200.00
150.00
100.00
50.00
-
US$ (million)
2013
2014
2015
2016
2017
Fuel Levy
License & Registr. Fees
F+L Mass-distance Charges
Transit Tolls
Load Control

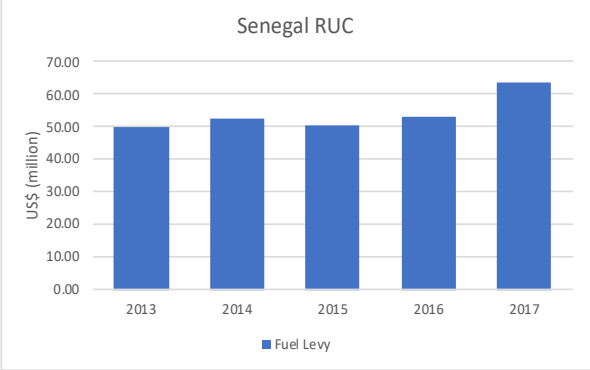

Namibia RF Revenues and Main Expenditures
200
150
100
50
0
-50
-100
-150
US$ (million)
2013
2014
2015
2016
2017
Total RUC
Works Exp.

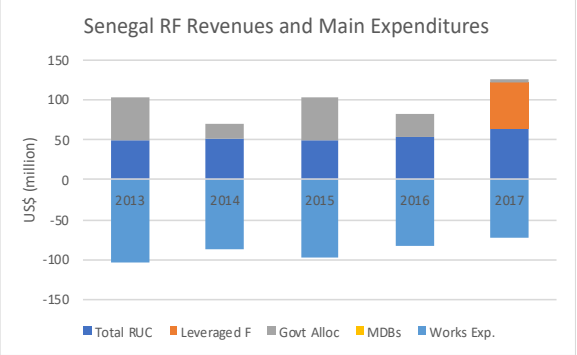

Mozambique RUC
160
140
120
100
80
60
40
20
0
US$ (million)
2013
2014
2015
2016
2017
Fuel Levy
Highway Tolls
Transit Tolls

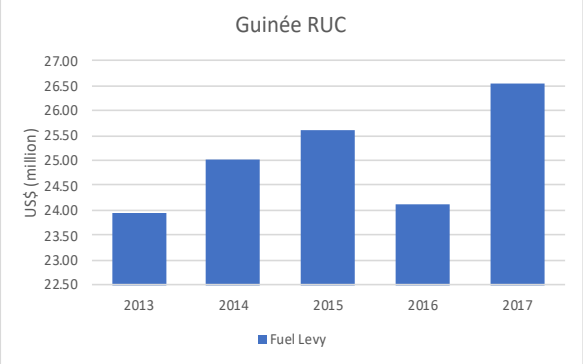

Mozambique RF Revenues and Maintenance Expenditures
250
200
150
100
50
0
-50
-100
-150
US$ (million)
2013
2014
2015
2016
2017
Total RUC
Leveraged F
Maint.Works Exp.

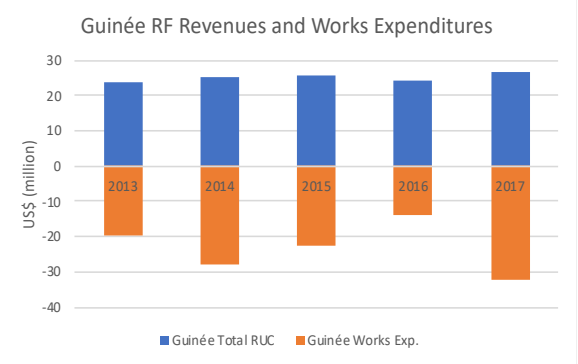

Ethiopia RUC
US$ (million)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
-
2013
2014
2015
2016
2017
Fuel Levy
Oil & Lub
License & Registr. Fees
Transit Tolls

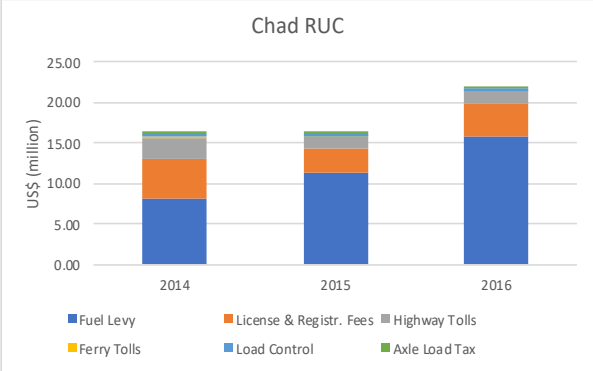

Ethiopia RF Revenues and Main Expenditure
US$ (million)
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
2013
2014
2015
2016
2017
Total RUC
Govt Alloc
Works Exp.

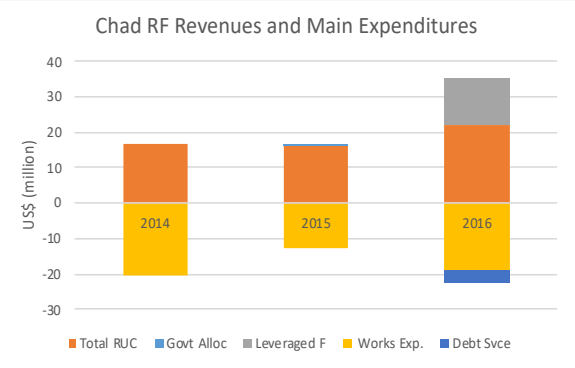

Senegal RUC
US$ (million)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2013
2014
2015
2016
2017
Fuel Levy

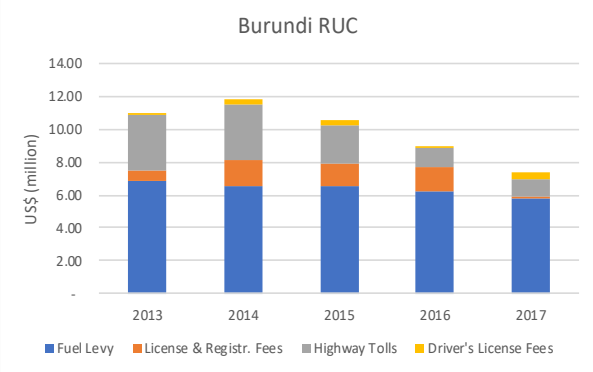

Senegal RF Revenues and Main Expenditures
US$ (million)
150
100
50
0
-50
-100
-150
2013
2014
2015
2016
2017
Total RUC
Leveraged F
Govt Alloc
MDBs
Works Exp.

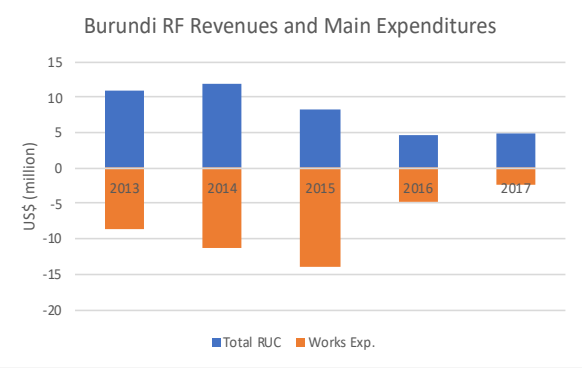

Guinée RUC
US$ (million)
27.00
26.50
26.00
25.50
25.00
24.50
24.00
23.50
23.00
22.50
2013
2014
2015
2016
2017
Fuel Levy


Guinée RF Revenues and Works Expenditures
US$ (million)
30
20
10
0
-10
-20
-30
-40
2013
2014
2015
2016
2017
Guinée Total RUC
Guinée Works Exp.


Chad RUC
25.00
20.00
15.00
10.00
5.00
0.00
US$ (million)
2014
2015
2016
Fuel Levy
License & Registr. Fees
Highway Tolls
Ferry Tolls
Load Control
Axle Load Tax


Chad RF Revenues and Main Expenditures
40
30
20
10
0
-10
-20
-30
US$ (million)
2014
2015
2016
Total RUC
Govt Alloc
Leveraged F
Works Exp.
Debt Svce


Burundi RUC
14.00
12.00
10.00
8.00
6.00
4.00
2.00
-
US$ (million)
2013
2014
2015
2016
2017
Fuel Levy
License & Registr. Fees
Highway Tolls
Driver's License Fees


Burundi RF Revenues and Main Expenditures
15
10
5
0
-5
-10
-15
-20
US$ (million)
2013
2014
2015
2016
2017
Total RUC
Works Exp.

III. Coverage of routine and periodic maintenance costs in SSA

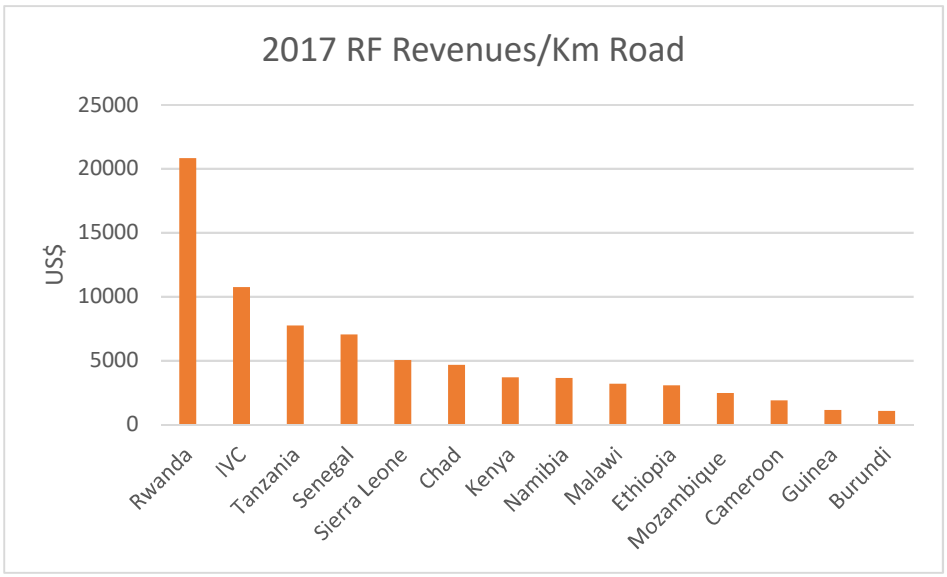
Estimation of the average combined cost of routine and periodic maintenance for a typical SSA country road network. The unit cost of periodic maintenance is drawn from a study commissioned by the African Development Bank.

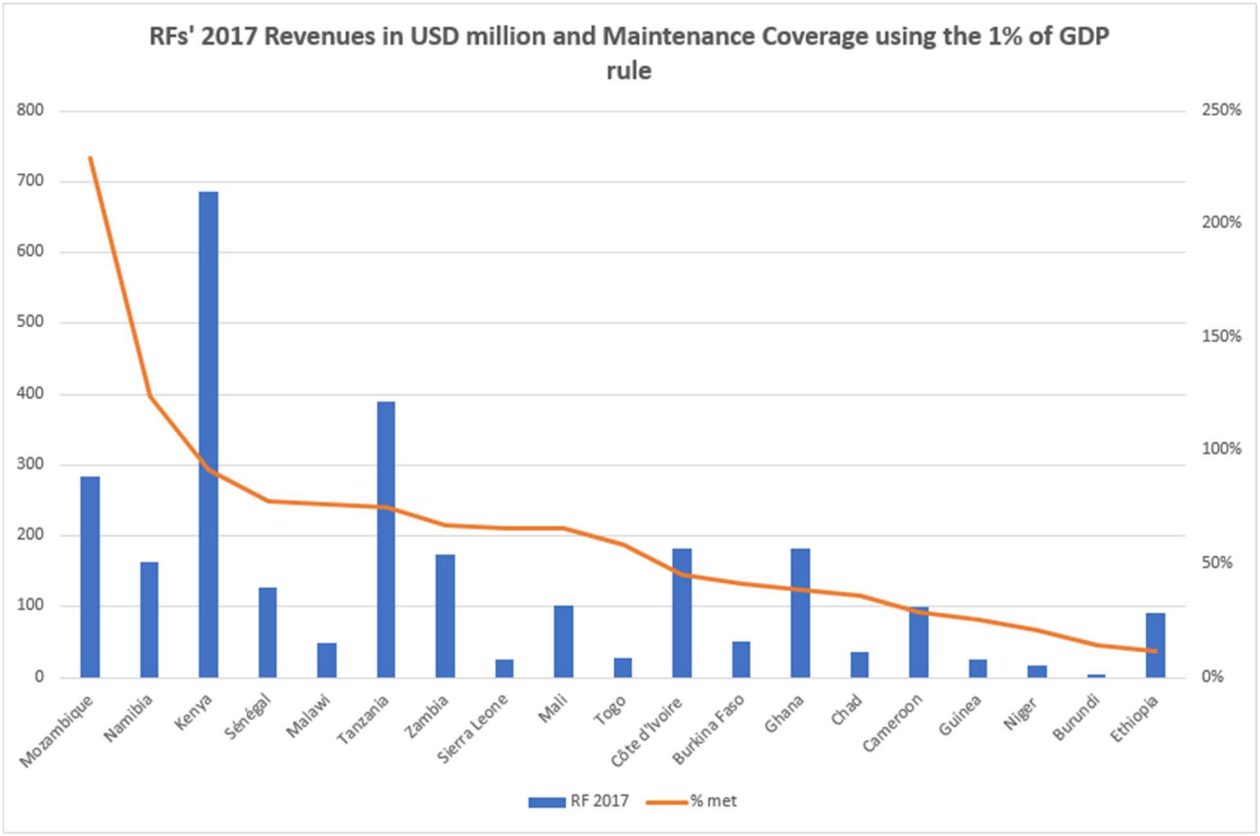
Average cost of P and R maintenance per km

A.	**Paved roads**	
	Assumptions	
	Percentage of road network	10%
	2-lane	
	Periodic maintenance frequency (years) :	10
	Cost of Routine Maintenance ($/km)	7,500
	Cost of Periodic Maintenance ($/km)	160,644
	Combined RM and PM	23,564
B.	**Gravel roads**	
	Percentage of road network	40%
	2-lane	
	Periodic maintenance frequency (years) :	5
	Cost of Routine Maintenance ($/km)	7,500
	Cost of Periodic Maintenance ($/km)	28,100
	Combined RM and PM	10,310
C.	**Earth roads**	
	Percentage of road network	50%
	2-lane	
	Periodic maintenance frequency (years) :	5
	Cost of Routine Maintenance ($/km)	4,000
	Cost of Periodic Maintenance ($/km)	15,000
	Combined RM and PM	5,500
D.	**Average cost $/km**	9,230

median value from "Study of Road Infrastructure Costs: Analysis of Unit Costs and Cost Overruns of Road Infrastructure Projects in Africa" published by the African Development Bank in May 2014
Adjusted at 2% annual inflation from 2006 to 2017 since data in US$ are from 2006.

The two graphs below respectively show how the RF resources meet the estimated maintenance requirements expressed in US$/km and in percent of the GDP.


2017 RF Revenues/Km Road
US$
25000
20000
15000
10000
5000
0
Rwanda
IVC
Tanzania
Senegal
Sierra Leone
Chad
Kenya
Namibia
Malawi
Ethiopia
Mozambique
Cameroon
Guinea
Burundi


RFs' 2017 Revenues in USD million and Maintenance Coverage using the 1% of GDP rule
800
700
600
500
400
300
200
100
0
250%
200%
150%
100%
50%
0%
Mozambique
Namibia
Kenya
Sénégal
Malawi
Tanzania
Zambia
Sierra Leone
Mali
Togo
Côte d'Ivoire
Burkina Faso
Ghana
Chad
Cameroon
Guinea
Niger
Burundi
Ethiopia
RF 2017
% met

Annex 3 Deep-dive analysis of a sample of SSA Road Funds

Contents of Annex 3

I. Cameroon

3. Analysis

RF - Cameroon						
Purpose, Legal Basis	**Planning and Programming of Works**	**Operations and Procurement**	**Finance**	**Management, Roles and Responsibilities**	**Reporting and Oversight**	**Impact, Value for Money**
Purpose: fund maintenance and investment work on 28,150 km of priority roads under two separate Maintenance (MW) and Investment (IW) windows. Since 2017, RF is assigned a moving portion of the 123,000 km long road network. The assigned network is determined based on road condition.	There is no Road Agency and all planning and programming are undertaken by the Ministry of Public Works (MINTP). The work program is assigned to RF by MINTP, the Ministry of Housing and Urban Development (MINHUD) and the Ministry of Transport (MINT). It is then fully or partially approved by the RF Board based on predictions of actual transfer of resources to the	Procurement and contract management are conducted by MINTP/MINHUD/MINT and MINMAP. Axle weight fees, overload fines, and tolls are collected by MINFIN through various public bodies but not the RF. Issue: -According to the technical	MW resources include a fixed portion of the fuel levy, overload fines, tolls, and axle weight fees. IW resources come from Govt budget and transfers from MW upon Govt. instruction. MW's different resources are first mingled in a centralized account at MinFin then an unpredictable portion is transferred to a RF account opened at BEAC[47]. RF uses a commercial accounting system (*OHADA*) but its resources are managed at MINFIN	The RF is administered by a CEO (*Administrateur*) assisted by 23 persons and is managed by an 11-person Board led by a Chairman appointed by the Govt among public civil servants. The majority of the Board is from the public service. Issue: the autonomy and independence of the RF is fictitious. The Board almost	The RF reports to MINTP and MINFIN which oversee RF performance on technical and accounting matters. Technical and financial audits are performed twice a year under two-year contracts. Issues: the annual reports contain repeated complaints about cash flow constraints, lack of predictability of revenues, and legal changes that consistently reduce	The RF impact on road asset condition and development is difficult to assess because the RF program is not geographically contained to the same area or network over time. It appears scattered and ever changing depending on MINTP's, MINHUD's and MINT's requirements. Also, the execution of

[47] Banque des Etats d'Afrique Centrale (International public bank)

Issues: -The laws that established the RF are regularly abrogated by new laws or decrees that weaken the autonomy of the RF and increase MINFIN's authority. -Govt created a Special Emergency Program (*PSU*) part of IW and gave RF instruction to fund it from the MW in violation of the spirit of the RF law.	RF and historic work program execution rate by MINTP, MINHUD and MINT. Issues: -RF's work program endorsement is risky because the budget is unreliable. It has led to substantial payment arrears. -The technical audits point to basic works programming flaws and shortcomings attributable to MINTP, MINDUH, and MINT. The public investment budget and the maintenance budget from the RF are about equal and managed by MPW. The latter represents about 80% of the RF	audits, overall procurement pace is slow and contract management leaves a lot to be desired.	which uses a public accounting system. Issues: -The fuel levy allocated to the RF is capped at an empirical amount fixed by MINFIN. This amount was fixed to CFAF 60 bn in 2015, which represents about 50% of what is collected annually. In other words, it is equivalent to having a fuel levy 50% lower than it is, or about 6.5 US Ct/l equiv. on gas and 5 US Ct/l on diesel fuel. -The amount collected on fuel and other sources is not deposited in the RF BEAC account at the same pace as it is mobilized in the MINFIN centralized account, and is not transferred in full. -Moreover, sometimes the RF BEAC account can only make non-cash payments which sets up a chain of claims and liabilities.	automatically accepts the work programs assigned to it by various Govt. administrations. Its main input is to endorse a slightly downsized work program because of the uncertainty surrounding the RF revenues and the execution pace by MINTP, MINHUD and MINT.	the RF's autonomy. They contain little data about RUC collection, road condition, traffic, fuel consumption, and the road network whose maintenance was funded by the RF.	the work program is not under RF control. The RF's role is essentially to make payments.

	overall budget – however this budget has not been released in full each year.					

4. Revenues and expenditures over the 2013-2017 period

Cameroon Road Fund (million FCFA)			1USD=	600 FCFA			RUC 2017
Exchange rate USD/FCFA	475	505	595	595	580		
	2013	**2014**	**2015**	**2016**	**2017**	**Average**	**USD (m)**
Maintenance Window							
RUC Cap	55000	55000	60000	60000	60000		100
Total RUC (approximately double)	110000	110000	120000	120000	120000		
RUC Collected at MINFIN	55000	55000	60000	60000	60000		
Other Resources Collected at MINFI	9173	9802	9908	10055	10441		
Total currently collected at MINFIN	119173	119802	129908	130055	130441	125876	230
Total Collected at MINFIN	64173	64802	69908	70055	70441	67876	124
Total Transferred to RF Account at BEAC	34000	47500	51000	30000	35000	39500	72
Withdrawal for SEP[3] in IW[4]	36144	25040	20396	3052	878		
Carry Over from Previous Year	29000						
Net RF BEAC amount spent on maintenance[1]	26050	21786	29686	26140	33098		
Actually Available Amount in RF BEAC				16140	14098		
Maintenance Program Proposed by Govt							
Maintenance Program Endorsed by RF	53075	92817	64456	104545	93137		
Maintenance Program Actually Contracted	23026	65895	35637	68522	80888		
Actual Road Maintenance Payments	26862	19981	27804	26331	33990		
Unpaid Invoices				10000	19000		
Guichet Investissement							
Govt Budget Allocated to RF[5]	106026	54456	61320	26020	1410		
Govt Budget without SEP	69882	29416	40924	22968	532		63
Investment Program Proposed							
Investment Program Actually Contracted	62473	51220	36898	30681	27163		
Actual Road Investment Payments	89335	71201	64702	57012	61153		
Govt Road Investment Program							
Program Amount			1078370				
Annual Execution			431348				
RF Contribution			9%				
Estimated Annual Cost of Road Maintena	80000	82400	84872	87418	90041	84946	155
Actual Expenditures	34%	24%	33%	30%	38%		
Fuel levy FCFA/l							

Authorized Spending	
Maintenance of intercity priority roads	> 58%
Maintenance of rural priority roads	< = 13,5%
Maintenance of urban priority roads	< = 12%
Studies and Control of Works	< = 6%
Road Safety	< = 4%
Maintenance of security measures to be used by t	< = 3%
Operation of RF	< = 2,7%
Auditing	< = 0,8%

In 2016 and 2018, MinFin allocated to the RF 16 and 14 billion CFAF respectively for maintenance works and 30 and 27 billion CFAF, i.e. twice as much, for investment works. On average, the RF financed 32% of road maintenance needs in the 2013-17 period. In 2015, the RF financed 9% of

[1] less 3% for overhead but without carryover
[2] including the levy of Special Emergency Program (SEP)
[3] Special Emergency Program
[4] Investment Window
[5] including the SEP withdrawal

If total RUC of 2017 were transferred it would be equivalent to $225 m of which about 20% would go for local/regional roads and 80% or $180m for the maintenance of national roads.

5. Main findings

- The RF has remained a 1st generation RF since its inception, its independence and autonomy have been weakened over time by new legislations.
- As a result, the RF cannot deliver on the RMI promises. Instead, one may wonder whether keeping it within the current context is an efficient use of funds.
- Two ways of improving the situation would be: (1) to increase and secure the resources earmarked for road asset management and development and have them managed by a more autonomous RF; and (2) to create a Road Agency responsible for the maintenance and development of a growing portion of the road network using funds managed by the RF.
- Unfortunately, the government has not shown any sign of moving in this direction.
- In 2016 and 2018, MinFin deposited 16 and 14 billion CFAF respectively in the maintenance window, and 30 and 27 billion CFAF, i.e. twice as much, in the investment window[48].
- Over the 2013-2017 period, the RF funded 32% of routine maintenance needs on average. The total maintenance needs are estimated at CFAF 100 bn.
- In 2015, the RF funded about 9% of road investments with a govt allocation equal to 6% of the estimated cost of the road investment program.
- Road classification was changed in 2017. There are now 4 classes: motorways (still under construction); national roads (9,370 km of which 4,724km are paved); regional roads (13,924 km); and communal roads (about 100,000 km). Before 2017, the RF was assigned a priority network of 28,150 km made of 4,724 km of paved roads, 11,316 km of earth roads and 12,110 km of communal roads.

[48] Details of funding and expenditures can be found in Cameroon RF Revenues and Expenditures immediately below.

II. Kenya

1. Analysis

Road Fund – Kenya Road Board Fund KRBF						
Purpose, Legal Basis	**Planning and Programming of Works**	**Operations and Procurement**	**Finance**	**Management, Roles and Responsibilities**	**Reporting and Oversight**	**Impact, Value for Money**
Purpose: fund maintenance (routine and periodic) and development works (new roads, or reconstruction, upgrading and modernization of existing roads) on the entire 161,000 km long road network (about 40,000 km of national roads and 121,000 km of county roads).	There are four Road Agencies: KeNHA, KeRRA, KURA, and KWS[49] each responsible for about 17,500 km of national roads, 126,000 km of county and national roads, 13,000 km of urban roads, and 4,500 km of national park roads respectively. Five-year maintenance and development plans aligned with the 2010-2024 RSIP[50] are prepared by	Procurement and contract management are conducted by the agencies. <u>Issues</u>: Despite a context of predictable and stable flow of fund and long-term performance-based contracting, procurement is still an obstacle to smooth	KRBF resources include a fuel levy called RMLF (KSH 18/liter since 2015), transit tolls, and an agricultural cess. Undisbursed funds can be carried over and interests earned can accrue. In 2017 the fuel levy constituted 99.9% of the resources, transit tolls <0.1% and there was no cess transfer. The 1999 Road Act specifies how RMLF resources should be shared: KRB 2%; KeNHA 40%; KeRRA 32% (22% through constituencies +10% through counties); KURA 15%; KWS 1%; and RSIP 10%. In 2015, (i) the CARA Act stipulated that 15% of the RMLF must be allocated to county govt directly for county roads maintenance; and (2) the Treasury determined that KSH 3/liter must accrue	KRBF is administered by a 13-person Board with a private/NGO majority; KRBF is managed by a CEO assisted by 72 persons. The RAs prepare the annual work programs and submit it to KRBF for approval. The Board endorses the program and KRBF releases the corresponding funds to the	A financial audit is undertaken every year by the Auditor General. The RAs are also subjected to an annual technical audit.	The situation is obviously better than before the KRBF was created. Road maintenance was quasi non-existent and led to the current huge maintenance backlog. However, right now the funds collected are about sufficient to cover the

[49] Kenya National Highways Authority, Kenya Rural Roads Authority, Kenya Urban Roads Authority, and Kenya Wildlife Services.

[50] Road Sub-Sector Investment Plan

The Kenya Revenue Authority (KRA) collects the fuel revenues and charges a 2% fee. Revenues are transferred to the KRBF which then releases them to the RAs as per the directives of the 1999 Kenya Road Act abrogated in 2007, the CARA Act of 2015, and the Road Annuity Fund (RAF).	MoTIHUD[51] in consultation with KRB and each RA. RAs prepare the annual maintenance and development work programs for KRB endorsement and consolidation by MoTIHUD into an Annual Public Roads Program. <u>Issues</u>: KeNHA is responsible for about 44% of the national roads only – which RAs are responsible for the balance? On average over the five-year period, KeNHA's work program covered 11,500 km and was executed at 65%. That means only 43% of the 17,500 assigned km were	execution. Kenya has launched a wide experiment of performance-based maintenance contracting but the contract duration does not exceed 2 or 3 years.	to a RAF dedicated to the financing of the RSIP. The funds are released by the KRFB to the agencies based on an annual budget and a projection of revenues. The actual revenues were much higher in 2015-16 and in 2016-17 thanks to a KSH 3 and KSH 6 increase of the fuel levy respectively. <u>Issues</u>: - in 2015, two changes to the Road Act have prompted a 23% reduction of the RAs' allocation for road maintenance and development. The first change is an earmarking of KSH 3/liter for the RAF, equivalent to about 16% of the fuel levy. The second change is the channeling of at least 15% of the 84% RMLF balance to the county governments. The remaining RMLF balance is shared between the 4 Road Agencies and RSIP following the same bracket as in the 1999 Road Act. However, the 10% RSIP share is distributed by MoTIHUD among the agencies based on investment needs. Compared to the 1999 situation the funding of the maintenance and development of county roads as	agencies. Because there is little uncertainty about the amount of funds that will be released each year to each agency, the preparation of the work programs and their annual approval process by the KRBF should be easily done. <u>Issues</u>: Despite what should be straightforward and predictable work programs, the financial execution rate varies substantially year in and year out (48% to 80% over 2014-2018 for KeNHA and 52% to 87% for KeRRA).		cost of routine and periodic maintenance of the entire network, but only about 50% is being maintained. If it is a deliberate choice to first restore about 50% of the network before addressing the 50% remaining, it may have some merits. But if the funds are scattered on various and changing parts of the network to address emergencies, there is a risk that the network may not improve. Because of a low financial

[51] Ministry of Transport, Infrastructure, Housing and Urban Development.

	effectively maintained and represented 19% of the national roads. In 2016-17 KeRRA's work program covered 28,000 km of county roads and was executed at about 100%. Even assuming that the county governments executed their 40,000 km work program at 100%, that means only 56% of the 120,000 km of county roads were maintained. KURA is responsible for 100% of the urban roads. On average, its work program covers 2,000 km or 15% and the average execution rate is about 70%. That means about 10% only of the urban roads are being		increased, so has the funding of road investment, but the funding of maintenance of national roads has been significantly reduced. And yet, KeNHA cannot fully execute the reduced budget; the financial execution rate was about 79% in 2016-17. -By the end of 2016-17 KSH 19,500 m accrued to the RAF but the reports did not specify how these funds were or will be used. The RAF will likely reach about KSH 30,000 m in July 2018. -In 2015-16 and 2016-17 combined, KRBF did not use KSH 18,000 m which were collected but not released to the RAs. It is unclear whether these unused funds are rolled over or lost. -Road development is funded from three sources: (1) a maintenance and development allocation to each RA; (2) the 10% RSIP allocation that is redistributed by MoTIHUD among the RAs; and (3) the RAF. Although the 2010-2024 RSIP is well detailed, the 5-year rolling modules are not available. Conversely, how road development budget was calculated is not specified and road investment expenditures are mingled with maintenance expenditures. -it is unclear whether the funds collected by KRA are transferred directly to the KRBF or transit through the Treasury and if so, what the delays and the retention are.	The total funds collected each year for maintenance and development purposes – outside the RAF – should be enough to cover the routine and periodic maintenance cost of the entire road network. Yet, only about 50% of the network is covered every year. If the reason is the need to rehabilitate, reconstruct, and strengthen a large part of the network, then the spending priorities should be clearly spelled out and the work programs organized accordingly. In particular, reconstruction should take precedence over development works. The annual reports do not provide clear information on		execution rate and overcautious budgeting, the KRBF carries a growing balance of undisbursed funds which is not efficient. The RAF could adequately improve the situation if it were primarily used to address the maintenance backlog particularly through PPPs and Long Term (LT) restoration and maintenance contracts.

	maintained on average.			how the network is gradually restored and maintained.		

2. Revenues and Expenditures for the 2013-2017 period

Jan-19 USD 1 = 102 KSH

Kenya KRBF (KSH million)

Exchange Rate to the USD		86	88	98	101.5	103.2		
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**		**AVG**	**$ (million)**
Fuel Levy		**27,882.00**	**31,709.18**	**51,068.00**	**69,110.00**			
Transit Toll				463.27	468.60			
Agricultural Cess		125	143.11	0	0			
Interest Income		315	423.84	71.00				
Total RUC Collected		28,322.00	32,276.13	51,602.27	69,578.60		**60,590.00**	591
Road Annuity Fund		**n.a.**	**n.a**	**8,511.33**	**11,318.33**		9,715.00	97
Net Road Maintenance Levy Fuel RMLF		27,882.00	31,709.18	42,556.67	57,791.67			
County Governments Allocation		**n.a.**	**n.a.**	**6,383.50**	**8,668.75**			
Total Actual Annual Budget for KRB + 4 Road Agencies		28,322.00	32,276.13	36,707.43	49,591.52			
Total Fund Released		25,101.00	26,338.22					
Total Maintenance and Develop. Budget[3]		**37,005.00**	**36,158.26**	**36,507.38**	**59,485.05**			
KeNHA[3]		15,524.00	14,920.77	14,121.69	21,519.98			
KeRRA[3]		14,499.00	14,539.16	11,965.30	21,346.24			
KURA[3]		6,459.00	6,238.40	6,666.10	8,253.50			
KWS[3]		523.00	459.93	454.29	865.33			
County Governments[3]		n.a.	n.a.	3,300.00	7,500.00			
Total Develop. and Maintenance Expenditures[4]		**19,353.00**	**19,816.30**	**25,397.00**	**38,967.24**			
KeNHA		7,157.00	8,234.97	11,313.00	16,928.00			
KeRRA		7,803.00	7,411.39	8,447.00	15,336.00			
KURA		4,175.00	3,873.07	5,367.00	2,116.00			
KWS		218.00	296.87	270.00	173.60			
County Governments		n.a.	n.a.		4,413.64			
Annual Road Sub-Sector Investment Program		**2,935.00**	**4,033.54**	**11,382.33**	**16,318.33**			
Annual Investment and Development Budget		2,935.00		11,382.33	16,318.33			
Annual Investment and Development Expenditures		726.00			2,218.00			
		20,079.00	19,816.30	25,397.00	41,185.24			
Road Fund Annuity		n.a.	n.a.	8,511.33	11,318.33			
Unreleased funds		3,221.00	5,937.91	10,702.93	10,569.86			
Funds Carried Over (or partially so)		17,652.00	16,341.96	6,991.00	8,723.17			
Estimated Annual Cost of Maintenance Entire Networ	49,000	50,000	51,000	52,020	53,060		52540	513
Fuel Levy KSH/liter	9	9	12	18	18			

2007-Adjusted Allocations of 1999 Road Act
- Maximum Shares of the RMLF and TT
- KRB: KSH 1.2 bn plus 2% of TT
- KeNHA: 40% of RMLF plus 98% of TT
- KeRRA: 32% of RMLF
- KURA: 15% of RMLF
- KWS: 1% of RMLF
- RSIP: 10% of RMLF

2015 County Allocation of Revenue Act (CARA)
- 15% of the RMLF must be allocated to the Counties

2015 Road Annuity Fund Creation
- KSH 3/liter must be allocated to a RAF

RMLF=Road Maintenance Levy Fuel
TT=Transit Tolls
KeNHA=Kenya National Highway Authority
KeRRA=Kenya Rural Roads Authority
KURA=Kenya Urban Road Agency
KWS=Kenya Wildlife Services
MoTIHUD=Ministry of Transport, Infrastructure, Housing and Urban Development
CARA=County Allocation of Revenue Act
RSIP=Road Sub-Sector Investment Program
[3] includes carry over opening balances and county govt budget
[4] includes carry over expenditures

1. County Gov allocation was much less than 15% of RMLF in 2015-16. 2. Little information is available on the expenditures and status of the otherwise well detailed 2010-2024 RSIP 3. There are discrepancies between some numbers in the annual report and in the financial audit (i.e. 2013-14 disbursements) and between APRP and corresponding annual report (i.e. fuel levy collections in APRP 2014-15 and annual report 2013-14) 4. Treasury releases funds based on an estimated budget -- there might be some adjustment during the year but overall, there is a significant gap between the funds released and the corresponding funds actually collected. About 23% and 16% were lost in 2015-16 and 2016-17 respectively. 5. In 2015, the CARA Act and the creation of the Road Annuity Fund have affected the 1999 Road Act fund distribution rules. As a result, the KeNHA allocation for maintenance and development of national roads is proportionally 29% lower than before and the total allocation for investment and development is 2.4 times higher than before. The combined funding of county roads through KeRRA and the county government is about the same however about 1/3 is now transferred to the county govt. 6. Overall there is a closing balance at the end of the fiscal year that is carried over, or partially, to the next fiscal year. Some agencies may spend more than their budget in which case the unfunded expenditures are paid under the following year's budget. 7. It is unclear how the development budget of each 4 agencies is calculated and how the MoTIHUD RSIP allocation is distributed among the 4 agencies. 8. It is also unclear how the KRBF net assets available for distribution are allocated to the road agencies in the subsequent year. As far as the annual reports show, each year there is an undisbursed balance equal to the sum of (i) difference between expenditures and funds released, (ii) difference between funds released and funds available, and (iii) undisbursed balance of the previous year. (i) depends on the program execution rate and (ii) depends on the prediction of fund collection. At the end of 2016-2017, the available balance was about KSH 21,000 m.

3. Main findings

- Only about 50% of the entire network is being maintained every year although the available funds should cover the cost of routine and periodic maintenance of the entire network

(about KSH 53 billion in 2016-17 vs available funds of KSH 59.5 billion). The financial expenditure rate was 65% in 2017.

- The reasons given are a huge maintenance backlog requiring expensive reconstruction and rehabilitation works, delayed procurement and low performing contractors. In a context of stable and predictable funds and authorized use of long-term performance-based contracting, procurement delays should be overcome sooner or later. In a context of sufficient and unused funds, a robust training program for the contracting industry should be rapidly set up and complemented by a classification/qualification system of contractors based on performance. The pervasive maintenance backlog tells that restoration of economically justified roads should take precedence over network expansion and development works. In this respect, the RAF could be used primarily for network restoration purposes for example to finance availability payments for LT restoration and maintenance contracts on long sections of priority paved roads.
- A substantial fuel levy of KSH 18/liter provides an adequate amount to maintain the entire network and raise a RAF that could be effectively used to clear a significant maintenance backlog (about KSH 400 billion according to Annual Public Road Program 2014-15-APRP).
- The annual balance between the funds released by KRBF and the funds collected by KRA is substantial (about 20 % in 2015-16 and 2016-17) and is not carried over in full to the agencies – the balance was about KSH 21,000 million by the end of 2016-17. It could be usefully transferred to the RAF to help address the maintenance backlog even faster. Doing so would raise the annual RAF transfer to about KSH 20 billion. At this rate and with the additional assistance of IFIs and PPPs, the backlog could be tackled in the foreseeable future.
- If the work program to be funded by the RAF is not quickly endorsed and implemented, the RAF runs the risk of being raided or wiped out by the Treasury.
- It is difficult to figure out from the annual report or the APRP what is the strategy underpinning the work programs funded by KRBF and whether these work programs bring sustaining improvement to the road network. Likewise, there is little information provided on the RSIP, the intent of the development program and even less on the use of the RAF.
- The KRA charges a 2% fee for the collection of the fuel levy which seems rather high for managing simple scriptural or digital transactions

III. Ivory Coast

1. Revenues and expenditures for the 2013-2017 period

Ivory Coast Road Maintenance Fund (million FCFA)			Feb-19	1USD=	575 FCFA		
Exchange rate for 1 USD	475	520	586	595	580		
	2013	**2014**	**2015**	**2016**	**2017**	Average	USD (m)
Unique Specific Tax; Taxe Specifique Unique (TSU)	18467	50295	59056	69834	84963	56523	100
Trade Tax and Vignettes + report	10458	7798	27156	23877	22850		33
Toll		5110	9315	9981	12507		13
Redevance Pesage (HGV Toll)			2995	3334	2997		3
Total RUC	28925	63203	98522	107026	123317	**84199**	**149**
Budget Subsidies	785	3051	2946	1541	0		3
ODA (C2D)		4319					2
Raising funds on bank lending and treasury facility	59000	95333	79067	38000	45000	63280	117
Financial and other revenues	10	178	564	594	657	401	0.7
Total Available Credit	**88720**	**166084**	**181099**	**147161**	**168974**	**150408**	**271**
Carryover from previous year							
Estimated Budget	**100666**	**264000**	**205899**		**190235**		
Works	80550	211726	124239		116685		
Operation	2730	2870	3394		8391		
Investment	336	544	6373		1058		
Commitments, provisions and financial expenses	17050	48860	71893		64101		
Implementation	**88742**	**131870**	**232125**	**141868**	**136518**		
Works	70675	89235	152720	68680	65471		
Operation	1935	2583	3066	6845	7896		
Investment	154	462	5118	280	857		
Commitments, provisions and financial expenses	15978	39590	71221	66063	62294		90
Costs Operation % Implementation	2%	2%	1%	5%	6%		
Rate of financial execution	100%	79%	128%	96%	81%		
TSU Diesel FCFA/l	20.00	25.00					
TSU Gasoline FCFA/l	20.00	20.00			USD/l =	0.040	
TSU Super FCFA/l	20.00	73.00					

2. Main findings

- The fuel levy represented about 70%, vehicle registration fees 20% and tolls 10% of the RF revenues over the 5-y period 2013-2017. An almost negligible and irregular Treasury subsidy supposed to top up the RUC revenues and help the RF fulfill its road maintenance mandate fell short of its objective: RF revenues represented less than 50% of the needs.
- At about US$ 4.5c/l, the fuel levy was, and still is, considerably below the global recommendation of US$ 15c/l. If this recommendation had been implemented, the 2017 RF revenues would have leaped to $505M from $215M and the respective contributions would have been: fuel levy 87%, registration fees 8%, and tolls 5%.
- Raising the fuel levy to the recommended US$15c/l would allow RF revenues to cover the maintenance costs and the spot reconstruction necessary to clear the maintenance backlog accumulated in the past.
- The transfers of the fuel levy have been irregular over the period, as well as before, and generated substantial arrears and associated interests.

- In order to clear these arrears and ensure a more regular cash flow, the RF raised a cashflow facility with commercial banks, backed up by future fuel levy collection and a government guarantee.
- In parallel, in order to fund the replacement of the wearing course of the Northern Motorway before opening it to tolling, the RF raised a commercial loan with a consortium of local banks.
- Over the 5-year period the RF drew about $575M from the loan and the cashflow facility and the debt service amounted to about $465M over the same period.
- In 2017, debt service accounted for about 46% of all expenditures, almost as much as the road works expenditures.
- Tolls raised on the Northern Motorway are collected by the RF and have been growing at almost 20% p.a. over the first four years of tolling. Tolling is administered and operated by the RF itself which employs 300 agents for this sole purpose. With plans to expand the tolling to other roads, it is likely that the number of agents will increase further. Outsourcing these operations may be easier and more efficient.
- A reform of the RF mandate and legal framework is underway. A close to final draft of the new law was submitted in early 2018 to the executive branch of the government for review and further request for Parliament consideration. However, nothing has progressed since then. The thrust of the reform is to expand the RF mandate to funding new construction and network expansion and transform the RF into a “public concessionaire” of tolled roads. An institutional and legal rapid analysis of the Ivory Coast --RF is provided further down (see Section III.3. below) and highlights how challenging it may be to set a coherent institutional and legal framework for RF and PPPs in Ivory Coast.
- The RF is paired with an experienced RA named Ageroute.
- The overall financial execution rate is meaningless because a substantial portion of the expenditures goes to the debt service. The execution rate of the work program was 70% on average over the period. Long procurement processing is generally blamed, 16 months on average.
- There is no mechanism to monitor the performance of past maintenance works nor regular independent surveys of road conditions and traffic volumes.
- Because of the heavy debt service and the limited resources of the RF, the budget for road works covered about 25% of the needs in 2017 and forced the RA to execute emergency works only.
- The law on PPPs was abrogated in March 2018 by a new law introducing a National Steering Committee of the PPPs.

3. The challenge of setting a coherent legal and institutional framework for road PPPs – The example of Ivory Coast.

Addressing institutional coordination and legal consistency can become even more complex in the case of road PPPs. Not only will coordination and consistency need to be checked as regards road sector institutions (see above) - but also in consideration of PPP institutions (e.g. PPP units) and legal texts (e.g. PPP laws). One of the countries reviewed as part of this study, Ivory Coast, provides a good example of how challenging this can be:

Ivory Coast is classified as a lower middle-income country. With solid projected growth rates and an institutional environment considered reliable by regional standards, it is a target for the development of PPPs in the infrastructure sector.

PPP legal framework and achievements. The country adopted a legal and institutional framework specific to PPPs in 2012, notably through the passing of two Presidential Decrees, one relating to PPP contracts and one to the PPP institutional framework, providing for the creation a dedicated PPP Unit (*Comité National de Pilotage des PPP* - CNP-PPP). Since, a number of PPPs have been brought to close, including some large-scale projects in the power sector or the Henry Konan Bédié toll bridge in Abidjan. In 2018, both decrees were replaced as part of an effort to modernize the PPP framework. Information gathered also shows that despite these achievements, capacity to prepare and implement PPPs remains a challenge.

Road sector legal and institutional framework - PPP history. A Road Maintenance Fund (*Fonds d'Entretien Routier - FER*) is in charge of managing certain funds dedicated to road assets and of disbursing the same to contractors. Another institution, AGEROUTE, is in charge of works planning, procurement and management. According to information gathered for this study, only three PPPs have been implemented in the road sector: one for the HKB bridge, one for a weighing stations concession and one for the Northern highway concession. As regards the latter (the only relevant for this study) it appears that the concession was awarded to FER and not based on the PPP decree (showing a certain ambiguity regarding FER's potential roles). Coordination problems between FER and AGEROUTE were also reported, including a misalignment between resources available and payment orders.

FER's option for reform. In 2018, a study was launched to assess FER's options for reform. Two notable objectives here were to include road construction in its mandate and increase its revenues through the adoption of a favorable tax regime (as FER is currently taxed as a business corporation). Several draft legal texts were prepared in support of this reform. A general assessment is that this framework is characterized by many ambiguities. In particular:

- The overall framework for road asset management is unclear - including whether AGEROUTE would be maintained and with what functions;
- FER's mandate is ambiguous. Among others, it is authorized to act as concessionaire but also to collect revenues from concessions (raising questions on who should act as contracting authority under road PPPs). Its role in works planning is also unclear.
- Practical modalities of revenue collection, management and disbursements are not defined. FER's revenues are defined per destination (maintenance or construction) and deposited into separate accounts, which could impact contracts combining both.
- FER is organized as an SOE (which could imply the application of specific rules, e.g., on borrowing, investments, disbursements, audits and controls) and operates under a triple oversight: Ministry of Infrastructure, Ministry of Finance, and Prime Minister's Office.
- FER-financed contracts are subject to the Public Procurement Code - whereas the PPP decree sets specific procurement rules (Public Procurement Code applies in a subsidiary manner only).
- FER may be asked to manage funds for maintenance programs at the decentralized level. Practical implementation modalities, the issue of new construction and the overall sharing of responsibilities between central and decentralized authorities is unclear.
- There could be overlaps between functions assigned to CNPPP and to FER, for example on planning (FER must« contribute » to strategic planning on road assets; CNPPP is in charge of PPP programming and approving any recourse to PPPs) or studies (FER is in

charge of financing studies over road assets; CNPPP of managing PPP studies funds and carrying studies for contracting authorities).

The texts reviewed were in draft form only - they have not been adopted. They nevertheless provide an illustration of the challenge of coordinating frameworks - and how discrepancies could prevent Road Funds to play an effective role in road PPPs.

IV. Tanzania

1. Analysis

Road Fund – Tanzania						
Purpose, Legal Basis	**Planning and Programming of Works**	**Operations and Procurement**	**Finance**	**Management, Roles and Responsibilities**	**Reporting and Oversight**	**Impact, Value for Money**
Purpose: fund maintenance (routine and periodic) and development works (new roads, or reconstruction, upgrading and modernization of existing roads) on the entire 87,241 km long classified road network. The road fund was established in 1998 under the Act No 2. The Act was revised in 2006 and named the Road and Fuel Tolls Act.	There are three Road Agencies: TanRoads, the President's Ministry of Regional and Local Government (PMORALG), and the Ministry of Works (MoW). [in 2013-14 and 2014/15] Out of the 87,241 km of classified roads, TanRoads is responsible for the maintenance of about 35,000 km of trunk and regional roads – national roads; PMORALG for the maintenance	Procurement and contract management are conducted by the agencies. <u>Issues:</u> Despite a context of predictable and stable flow of fund and long term performance based contracting, procurement is still an obstacle to smooth execution.	The RF resources include a fuel levy (TZS 315/liter since 2017), transit fees, overload fees, and donors' contribution for development works. The fuel levy and the transit fees are collected by the TRA and the overload fees by TanRoads. TRA transfers the proceeds to the Treasury which then transfers them to the RF, whereas TanRoads and donors transfer their contribution to the RF directly. It appears that the RF account is located in the Treasury. In 2015 the fuel levy constituted 94% of the resources, transit tolls about 1%, overloading fees about 2%, and donor contribution about 3%. The 1998 Act No 2 stipulates that not less than 90% of the RF resources should finance road maintenance and not more than 10% road development. The 2006 revision of Act No 2 spells out the distribution	The RF Board is composed of 9 members with a 5/4 private majority. The chairman is appointed by the President of the Republic and is currently from the private sector. The Road Fund Manager acts as the Secretary of the Board. He is assisted by three deputies (Finance, Technical, and Resource Mobilization), two internal auditors, and one planning and monitoring engineer. The Board conducts its activities through three committees, namely: Technical and Finance; Audit and Risk	A financial audit is undertaken every year by the Auditor General. The RAs are also subjected to an annual technical audit. The technical auditor is appointed by the RF Board. The	The funds collected were more than sufficient to cover the cost of routine and periodic maintenance of the entire network during the period under review. However, on average 58% of the annual revenues are not used because of unreleased and unspent funds. Consequently, the financial

The Road Fund is administered by a Board of 9 members with a majority from the private sector (5 to 4) but is chaired by a public representative. The Board consists of three departments (finance and administration, technical service, and resource mobilization) and one internal audit unit.	of about 26,000 km of district, feeder and urban roads – classified roads; and MoW for the development of about 1,200 km of national and classified roads. TanRoads and PMORALG prepare their annual maintenance program (RM, PM, spot improvement, emergency and supervision), MoW prepares the road development work program and they submit it to the RF for endorsement and financing. <u>Issues</u>: In 2013-2015, about 70% of the network was		scale among road agencies after deduction of the RF administration costs: 63% to TanRoads for the maintenance of national trunk roads and regional roads; 30% to PMORALG (including 1% for administrative needs) for the maintenance of classified district, feeder and urban roads; and 7% to MoW for road development projects. The funds are allocated by the Treasury to the RF based on an annual budget and a projection of revenues and then released to the RF account in the Treasury. The funds released are equal to or lower than the budgeted allocation which is also generally lower than the actual revenues. The RF then disburses the funds to the agencies based on approved invoices. <u>Issues</u>: - it is unclear whether the unused portion of the released funds are carried over and if so whether they are bundled at the RF level or stay with the relevant agency. -it is also unclear whether the unreleased funds are carried over in	Management; and Human Resources. The RAs prepare the annual work programs and submit them to the Board for approval and funding. Because there is little uncertainty about the amount of funds that will be released each year to each agency, the preparation of work programs should be greatly facilitated and the annual approval process by the Board should be greatly facilitated. <u>Issues</u>: Despite what should be straightforward and predictable work programs, there are swings in the annual financial execution rate (67% to 53% from 2013-14 to 2014-15). The funds collected each year for maintenance and development purposes	findings of the technical audits are not reported in the RF annual report. It is unclear how the road condition surveys have been conducted and how reliable they are. According to the annual report 2014-15, 56% of the network is in good to fair condition and 44%	coverage of maintenance needs was only 67% on average. According to data provided in 2013, it would represent about 60% of physical coverage. These unused funds were rolled over and generated surpluses that represented 20% of the revenues on average. These unused funds could improve the situation if they were used to address the maintenance backlog particularly through PPPs and LT restoration and

	targeted for maintenance and about 78% of the target was achieved. However, only 55% of the entire network was maintained. Deeper analysis shows that the coverage of PM was 78% while the coverage of RM was 53%.		the RF and if so are available the next FY. - In 2015, the unused and unreleased funds amounted to about 69% of the RF revenue (27% and 42% respectively). - the unused and unreleased funds amounted to TZS 356 bn and TZS 454 bn in June 2014 and June 2015, but the RF accumulated surplus at the same dates were TZS 151 and TZS 244 only. -(in 2013-15) about 78% of the PM needs and 53% of the RM needs were covered. Spot improvement, specific maintenance, and bridge maintenance were probably not funded. -The total cost of maintenance was estimated around TZS 633 bn in 2015, including 270 bn for PM, 150 bn for RM and a combined 213 bn for spot improvement, specific maintenance, bridge maintenance, and supervision. This cost was covered by the TZS 652 bn RF net revenue the same year. The problem is that only TZS 197 bn were spent on road maintenance and development works in 2014-15.	should suffice to cover the routine, specific, and periodic maintenance cost of the entire road network. However, the financial coverage is about 40% and the physical coverage about 70% of the network every year. As a result, the condition of the network continues to deteriorate although at a slow pace. If the reason is the need to rehabilitate, reconstruct, and strengthen large parts of the network, then the spending priorities should be clearly spelled out and the work programs organized accordingly. In particular, reconstruction should take precedence over development works. It would then be useful to dedicate a portion of the funds for reconstruction purposes. The annual reports should give a sense of how the network is gradually restored and maintained.	in poor condition. According to the RF, the average performance rating of TanRoads and PMORLG was 55% from 2010-15. The best performance was 75% for procurement and the lowest was 20% for program completion -Numbers in the annual report and the auditor's	maintenance contracts. The reality is blurrier because some of the funds are used to finance development works. Overall, it appears that maintenance management is not efficient and a lack of systematic independent surveys hinders the ability to assess the consequence of the status quo.

			According to the 2014-15 financial audit, TanRoads ran outstanding contractors claims of TZS 4.5 bn and US$ 20.3 m; see Financial Audit Report p. 139 of the Tanzania Road Fund Annual Report 2014-2015.		report do not match. -The financial audit covers the funds collected and released. It does not cover the use of the released funds and therefore of the undisburs ed funds.	

2. Revenues and expenditures over the 2013-2017 period

Jan-19 USD 1 = 2300 TZS

Tanzania Road Fund (TZS billion)

Exchange Rate to the USD		1600	1665	2015	2185	2235
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
Fuel Levy	**434.47**	**626.02**	**623.18**	**705.09**		
Transit Charges	5.41	6.52	7.90	9.49		
Overloading Fees	7.94	8.69	11.35	8.08		
Others (mainly DFID support)	0.52	5.99	20.06	27.21		
Total Operating Revenue	**448.34**	**647.22**	**662.49**	**749.87**	**897.00**	
Total Net Revenue for Works[2]	**443.94**	**642.94**	**652.39**	**743.69**		
Revised Budget[3]	**497.07**	**510.37**	**560.83**	**866.38**		
TanRoads	329.72	320.45	341.50	459.17		
PMORLG	135.88	154.97	181.04	216.53		
MoW	31.47	34.95	38.29	190.68		
Released Funds	**351.84**	**428.71**	**372.96**	**460.19**		
TanRoads	218.59	261.46	214.54	260.11		
PMORLG	103.48	138.28	134.33	175.25		
MoW	29.77	28.97	24.09	24.83		
Works Expenditures	**257.77**	**287.37**	**197.93**	**254.25**		
TanRoads	159.32	168.03	108.19	152.39		
PMORLG	84.07	105.20	81.04	82.17		
MoW	14.38	14.14	8.70	19.69		
Roads Fund Board Administration Expenditures	**4.41**	**4.28**	**10.10**	**6.18**		
Unreleased Funds[4]	**92.10**	**214.23**	**279.43**	**283.50**		
Unused Funds[5]	**94.07**	**141.34**	**175.03**	**205.94**		
Total Funds Lost	**186.17**	**355.57**	**454.46**	**489.44**		
Total Funds Lost (% Revenue)	**42%**	**55%**	**69%**	**65%**		
	248.36	290.43	238.62	284.94	-	
Estimated Annual Cost of Maintenance Entire Network[1]	318.00	324.00	305.00	765.00	906.00	
Potential Financial Coverage	140%	198%	214%	97%		
Actual Financial Coverage	81%	89%	65%	33%		
Actual Physical Coverage	73%					
Accumulated Surplus (based on Financial Audit)	18.19	151.27	244.16	86.33		
Fuel Levy TSH/liter	200	263.00	263.00	263.00	315.00	
Fuel Levy US C/liter	12.5	15.8	13.1	12.0	14.1	

Alain Labeau: includes 137 bn for outstanding debts and 1 bn for construction of office building

Missing Data

[2] Equals Total Revenue less RF administration expenditures

[3] Initial or Revised Budget in case of revision also includes rolled-over funds

[4] Difference between funds disbursed to the agencies and revenue collected

[5] Difference between funds received and spent by the agencies

Regional and Local budget in % of total Budget	**27%**	**30%**	**32%**	**25%**

Local and regional roads represent about 25% of the budget. RUC in 2016/17 was $400 m of which 75% or $300m for National Roads. National network is 35,000 km.

3. Main findings

- Only about 70% of the entire network is being maintained every year although the available funds should be sufficient to cover the full cost of maintenance works of the entire network. As a result, the overall condition of the network inexorably deteriorates.
- The reasons invoked are: a huge maintenance backlog requiring expensive reconstruction and rehabilitation works, slow procurement and low performing contractors. The two latter justifying a low execution rate are difficult to accept in a context of stable and predictable funds and authorized use of long-term performance-based contracting. The former means

that restoration works should take precedence over development works. In this respect, a portion of the RF revenues might be better used for network restoration and maintenance purposes on priority alignments under long term contracts, either Performance Based Contracts (PBCs) or PPPs.

- A fuel levy of TZS 315/liter (USD 13.7 c/l) provides an adequate amount to fully maintain the entire network (routine, specific, sustaining and periodic maintenance and emergency works). A further increase to TZS 400/liter would generate about US$ 75 m more that could be transferred into a Road Restoration Window and serve to effectively clear the maintenance backlog through restoration and maintenance contracts funded under PPP.
- The annual balance between the funds released by the RF and the funds collected by TRA is substantial (about 38%) and is not carried over in full to the agencies – observations show that the agencies already struggle to spend their budget allocation.
- Vehicle Registration fees and annual vehicle license fees are substantial but do not add up to the RF revenues. On average, they represent about 20% and 12% of the revenue from the fuel levy.
- The administrative cost of the implementing agencies has increased substantially over time but not their financial execution rate. An amount of TZS 130 billion (about $56M) was paid to the Ministry of Works in 2016 to clear an outstanding debt.
- It is difficult to figure out from the annual report or the annual public road program what is the strategy behind the work programs funded by the RF and whether these programs generate sustainable improvement. Likewise, there is little consolidated information provided on the intent of the development program.
- There is some confusion between the original and the revised budget, released funds and revised budget, and expenditures and disbursed funds. There are some discrepancies between the amounts reported in the annual report and in the financial audit report and even within the financial audit report.
- The sum of unused and unreleased funds amounts to about 60% of the total operating revenue. Part of that lost amount could be used more productively if it were saved in the Road Restoration Window earmarked for restoration and maintenance works on priority alignments under LT performance-based PPPs.

V. Chad

1. Revenues and expenditures over the 2013-2017 period

Jan-19 1 USD = 575 FCFA

Chad Road Maintenance Fund (million FCFA)

Exchange rate FCFA/USD	475	505	595	595	580			
	2013-14	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**Average**	**USD (m)**
RUC collected at MINFIN	13228	11772	10321	9398	9888		10921	20.3
RUC spent by MINFIN	13228	4210	6696	9398	9888		8684	16.1
Freight charges	2457	2395	1639	2355				
Road toll	1198	1259	1321	936				
Other revenues	946	560	192	8192				
Total net revenue of RF	**17829**	**8424**	**9848**	**20881**				
Annual sum not spent by MINFIN		**7556**	**3632**	**0**				
Budget passed by the Management Board	18494		15960	20706				
Effective budget for road maintenance	17865	18139	13496	16120				
Total expenditures	**21220**	**14965**	**11686**	**18363**				
Expenditures on works maintenance and control	16576	10721	7588	11280				
Operational and administrative expenses	2214	1792	4097	3165				
Unpaid in the exercise		4457	1910	0				
Commercial bank loan at 7.7% for 2 years				7900				
Audited unpaid sums with the bank loan		4382	1874	5857				
Bank loan refund				1900				
Estimated Annual Cost of Road Maintenance			0	52000			50000	87
Fuel Levy on gasoline (CFAF/l)	30	25	25	25	30	15	25	5.0
Fuel Levy on diesel (CFAF/l)	20	20	20	20	21	15	20	3.7

2. Main conclusions

About 1710 km of the planned 2560 km (1550 km paved and 1010 km gravel) are maintained annually on a network of 7475 km of national roads. The cost of the works represents 70% of the expenses, their supervision 7% and operational costs – 23%. The estimated annual cost of maintenance is 52,000 m CFA francs, while the revenue was 12,980 m CFA francs (25%) in 2017 when the Treasury paid for 100% of the RUC collection, which was not previously the case. The RUC of 20 and 25 CFAF/l on diesel and petrol is the lowest in Africa. Chad has accumulated considerable experience in the use of GENIS contracts. The organization of maintenance programs is appropriate; the problem lies with the completely insufficient level of funding. The RUC should be quadrupled and the funds transferred directly to the Road Fund. The bank loan requires the Treasury to reimburse the unpaid RUC amounts over 2 years, otherwise the maintenance budget will once again not be apportioned. The drop in RUC revenue collected since 2013-14 is mainly due to the economic context linked to the drop in crude oil prices, of which Chad is an exporter, which has caused a sudden decrease in traffic and a fluctuation in the RUC share on the fuel price structure.

VI. Malawi

1. Revenues and expenditures over the 2013-2017 period

	IN 'THOUSANDS' OF MALAWI KWACHA					Average	Average	Percentage
ROAD FUND REVENUES	2013	2014	2015	2016	2017	2013-17	**USD (million)**	
fuel levy	8,119,670	10,129,124	10,687,288	21,203,001	27,574,259	15,542,668	28.25	
Road User Charges (Intern. Transit Fees)	880,806	1,506,260	1,580,355	2,438,911	3,651,739	2,011,614	3.68	
Financial Income	362,412	239,279	3,130,942	2,711,559	3,633,007	2,015,440	3.51	
INTEREST INCOME	291,224	95,240	719,952	1,873,250	3,408,582	1,277,650	2.01	
SUNDRY INCOME	71,188	144,039	2,410,990	838,309	224,425	737,790	1.50	
Total road fund REVENUES	**9,362,888**	**11,874,663**	**15,398,585**	**26,353,471**	**34,859,005**	**19,569,722**	**35.44**	
Total Road User Charges	9,000,476	11,635,384	12,267,643	23,641,912	31,225,998	17,554,283	31.93	
FUEL LEVY AS % OF RUC	90%	87%	87%	90%	88%	89%	89%	89%
RUC as Total Revenues	96%	98%	80%	90%	90%	90%	90%	90%
ROAD FUND EXPENDITURES								
TOTAL ROAD WORK EXPENDITURES (incl consultants)	3,995,103	9,219,331	9,850,117	13,177,627	29,379,190	13,124,274	23.24	82%
Total Inv Works Exp	970,189	3,046,245	4,861,121	7,287,649	22,879,995	7,809,040	12.65	45%
Total Maint Works Exp	3,024,914	6,173,086	4,988,996	5,889,978	6,499,195	5,315,234	10.60	37%
Total Operating Costs	1,634,554	2,157,461	2,439,191	2,821,642	4,273,281	2,665,226	5.12	18%
Total Expenditures	**5,629,657**	**11,376,792**	**12,289,308**	**15,999,269**	**33,652,471**	**15,789,499**	**28.37**	100%
Discrepancies				14,540	-			
OPERATING SURPLUS	3,733,231	497,871	3,109,277	10,354,202	1,206,534	3,780,223	7.08	20%
% UTILISATION	60%	96%	80%	61%	97%	81%	81%	
CUMULATIVE SURPLUS INCLUSIVE OF 2012	4,441,977	4,939,848	8,049,125	18,403,327	19,609,861			
Cumulative surplus as % of annual revenue	47%	42%	52%	70%	56%			

2. Main findings

- The fuel levy collection contributes to 80% of the revenues and 90% of the RUC.
- The fuel levy tariff increased to USD15c/l equivalent in 2017 from USD9c/l equivalent in 2006. In local currency, the variation is 700%, testifying a government will to adequately fund road maintenance. This tariff is close to the USD17c/l recommendation to adequately fund road maintenance. In 2018, the government accepted to change the fuel levy tariff from a flat rate per liter that required periodic adjustment to keep up with inflation and currency depreciation to a percentage of the in-bond landed cost (a proxy of the pump price) of the fuel and was set at 11%.
- The RF funds road investments with the RUC revenues and these investments go beyond the scope of spot reconstruction. Over the 2013-2017 period, the average investment expenditures exceeded the average maintenance expenditures: 45% vs 37%. Even more concerning is the continued decline of maintenance expenditures as a share of overall works expenditures: 76%, 67%, 51%, 45% and 32% from 2013 to 2017 respectively.
- The resulting underfunding of road maintenance can be measured against (a) the 1% of GDP rule, and (b) the average allocation per km of road. (a) In 2017, 32% of the expenditures were spent on maintenance and the expenditures represented 97% of the revenues, which amounted to about 0.8% of the GDP. Therefore, maintenance expenditures represented 25% of the GDP, i.e. one quarter of the amount considered necessary to adequately maintain the road network (regardless of clearing the maintenance backlog). (b) each km to maintain received an allocation of about $3,500/km x 32% x 97% = $1,100/km or 12% of the amount considered necessary to adequately maintain the road network. In other words, the allocation for road maintenance may represent only about 1/5 of the needs. Redressing this situation will require that (i) with the exception of spot reconstruction, investment be funded from the government budget, (ii) RF revenues be increased by diversifying the RUC as the tariff of the fuel levy is close to global recommendation (vehicle registration fees, increased/expanded international transit fees, tolling…), and (iii) overall operating cost be contained (see immediately below).
- The efficiency of the use of funds is questionable and should be improved in the future. First, 20% of the expenditures are for various operating and administrative costs. And second, on average only 80% of the revenues were spent annually over the 5-y period with two lows of 60% in 2013 and 2016.
- The funds that are not spent are carried over but overall, the RF ran a cumulative surplus that reached 70% of the annual revenue in 2016. The situation eased up slightly in 2017 when the RF spent 97% of its annual revenue.
- The RF raised 5-y maturity Kwacha10 billion bonds in 2018 (about $14M or 1/3 of fuel levy revenues in 2018) through a commercial bank to fund road rehabilitation works. The bond emission is backed by the fuel levy and by a government guarantee.

VII. Lessons from Poland[52]

The Polish RF (KFD) has been set to fund investment in the National road network and has achieved substantial results since its creation in 2004. The national road network in Poland is now over 19,000km including 7,500km of motorways and expressways. Since 2001, the percentage of national roads in good condition has been multiplied by 3 reaching 60% in 2017, whereas in the same period, the share of national roads in bad condition has been divided by 2 (about 15% in 2017).

Coinciding with Poland's accession to the European Union (EU), the creation of KFD was intended to provide a co-funding mechanism able to ring-fence EU grants as well as dedicated resources and channel them to the national road network efficiently. The SSA RF model was a source of inspiration for KFD but the model has been substantially tweaked to adapt to the Polish context (cf. Box 2). Despite differences with the SSA RF model, two key lessons are worth underlining.

Box 2: Features of the Polish Road Fund (KFD)

KFD is an account hosted by the Polish state-owned national development bank (BGK). KFD has no legal personality and is legally represented by BGK. KFD's operations are governed by an agreement between the minister in charge of transports and BGK. The Polish Road Administration is in charge of the strategic planning (5-7years) of investment and maintenance in the road sector and implements the plan. Polish authorities purposely decided to host the RF into a well-functioning and efficient financial institution to avoid creating another administration. Moreover, KFD benefits from BGK investment and banking skills to efficiently raise long-term debt (off BGK balance-sheet but with sovereign guarantees) and increase its source of financing.

KFD is focused on increasing the maintainable national road network (investment) but increasingly funds periodic maintenance. The maintenance of national road network is funded by national budget appropriation. Maintenance expenditures on the road network are rather stable at US$700M per year on average between 2010 and 2016. During the same period, the investment expenditures were more variable (between US$1.75bn and US$6.2bn) and reached on average US$3.7bn.

On average during the 2008-2017 period, KFD's resources stemmed from 3 broad categories: 34% from recurrent and non-reimbursable sources (fuel levy, concession fees, HGV charges and road fines), 29% from non-recurrent and non-reimbursable sources (EU grants); 35% from non-recurrent and reimbursable sources (loans and bonds), 2% of other sources. Among the recurrent and non-reimbursable sources, the fuel levy is rather stable (accounting for about 70%), and the HGV charge, created only in 2011 is in constant increase and now accounts for about 28%. Debt outstanding amounts to US$15bn and annual debt service represent about US$0.7bn (about half of the annual recurrent and non-reimbursable sources).

About 20,000 disbursements from KFD are processed annually thanks to a lean and efficient system. Third-parties like BGK (for debt service), the General Director of National

[52] World Bank Group. Knowledge brief – Role of the National Road Fund in Financing National Roads in Poland. June 2018.

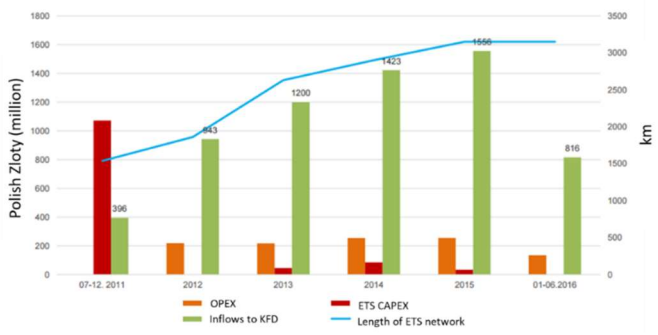
Roads and Motorways, the Chief Inspector of Road Transport and the Minister competent for transport, apply for disbursement and KFD makes payments directly to end beneficiaries (contractors, property owners, lenders, etc.). To our understanding KFD is not involved in works commissioning or auditing and is in reality a payment mechanism.

Lesson 1: Raising long-term debt (loans or bond emissions) requires investment skills and sustainable funding sources to repay these debts. KFD in hosted by a State-Owned national development bank (BGK) and thus benefits from the investment skills of its staffers who raise debts on behalf of KFD. Transforming SSA RFs and hosting them into national development banks is probably not replicable or advisable. However, to be able to raise long-term debt, these RFs will need to build in-house skills which they do not currently possess. Moreover, if debt can accelerate a specific investment program, the debt service may represent a very significant portion of available resources. Long-term financial strategy is thus needed to match debt service with resources without taking a too considerable of a slice out of other RF mandates, such as maintenance funding.

Lesson 2: Diversification of RF resources toward less fuel levy and more distance-based charges is proving efficient but it requires strong political will and demonstrated road condition improvements. In Poland, distance-based charges are collected through an electronic toll system (ETS) on selected sections of national roads. Only users of vehicles with a maximum permissible weight above 3.5 tons are charged. Before being operational, the system has been long publicized by the authorities. Acceptability from the trucking industry relied on several factors: a widespread perception that road condition was improving, a funding mechanism ensuring the truckers that the charges they pay go into the road sector through KFD and not flow into the national budget. Despite initial CAPEX to implement the system, the revenues are far exceeding the OPEX. The marginal cost to extend the system to new sections is low. As shown in

Figure 2, the revenues from this system are steadily increasing over time, slowly replacing the fuel levy in KFD's revenue mix[53]. This system has even given room to the Polish government to dedicate a growing portion of the fuel levy to sub-national level of government in order to increase the funding of the sub-national road networks.

Figure 2: Cost and revenues of the Electronic Toll System (ETS) in Poland (1PLN = 0.26US$).



[53] In Poland, the tariff of the fuel levy is not very high (US$0,03c/l for gasoline; US$0.08c/l for diesel; US$0.02c/l for LPG), but it is indexed to reflect inflation.

Annex 4 Legal and institutional considerations on Road Funds and Road PPPs

Contents of Annex 4

As discussed in the main report, one of main arguments initially supporting the creation of Road Funds was the need to secure and segregate the funding for road maintenance. Two principles, operational and financial autonomy, remain fundamental factors for RFs to play an efficient role in the management of road assets. The former implies a clear definition of their mandate and corporate governance regime and is discussed in Chapter I Section 5.b. of the main report. The latter requires looking at their revenues, from collection to disbursements. A crosscutting issue pertains to institutional coordination. All of those are also paramount issues to enable RFs to play an active role in the implementation of road PPPs. (Note: references are made to the para numbers of the main report)

I. Ensuring Road Funds' financial autonomy: Road Funds' revenues

The legal acts establishing RFs should provide an exhaustive list of possible resources while also providing flexibility in the use of the resources by the RF. Many legal texts establishing RFs list their revenues, which include various RUCs. A complete definition of revenues is obviously important to guarantee that RFs will be properly funded. Here again, this calls for clarity, to avoid ambiguous wording, such as « a portion » of a given levy. It is equally important to check whether the same levy is not assigned to another entity elsewhere. Defining revenues can be linked to the issue of the mandate. For example, some legal texts refer to « concession fees » as a possible RF revenue, however, these fees are usually paid to the contracting authority. While a portion thereof could be assigned to RFs, it is not recommended that they act as a contracting authority. The definition of the RFs' mandate and of their revenues should, therefore, be properly articulated. This also applies to tolling. As discussed earlier in the main report, 3rd Generation RFs would be structured so that net revenues from tolls flow directly into the RFs. Collection itself, however, should preferably be contracted out to a third party. Last, some legal texts establishing RFs provide for an allocation of resources per category of eligible expenditures, for example that certain levies should be used to pay for maintenance costs. Linking revenues and expenditures may prove an excessively rigid approach, especially for construction and maintenance, which could be combined under single contracts, as proposed in this paper. On the other hand, this could prove useful for specific activities (e.g., road safety enforcement) to increase the predictability of funding available for construction and maintenance.

The legal act establishing an RF should clearly state that all RUCs be directly payable to the RF if it does not collect them; in particular RFs should be responsible for toll collection and should be able to outsource it. Apart from defining their revenues, legal texts sometimes provide that RFs will "collect" such revenues. But details are rarely given on how this collection should occur. RF revenues are, most of the time, collected by other institutions, and may also transit through public accounts before being credited to an RF's account. This, in turn, increases the risk of delays, and possible retention, in the payment to RFs. The very creditworthiness of RFs is at stake here, and so is their credibility to act as funding instruments under PPP schemes. A solution sometimes applied is to establish by law that certain RUC be payable to the RF, even if collection is carried out by another institution (with a cap for perception cost). This should also apply to tolling for road segments that would be contracted out under the Restoration Concept, even if collection would be outsourced by RFs to a third party.

RFs should be authorized to subscribe commercial loans provided that these loans serve a long-term objective rather than just to face short-term liquidity issues. Another issue lies in the management of funds under the responsibility of RFs and their ability to borrow. Some legal texts related to RFs provide that they are authorized to borrow, some others that they are not. Very few, however, provide for any details on how RFs may, for example, invest funds under their authority on financial markets. As discussed above, the ability to borrow from financial markets could represent an opportunity for RFs to leverage private financing. Examples exist of RFs raising long-term debt on financial markets to finance road works. However, borrowing to address liquidity problems resulting from a lack of government funding is obviously not a viable recommendation, nor does it serve the objective of developing the capacity to finance road assets in a sustainable way. While the ability to borrow funds should be legally enabled, it should be strictly framed. Conditions would include an analysis, both at RF and national level, of debt sustainability considerations and compliance with any applicable laws or undertakings in this respect. It would also include a careful analysis of the rationale, terms and appropriateness of the proposed loan. A cross-cutting issue here is the technical capacity of RFs to carry out such an analysis. Similar considerations apply to the investment of funds under RFs' management, which may also be governed by specific rules pertaining to public funds management.

Regulations governing RFs' disbursements should be as simple and clear as possible in order to minimize the risk of payment delay. Many legal texts pertaining to RFs list activities eligible for their financing. However, they generally do not provide for detailed rules on disbursements. Most public spending, disbursements by RFs may be governed by specific public sector rules. Practice shows that coordination with Ras, which is in charge of commissioning the works, is not always functional, which can result in delays in payments to contractors. This can obviously affect the credibility of RFs to act as reliable funding mechanisms and could become a fundamental obstacle to enabling the involvement of RFs in road PPPs. Here again, a recommendation would therefore be to clearly set rules governing disbursements by RFs, which should be as simple and unambiguous as possible.

II. Institutional coordination, legal consistency and the overall governance factor

As of today, planning and procurement of investment in and maintenance of roads remain in the hands of other institutions, primarily ministries of transport, RAs (Procurement Agencies may also be playing a role). Even if RFs are to evolve into a new type of instrument (construction, tolling, PPPs and « restoration »), they should continue to focus on disbursements. As such, coordination with other institutions involved in the management of road assets will remain essential. As regards the planning of works for example, it may be good practice to consult with RFs (including on the availability and flow of funds in the mid-term). Their mandate should, therefore, be consistent with the mandate of other entities in charge of planning, primarily RAs. This also applies to procurement and disbursements, where rules and mandates should be unified among institutions involved. Another area where consistency and coordination are key is their geographical mandate. Many coordination problems are reported in practice, (e.g., between RFs and RAs, resulting in delayed payments to contractors or insufficient funding available in RFs' accounts – but also of RFs being « ordered » to fund works at the local level, in principle not within their jurisdiction, etc.). There are two main issues here.

Legal documents governing RFs' mandate and actions should be consistent with other relevant legal documents (e.g. on the disbursements and management of public funds). The above issues may be regulated in a variety of texts – from the sharing out of responsibilities between central and decentralized authorities, to tax collection, borrowing and public debt, public funds management and disbursements. Special attention must therefore be paid to the consistency of legal texts pertaining to RFs with other texts.

III. Road Funds and Road PPPs

Methodological observation. This study serves as an intersection of two apparently distinct agendas: the modernization of RFs and the increase of private sector participation in the roads sector. In so doing, some questions were deliberately not included here, even though they could in theory be raised. The first pertains to whether RFs are the sole – or best – funding instruments under PPPs from the private sector's perspective. This falls under the wider debate on road PPPs that goes beyond the scope of this study. Another question pertains to the possible use of private sector financing by RFs. This, on the other hand, is unrelated to PPPs. From a legal and institutional point of view, looking at RFs and Road PPPs together requires looking into three sets of issues: (i) enabling environment for PPPs, (ii) role to be played by RFs under PPPs and applicable rules, and (iii) legal and institutional coordination.

1. Enabling environment

PPPs are complex operations that rely on a risk sharing between the public and the private sectors, including the financing of the operation. From the private sector's perspective, the feasibility and cost of a PPP will depend to a large extent on an assessment of the risks incurred. The main factor here lies in the legal and institutional framework. As indicated, the purpose of this study is not to re-discuss the issue of PPPs at large, including the enabling environment[54] for them. A few quick reminders are nevertheless useful.

The legal environment should typically address three sets of issues: (i) the general legal business environment, (ii) PPP-specific regulations, and (iii) sector-specific regulations. The general legal business environment includes corporate regulations, access to land, guarantees, health and safety requirements, environmental safeguards, labor regulations and taxation, as well as contract enforcement and judicial/arbitration issues. PPP-specific regulations include contractual forms allowed to carry out a PPP, processing requirements (pre-feasibility and feasibility analysis, Value for Money analysis), procurement, public financing constraints (direct or contingent, including in light of rules pertaining to public debt and the ability of the State to issue guarantees); taxation (specific taxation rules may be requested, e.g., Value Added Tax and import duties exemptions, progressive company tax, etc.) and foreign exchange regulations. Sector-specific regulations, in the sector in which the PPP is considered, include: authorizations to operate; competitive landscape; specific forms of PPPs allowed, presence and role of SOEs (which may act as off-takers or competitors); and presence and role of a sector regulator (including with regard to tariffs).

Multiple layers of public institutions, with unclear, fragmented, uncoordinated or overlapping mandates will typically act as a deterrent to private sector investment. This applies both at the preparation and the implementation stage. This calls for the defining of a clear institutional framework, with a limited number of public institutions involved, clear mandates and a delineation of responsibilities.

[54] Many instruments and toolkits have been developed on this question, whether general or sectoral. See for example the APMG PPP Certification Guide, funded by PPIAF (https://ppp-certification.com/ppp-certification-guide/about-ppp-guide).

2. Potential roles for RFs under PPP schemes

There exist several potential roles for RFs under PPP schemes, but in the context of SSA countries, this should be limited to a creditworthy funding mechanism. One of the dimensions explored in this report pertains to the increase, diversification and securing of RFs' revenues. Options could also be explored to allow RFs to optimize the revenues from monies under their management, including investment in financial markets and overall securitization. This in turn could become a feature of the financial architecture retained for a PPP. As an example, the possibility of using some RFs' revenues or financial instruments as a guarantee or collateral could be explored - as could other elaborate schemes whereby RFs would develop a role of financial intermediation, similar to some PPP funds[55]. Such options, however, appear premature in the context of LICs in SSA for a number of reasons. The first pertains to capacity. Building on the example of PPP funds, a lesson in LICs is that a significant level of technical capacity is needed before they reach the credibility to efficiently intervene on financial markets. Another reason pertains to the institutional simplicity, which is also related to the capacity factor. Efforts are underway in many LICs to support the development of PPPs. This generally includes modernizing the PPP legal framework, establishing dedicated units (PPP units), and strengthening planning, evaluation, procurement and implementation capacities. A common challenge in this respect is to ensure institutional coordination among a number of stakeholders: sectoral ministries, ministry of finance, PPP units and procurement agencies. From this point of view, adding a new institutional layer whereby RFs would claim a substantive role in PPP development may appear counterproductive (need to build additional capacity, coordination, etc.). While the role of RFs could potentially be re-explored in the future, as markets for road PPPs in SSA become more mature, the objective at this stage is for them to act as functional and credible funding mechanisms.

The issues pertaining to mandate, corporate governance, revenue collection and disbursement are all critical to enable RFs to fund Availability Payments under Gov.-Pays PPPs. Several types of public payments are in theory possible under a PPP scheme. First, it is not uncommon, especially in environments considered riskier by investors, that the State be required to provide financing to the project. Financing can be direct, for example a contribution to the construction costs, or contingent, where a State guarantee would be provided. The question can also be raised of whether the State should be a shareholder in the Project Company (a Special Purpose Vehicle – SPV - which is the legal entity that will, in summary, receive the financing, enter into the PPP contract and service the debt). To the extent that RFs are designed to become main funding instruments under PPPs, the question could also be raised about the role they should then play, for example as an equity holder - or even of whether they could act as a part of the SPVs. Some legal texts reviewed as part of this study are actually ambiguous in the definition of RFs' mandates, as they sometimes include the possibility to act as concessionaire (a role generally assigned to SPVs). Here again, the purpose of this study is not to reexamine PPP arrangements at large, nor of SPVs (where significant shareholding by the State is generally not a preferred option). As explained above, at this stage, the objective is not to envision any role for RFs in PPPs other than a funding mechanism offering the appropriate level of reliability. In practical terms, they

[55] See for example the Federal Brazilian Guarantee Agency that can backstop Availability Payments of Gov.-Pays PPPs contracted by federal or non-sovereign levels of government.

should serve primarily to service another type of payments under PPP schemes, considered most likely in the road sector: Availability Payments. From this point of view, legal issues to look at are no different from those outlined earlier in this report: the defining of a clear legal mandate; clear definition of revenues, including collection, management, disbursements; institutional coordination and legal consistency.

3. Assessing the legal and institutional framework for road PPPs: a checklist

The efficient operation of RFs depends to some extent on the legal and institutional framework governing their activities but also on how this framework is actually implemented. Overall environments and practices vary tremendously depending on countries and it is difficult, if possible at all, to set an absolute prescriptive model that would fit all situations. As explained above, a number of standards can nevertheless be used to warrant their financial and operational autonomy. Adherence to these standards should be considered a prerequisite if RFs are to play a funding role under PPP schemes. However, many other legal and institutional issues need to be looked at when considering a road PPP, from overall investment climate issues to the specific PPP framework as well as institutional coordination (road administration, PPP institutions).

For transparency and replicability, it is preferable to establish a sustainable framework for the development of PPPs, rather than adopting an *ad hoc* legal and institutional architecture. In practice, a first step will generally be to carry out detailed due diligence studies in the country where the PPP is considered (sometimes as part of a feasibility study) to assess the legal and institutional framework. Where gaps are identified, a number of improvements may be needed. But implementing them at a systemic level may prove difficult within a short timeframe. An approach sometimes applied instead consists of adopting an *ad hoc* or *sui generis* legal and institutional architecture for the purpose of a given PPP. This means that specific institutions and legal instruments may be established/adopted to allow for the preparation or implementation of a PPP. Such specific arrangements may also be set in contractual instruments, with the contract(s) then approved at a level that will give it force equivalent to that of a law (e.g., by Parliament). This approach, however, can be considered suboptimal in terms of transparency or replicability.

In light of the above, the following key questions (see Table 4) could serve as guiding principles when seeking to assess and improve the legal and institutional framework for road PPPs.

Table 4: Assessing the legal and institutional framework for Road PPPs – a checklist

Road assets overall institutional framework	- What are the main stakeholders in the field of road asset management? - Are works planning, procurement and disbursements functions separate? In this case, is coordination among the institutions in charge functional? - Where it is not functional, what are the measures that could be implemented to ensure due coordination, in particular as regards the payment to contractors (including from a management/HR or technical point of view, e.g. organizational chart, consultations/meetings, availability of data through electronic platforms, etc.)?

RFs' legal mandate and organization	- **Overall mandate**: is the mandate of the Road Fund, clearly defined, including in terms of:
	  ○ Exact activities with regard to road asset management (maintenance, construction); is the mandate of the RF sufficiently precise and focused?
	  ○ Geographical scope (What is the sharing out of responsibilities over road assets between central and decentralized authorities? What is the RF's mandate in this respect?).
	  ○ Works planning.
	- **Revenues**:
	  ○ Are revenues precisely defined and adequate to fulfill the RF's mandate? Is tolling included as a possible source?
	  ○ Are revenues defined per destination (type of expenditure) or are they fungible?
	  ○ Are rules pertaining to revenue collection defined? Are revenues deemed payable directly to RFs? Where other entities are in charge of collection, are they acting on behalf of / contracted out by RFs? How are they paid for collection? What are then the payment modalities to Road Funds, including transit through budgetary accounts?
	  ○ Are rules pertaining to revenue management and ability to invest or borrow funds defined (including applicability of rules governing public debt and spending)?
	- **Corporate framework**: is the RF operating under a clear and adequate corporate framework, including in regard with:
	  ○ Legal form?
	  ○ Supervision and management?
	  ○ Operational autonomy and interaction with Ministries (line Ministry, Ministry of Finance)?
	  ○ Reporting, audits and controls?
	- **Capacity**: is the RF adequately staffed and technically apt to fulfill its mandate?
	- **Disbursements:** are clear rules defined as regards disbursements, including chain of command, approvals and

	possible application of rules governing public spending? Are coordination mechanisms with other institutions defined? - **Legal consistency**: could the above-mentioned issues be governed by several sets of possibly conflicting rules? - **Compliance**: are those rules complied with, and enforced?
PPP institutional framework	- **Legal framework**: Is there a PPP law? Is there a sectoral law (transport/road) applicable - and does it include any provisions with respect to private sector participation and PPPs? Do those define a contracting authority? - **Institutional framework**: What is the institutional framework for PPPs, including: programming, initiation, evaluation and preparation, procurement and supervision? Are one or several institutions in charge? - **Processing and evaluation**: What are the legal requirements to initiate and implement a PPP, including, including economic analysis, minimum contract value, Value for Money analysis, Fiscal Risk assessment, pre feasibility and feasibility analysis? - **Geographical scope**: are specific rules set for the preparation and implementation of PPPs at the subnational/decentralized level? - **Consistency**: could the legal mandate of PPP institutions possibly overlap with the mandate of institutions in charge of managing road assets, whether at planning, preparation or implementation stage? - **Strategic options**: considering (i) technical capacity challenges that PPPs represent - and ongoing actions engaged to increase said capacity, and (ii) the fact that simplicity and visibility will be an important factor for private sector engagement, what would the optimal arrangement (sharing out of responsibilities and coordination) be between institutions in charge of PPP and road assets?
Procurement	- Are PPPs subject to specific legal and institutional arrangements as regards procurement - and are those in line with arrangements applicable to the management of road assets?

Annex 5 Qualitative Assessment of Road Funding Instruments in SSA

Contents of Annex 5

I. Qualitative criteria to assess road funding instruments

Usually countries rely on a mixture of instruments[56] to fund their road sector. Governments around the world have proven very creative about road funding instruments, which can be classified into 8 categories. Examples of instruments of each type are briefly described in the following sections. Their suitability to the context of Low and Lower-Middle Income countries (LIC and LMIC) especially in Sub-Saharan Africa (SSA) is assessed following the qualitative criteria below:

- equity. It refers to the impact of a funding instrument on affordability. An instrument providing equity would allow proportionating the funds to be collected to the financial capacity of the contributors. An equitable instrument would also provide a link between where the funds are collected and where they are used
- yield potential. It refers to the ability of funding instruments to provide significant revenues that are predictable and stable in the long term
- alignment between users/polluters and those who pay. It refers to the ability of the instrument to reflect the user-pays and polluter-pays principles
- alignment between beneficiaries and those who pay. It refers to the ability of the instrument to collect contributions from beneficiaries irrespective of whether they are road users or not. “Beneficiaries” in this context are defined as individuals or economic actors who benefit from increased opportunities (business, property value) thanks to capital expenditures on a specific road segment (increase of capacity, new road accesses, upgrading)
- administrative simplicity. It reflects the administrative and technological support and challenges required to implement, operate and enforce the funding instrument. It is particularly relevant in LIC where institutional capacity can be limited
- efficiency. It reflects the ability of the funding instruments to foster an efficient use of the road network by sending a relevant price signal helping to manage road demand or reducing road usage-related negative externalities (e.g. congestion)

[56] E.g. Acosta, L. National Funding of Road Infrastructure – comparative summary. The Law Library of Congress, March 2014.

II. General (all-purpose) taxes

General taxes refer to broad-based taxes that do not have a direct link to the road network development either in terms of purpose or earmarking. They may consist in [57, 58, 59]:

- direct taxes, which are levied on the income of individuals (either from labor or capital) and corporations, or on the stock of capital owned (e.g. property taxes)
- indirect taxes which are levied on the sales of goods and services (e.g. Value-Added Tax)

They are collected by the fiscal administration and flow into the Treasury. Their allocation depends on the priorities of the government in terms of funding needs (health system, education, national defense, justice, etc.) and is usually endorsed each year by the national representation.

Table 5: qualitative assessment of general taxes as a road funding instrument.

Criteria	Comment
Equity	All-purpose direct taxes may be designed to be progressive (e.g. labor income taxes), but indirect taxes often consist in flat-rate taxes. Taken as a whole, general taxes can thus be regressive, and may impose a larger burden on lower-income categories than on higher-income ones[59, 60]. Their allocation to the road network development and management is dependent on a government's priorities. The geographical link between collection and use of funds may be weak.
Yield potential	General taxes are already a very large source of revenue. Their long-term evolution is dependent on economic and demographic growth, which are expected to be significant for SSA countries in the next decades.
User-pays and polluter-pays principles	By nature, general taxes do not align general taxpayers with road users and polluters. However, general taxpayers may also be users and polluters. Thus, when the road sector is funded by a

[57] CEDR (Conference of European Director of Roads). Funding formulas of roads: inventory and assessment. March 2017

[58] Ministry of Transport of New Zealand. Future Funding - Revenue tools for transport, November 2014.

[59] Chen, C., and Bartle J.R. Infrastructure Financing: a guide for local governments managers. Prepared for International City/County Management Association and Government Finance Officers Association, 2017.

[60] Piketty, T. Capital in the Twenty-First Century. Harvard University Press, April 2014.

	mixture of all-purpose taxes and instruments reflecting these principles, there may exist a “double” payment reducing the funding system’s clarity for the general public.
Beneficiary-pays principle	Roads are often among the biggest of a country’s assets. Their development and maintenance are necessary to ensure a swift movement of goods and people in a country. It can be thus argued that roads benefit the national population as a whole, not only its users.
Administrative simplicity	When a fiscal system, including general taxes, is already in existence, the marginal cost of collection and administration of an incremental tax rate to fund the road network is negligible.
Efficiency	Because of their construction, general taxes do not send a price signal on the usage of roads and its negative externalities. They cannot incentivize an optimized use of the road network (e.g. reducing mileage or using the roads off-peak).

III. Non-recurring access-based charges

Access-based charges are related to the purchase of a motor vehicle. Among these charges, the so-called non-recurring are one-off charges paid to allow the use of a motor vehicle on the road network. They include a variety of charges, for example[58, 61, 62]:

- Vehicle Registration Fee paid to register the vehicle in the purchaser's jurisdiction. Its tariff can be differentiated according various parameters (e.g. fuel efficiency, horsepower, vehicle class or maximum weight)
- Customs Duties paid for imported vehicle that may also be differentiated according to vehicles' features
- Luxury car tax that can be understood as an incremental rate on the already applicable VAT (Value Added Tax) or GST (Goods and Services Tax)

These non-recurring access-based charges can flow into the national Treasury or be (partially or totally) earmarked in a dedicated structure aiming at funding the road sector.

Table 6: qualitative assessment of non-recurrent access-based charges as a road funding instrument.

Criteria	Comment
Equity	Usually, these charges are either a fixed tariff (e.g. Vehicle Registration Fee) or a flat rate (e.g. Custom Duties or Luxury Car Tax). The tariff or rate can be adjusted to consider some vehicle features (type, fuel efficiency, age, etc.). However, there is usually no individual/household resource adjustment, which makes these charges regressive by nature and might be a problem for lower-income categories. Either flowing into Treasury or a dedicated fund, the geographic link between collection and usage of the fund is weak.
Yield potential	By nature, these charges are of the non-recurring type, and the associated revenues depend on (1) the motorization rate and (2) the renewal rate of the motor vehicle fleet. The evolution of these two parameters in the long-run is a challenge, especially in SSA countries. On the one hand, one can argue that the motorization rate is increasing fast

[61] Deloitte. Road Pricing and transport Infrastructure funding: reform pathways for Australia – Discussion paper. 2013.

[62] Association Mondiale de la Route. Financement, dévolution et gestion des investissements routiers – Comité Technique A.2 de l'AIPCR, rapport 2012R08FR. 2012.

	and should be accelerated with demographic and economic growth. On the other hand, it is difficult to predict in the long-term what drivers' behavior will be in the future (e.g. usage vs. ownership)
User-pays and polluter-pays principles	These charges are not linked to road usage. One can argue that a motor vehicle is purchased to be used, but with similar vehicle features, the same charge will be paid irrespective of the mileage. Theoretically, it should be possible to adjust the rate/tariff of these charges to vehicle features such as GHG (greenhouse gas) emission.
Beneficiary-pays principle	Unless they are also motor vehicle owners, there is no alignment between beneficiaries' interests and this type of charge.
Administrative simplicity	Vehicle registration is very important, because it provides a means of identifying vehicles, confirming their ownership and having a knowledge of the vehicle fleet. However, there are significant risks of evasion linked to the fact that enforcement requires a strong administrative support (control).
Efficiency	By nature, these charges do not send a price signal on the usage of roads. However, they could be adjusted to reflect potential negative externalities of vehicles. They cannot incentivize an optimized use of the road network (e.g. reducing mileage or using the roads off-peak).

IV. Recurring access-based charges

Contrary to non-recurring access-based charges, the so-called recurring charges are fees paid regularly by vehicle owners and users. These charges include for example[58, 62]:

- Vehicle Licensing Fee. They are usually paid on an annual basis. They consist in a fixed tariff. Depending on countries, the tariff can be structured according to various vehicle features (horsepower, vehicle age, weight, fuel type, GHG emission, etc.);
- Axle Tax. In some countries, heavy goods vehicles (HGVs) owners also pay an axle tax, which is supposed to reflect the extra damage they cause depending on the number of axles (the more axles, the less damage) and the maximum weight authorized. This tax is either paid annually or on a quarterly basis (e.g. in France);
- Insurance Contract Tax. In some countries, vehicle owners pay a tax on their vehicle insurance premium;
- Driver's License Fee. In some countries, it is mandatory for drivers to renew their driver's license periodically and to pay a fee at renewal.

As for non-recurring access-based charges, these charges can flow into the national Treasury or be (partially or totally) earmarked in a dedicated structure aiming at funding the road network.

Table 7: qualitative assessment of recurrent access-based charges as a road funding instrument.

Criteria	Comment
Equity	Usually these charges are either a fixed tariff (e.g. Vehicle Licensing Fee, Axle Tax, Driver's License Fee) or a flat rate (e.g. vehicle insurance premium tax). The tariff or rate can be adjusted to account for some vehicle features (type, fuel efficiency, age, etc.). However, there is usually no individual/household resource adjustment, which makes these charges regressive by nature and might be a problem for lower-income categories. Either flowing into Treasury or a dedicated fund, the geographic link between collection and usage of the fund is weak.
Yield potential	By design, these charges are recurring, and the associated revenues depend on (1) the motorization rate, (2) the number of licensed drivers and (3) the level of the tariff/rate. Cf. Section III. for the evolution of the first two parameters.

	The level of the tariff/rate can be adjusted to inflation in road construction and management costs, but public acceptance would be a challenge (cf. equity).
User-pays and polluter-pays principles	These charges are generally not linked to road usage. The axle load tax tries to reflect, however, the extra damage on roads caused by heavy vehicles. However, with similar vehicle features, the same charge will be paid irrespective of the mileage.
Beneficiary-pays principle	Unless they are also motor vehicle owners and users, there is no alignment between beneficiaries' interests and this type of charge.
Administrative simplicity	Except for the insurance premium tax which will flow to the Treasury from insurance companies (excise tax), these charges are relatively expensive to administer and are subject to evasion. Enforcement requires a strong administrative support (control). Regarding vehicle licensing fees, costs could be significantly lowered by leveraging new technologies (automatic license plate recognition), but that would require significant upfront investment and increased operating costs.
Efficiency	By design, these charges do not send a price signal on the usage of roads. However, they could be adjusted to reflect potential negative externalities of vehicles. They cannot incentivize an optimized use of the road network.

V. Distance-based usage charges

Distance-based usage charges are paid directly by the user in exchange for the use of the road. These charges are usually based on a unitary tariff (e.g. $c/mil). The tariff can be modulated according to several parameters, such as maximum authorized weight, number of axles, period of the day or even GHG emission class[57, 62, 63]. These charges can be paid by the user either using cash or electronic fund transfer and consist in:

- tolls. They are generally charged in exchange for the use of a specific segment of road. The revenues thus collected are used to repay investment costs and face operational expenditures (including the cost of toll collection). Repaying investment here means either servicing debt raised by the public authority (borrowing against the future toll revenues) or servicing debt and equity provided by the private sector under for example a User-Pays PPP scheme[58, 64]
- international transit fees. This type of charge is levied against foreign registered heavy goods vehicles. This charge is collected at border crossing points[57]
- HGV charges. This charge is levied against HGVs above a certain weight using roads that are not tolled, using for example an all-electronic system. It is usually not levied on a specific segment but rather on a delimited road network. Revenues collected are allocated to maintenance, operation and upgrading of the non-tolled road network, accounting for the extra-damage caused by HGVs[63].

By nature, distance-based usage charges are more likely to be earmarked in a dedicated structure rather than being diverted into the national Treasury.

Table 8: qualitative assessment of distance-based usage charges as a road funding instrument.

Criteria	Comment
Equity	These charges are modulated according to vehicle features but not according to individuals/households/companies' income. Therefore, they have a rather regressive impact which may be a problem for lower-income categories. As for the geographical link between collection and use of funds, these charges perform relatively better. (especially tolls).
Yield potential	These charges are highly associated with economic growth and probably have the best yield potential among all the type of charges studied.

[63] Schwarz-Herda, F. Road pricing for heavy vehicles: a key for financing road infrastructure? A successful example in Austria. Route – Roads 2013, volume 358. www.piarc.org.

[64] Committee for a study of the future Interstate Highway System. Renewing the National Commitment to the Interstate Highway system: a Foundation for the Future. Transportation Research Board. 2018.

	Tolls and HGV charges can be a challenge regarding public acceptance. In addition, some toll roads have experienced financial distress in the past. However, these charges can generate enough revenues to repay investment and fund maintenance and operations. In Austria for example, tolls and HGV charges are the main funding sources of the federal road network. The revenues are earmarked in an SOE which is financially independent from the national budget[63].
User-pays and polluter-pays principles	By nature, these charges align the interests of users and those who pay. Differentiating the tariff considering authorized weight and number of axles allows for making vehicles that cause extra damage to roads pay their fair share. Since the tariff can theoretically also be modulated using other factors, such as emissions class, they contribute to internalizing some negative externalities.
Beneficiary-pays principle	By nature, the beneficiaries are not charged unless they are also a user of the road.
Administrative simplicity	The evaluation in this regard is contrasted. Users are charged when they enter and leave the toll road/charged network. The charging can rely on cash (or card) payments made at a toll booth or on an all-electronic system. In either option there are significant implementation and operation costs. It is estimated that the collection costs alone can represent between 5% and 13% of gross revenues[64].
Efficiency	By nature, these charges give a signal price to users and should incentivize a better use of the roads. Tolls can help better match needed investments with demand. However, this argument is weakened if there is no user charge (e.g. HGV charges) on the non-tolled roads. As a matter of fact, some of the HGVs traffic could be divested to non-charged roads, leading to a worsening of their technical condition.

VI. Time-based usage charges

Time-based usage charges are paid directly by the user in exchange for the right to use the road (or network) during a specified period. These charges are usually based on a unitary tariff (e.g. $/day, week, month or year). The tariff can be modulated according to several parameters, such as maximum authorized weight, number of axles, period of the day or even GHG emission class[57, 58, 63]. These charges include for example:

- Vignettes. They can be paid by the user either using cash or electronic fund transfer. The user then has to display the vignette on his dashboard to prove he bought the right to use the road, or its registration plate can be automatically registered upon making the payment if the enforcement system is electronic.
- Urban charges[65]. These are direct charges levied for the roads inside a spatially delimited area. Users are charged when they drive in or out of the area and the tariff is usually adjusted in terms of the period of the day. The higher tariffs are levied during peak-hours whereas the lower tariffs are levied off-peak. There may be no charge during weekend days[66].

Time-based usage charges can flow into the national Treasury or be (partially or totally) earmarked into a dedicated funding structure. The case of urban charges needs to be specifically clarified. These charges are more likely to be designed as a demand management tool aiming at reducing negative externalities (e.g. congestion, atmospheric pollution, noise) in high-density urban areas (e.g. London, Stockholm or Singapore). The associated revenues are generally dedicated to fund alternative transit solutions (e.g. soft mobility or public transport).

Table 9: qualitative assessment of time-based usage charges as a road funding instrument.

Criteria	Comment
Equity	Vignettes are modulated according to vehicle features but not according to individuals/households/company income. Urban charges face strong public opposition and may prevent lower-income categories from accessing opportunities, particularly if there are no efficient alternative transit solutions. There is not necessarily a strong geographical link between the collection of vignette revenues and the use of funds. As for urban charges, there is by nature a geographical link, but the funds collected do not fund the road network itself but rather fund transit options as alternatives to individual cars.

[65] Also called road pricing, spatial rate, or congestion charge.

[66] https://www.policynote.ca/mobility-pricing-in-practice-a-look-at-london-stockholm-and-singapore/

Yield potential	Vignettes can present an interesting yield with sustainable and rather easily predictable revenues. The purpose of urban charging, however, is not its potential yield but rather its potential effects in terms of reducing negative externalities due to urban road traffic. Its tariff should be set so as to reduce individual car use to the benefit of other transport modes.
User-pays and polluter-pays principles	By nature, these charges are not proportional to the mileage thus reflecting poorly the user-pays principle. Theoretically, vignettes and urban charges' tariffs can be modulated to take into account negative externalities (GHG emission class, congestion), so they may reflect the polluter-pays principle.
Beneficiary-pays principles	By nature, the indirect or direct beneficiaries are not charged unless they are also road users.
Administrative simplicity	Vignettes can constitute a simple system to implement. This system shifts part of the burden to users who must proactively buy the vignette in terms of their mobility needs. The enforcing system, however, is quite burdensome for authorities. As a matter of fact, it either relies on a strict control system (if vignettes are displayed on a vehicle's dashboard) or on significant initial investments in the case of electronic systems. Existing urban pricing schemes rely on different electronic systems (automatic license plate recognition with billing in London; displaying in the vehicle a smartcard with credit, charged automatically in Singapore). Either option requires significant initial investments and operational costs.
Efficiency	Urban charges can send a significant price signal and thus contribute to a more efficient use of urban roads. However, vignettes are usually not structured to achieve demand management.

VII. Fuel-consumption-based charges

These charges are excise taxes, meaning that they are included in the price paid at the pump by consumers and the taxpayer is either the fuel producer or distributor. These taxes consist in a unitary tariff (e.g. US$/l) which can be modified depending on the fuel type. For example, less environmentally-harmful fuels like LPG (Liquefied Petroleum Gas) or CNG (Compressed Natural Gas) may have a lower rate.

As fuel-consumption-based charges reflect (to some extent) the usage of roads, the associated revenues are usually at least partially earmarked in a dedicated funding structure. The rate could easily be adjusted to inflation regularly, but as it is a socially and politically sensitive issue, most countries adjust the rate when revenues appear to be significantly eroded by inflation. In the US, for example, the fuel excise tax has not been adjusted for the past 25 years[64].

Table 10: qualitative assessment of fuel consumption-based charges as a road funding instrument.

Criteria	Comment
Equity	Fuel taxes are regressive by nature. Lower income categories pay a higher proportion of their income for fuel when they drive than higher income ones do. It is even more pronounced considering that vehicles produced more recently are more fuel-efficient or even use alternative energy sources (hybrid or electric vehicles). The geographical link between the collection and use of funds is not obvious and mostly depends on priorities of investment and maintenance.
Yield potential	The situation is contrasted. In the short to middle term the yield potential is very significant as motorization rate and mileage (and thus motor fuel consumption) is likely to increase in SSA countries. However, in the long-term, as is already the case in developed economies, motor fuel tax revenues are likely to erode because[61, 64]: - the newest vehicles are more fuel efficient. As the fleet gets renewed, fuel consumption tends thus to decrease - penetration rate of hybrid and electric vehicles is increasing. An increased mileage share of these vehicles will decrease fuel tax revenues - if motor fuel taxes' tariffs are not linked to inflation, associated revenues will progressively erode with inflation.

User-pays and polluter-pays principles	Fuel consumption can be considered as a proxy of road usage. However, the link is rather loose since the extra consumption of heavy goods vehicles is not proportional to the extra damage to the roads[64]. Since there can be a differentiated tariff (lower) for less polluting fuel, motor fuel taxes may reflect the polluter-pays principle.
Beneficiary-pays principle	By nature, the beneficiaries are not charged unless they drive a vehicle.
Administrative simplicity	There already exists some form of motor fuel excise tax in many countries around the world. The collection costs of increased motor fuel taxes are thus negligible. If this type of tax needs to be created, as it is an excise tax, collection is very simple, and associated costs are low (around 1% of gross revenues)[64].
Efficiency	Users driving motor fuel vehicles are not charged for the time and location of their trip (e.g. congestion period). Moreover, fuel consumption is not directly linked to the costs of providing and maintaining roads. The signal price is thus weak and motor fuel taxes are mostly insufficient to manage demand.

VIII. Value capture charges

Value capture is defined as the public recovery of all or a portion of increased property value created as a result of public infrastructure investment, or that benefits from it[57, 67]. Subject to enabling conditions (e.g. real estate market vitality, zoning and land use entitlements, legal possibility to apply these mechanisms, institutional capacity, successful cooperation between private and public stakeholders to optimize value creation), new road capacity and new road access can create business opportunities and value in the surrounding land and real estate. Some of the main value capture mechanisms suitable for road funding are briefly described below[59, 67]:

- Impact fees. They are assessed by governments against newly developed real estate to offset costs associated with providing roads. They are by nature a one-time charge difficult to combine with other value capture mechanisms
- Joint development. It results from a partnership between developers and a public agency or government to develop land owned by the latter within a certain distance from the road and its access points
- Land value taxation. It is a tax on the unimproved value of the land (i.e. without considering the "vertical improvement of the land" which reflects private choices and investment decisions). Unimproved land taxation would better reflect the value of public investment in infrastructure. It could be a regular flow of revenues but has challenges about assessment of the unimproved value of the land and repartition between "vertical" owners of the said land
- Negotiated exactions. They are similar to impact fees in the sense that they are a mean of having developers pay for the costs associated with their impacts. Negotiated exactions are direct payments or in-kind contributions by developers to local government or public agency. It can include infrastructure improvement such as road paving. By nature, it is a one-time charge difficult to combine with other value capture mechanisms.
- Special Assessment Districts. They cover a geographical area in which property owners and businesses agree to pay a special property tax to fund a proposed improvement or service. These districts are usually set for a fixed duration (e.g. 30 years) and require a vote in the defined area. The Grand Paris Express (the extension of the metro network in the Greater Paris) is an example of infrastructure funded (partially) using Special Assessment Districts. Two taxes were created against which the public agency responsible for the project was able to leverage private debts to finance the CAPEX (totaling €35bn)[68, 69, 70]: A Special Equipment Tax, consisting in an amount fixed annually by the legislator and then shared among all taxpayers subject to some form of property tax within the Greater Paris; Tax on Commercial and Office Areas, which is a stock tax based on a unitary tariff (€/m^2) modulated by the type of use of property and the location within the Greater Paris area. The tax is paid by the owner;
- Tax increment financing. Government defines a clearly delineated district within which the assessed property value is capped during the district period (several years or decades). During

[67] Page, S., Bishop W.L., Wong W. Guide to value capture financing for public transportation projects. TCRP (Transit Cooperative Research Program Research) Report 190. National Press Academies. 2016.

[68] Carrez, G. Ressources de la Société du Grand Paris. Premier Ministre, Juillet 2018.

[69] https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000025044460&fastPos=1&fastReqId=378509629&categorieLien=cid&oldAction=rechTexte, accessed on Dec. 13th 2018.

[70] https://www.impots.gouv.fr/portail/www2/precis/millesime/2017-2/precis-2017-chapter-14.7.11.html?version=20170701, accessed on Dec. 13th 2018.

the district period, all property taxes generated by an assessed value above the cap are used to reimburse initial investments

Another example of funding instruments which is not *per se* a value capture charge but allows beneficiaries to contribute to project funding is the Special Contribution CDG Express created to partially fund the express railway between Paris and its major airport[71, 72].This Special Contribution consists in a unitary tariff (€/passenger) to be paid by aircraft companies for each passenger (excluding transit) landing or taking-off from Paris's major airport. Aircraft companies are most likely to pass-on this tax to their customer. This Special Contribution is then a way to make air passengers contribute to the funding of this supplementary service whether they use it or not.

Value capture charges are by nature more likely to be earmarked to the funding of a specific project or a portfolio of projects in a specific area.

Table 11: qualitative assessment of value capture charges as a road funding instrument.

Criteria	Comment
Equity	Because these charges rely on value creation and capture, the government or agency must be cautious so that real estate development does not exclude lower-income categories and particularly affordable housing. The geographical link between the collection and use of funds is by nature very strong.
Yield potential	The situation is contrasted. The mechanisms providing non-recurring revenues are more likely to contribute to a project's CAPEX but probably not a significant share thereof. The mechanisms providing recurring revenues have a promising potential yield, but by nature the associated revenues are riskier, particularly if the created value for real estate and land is lower than what was forecasted.
User-pays and polluter-pays principles	Due to their nature, value capture charges are not designed to reflect user-pays and polluter-pays mechanisms.

[71] https://www.ecologique-solidaire.gouv.fr/charles-gaulle-express, accessed on Dec. 13th 2018.

[72] https://www.legifrance.gouv.fr/eli/loi/2016/12/29/ECFX1629304L/jo, accessed on Dec. 13th 2018.

Beneficiary-pays principle	By nature, value capture charges are designed to make beneficiaries (in terms of land and property value creation) contribute to a project's funding.
Administrative simplicity	Value Capture charges appear very sophisticated and require public and private stakeholders to build strong partnerships. Regarding the public sector, there are some pre-requisites that may appear as a barrier in the short to middle term for most LIC and SSA countries (strong institutional capacities in the fiscal administration, strong and efficient zoning system, etc.).
Efficiency	By nature, value capture charges are not designed to send a signal price to road user allowing them to adapt their driving behavior.

IX. Towards a universal road user charge?

In many countries, the road sector is not funded by only one of the instruments described in the previous sections, but rather by a combination thereof (e.g. [56, 62, 64]). However, combining these instruments can lead to a lack of transparency, cross-subsidizing, and even give a wrong signal to road users, leading some to think that since they pay taxes on fuel, roads are 'free' and some others to think that they pay twice whenever using a toll road[61].

Acknowledging these limits, the road investment gap, and the future shortcomings of fuel taxes as one of the main funding instruments, some countries are currently starting to conceptualize a new road pricing scheme that could first complement and then replace current funding instruments such as motor fuel charges, or recurring access-based charges. This new pricing scheme is known as Universal Network Charging[58], Universal Road User Charging[61] or Mileage-Based User Fee[64].

This new charging scheme would apply to all motor vehicles and in the whole road network. The concept is basically to charge users for the distance they travel on roads; the unitary charge would then differentiate classes of vehicles to account for the differential damage they cause to the roads. In its simplest form, this charge would be based on odometer readings. But leveraging currently used technology (GPS, all-electronic tolling) this system could structure the unitary charge based on other relevant parameters in addition to mileage[61]:

- Vehicle weight class to account for the differential damage caused by heavier vehicles with a lower number of axles
- Time of day, which would allow charging more during congestion periods
- Location, which would allow for charging more to reflect that some parts of the network (e.g. tunnels, bridges, urban roads) require more capital expenditures than other parts of the network (e.g. rural roads)
- Type of fuel, to account for the differential GHG emission class

The revenues generated by such a charging system are likely to be earmarked in a dedicated structure to fund road rehabilitation and maintenance.

Table 12: qualitative assessment of a universal road user charge as a road funding instrument.

Criteria	Comment
Equity	In its simplest form, this charging system would suffer from the same drawbacks as other types of charges. However, leveraging technology (i.e. an all-electronic system), it would theoretically be possible to organize rebates for lower-income categories. However, equity of an all-electronic charging system would be challenged by persons who do not use bank services. With an all-electronic charging system, the geographical link between collection and use of funds would become more direct. Cross-subsidy between different part of the

	network may prove necessary. Such a system could then improve cross-subsidizing transparency.
Yield potential	The yield potential is probably the highest among the different funding instruments since all road users would contribute, and it would overcome the erosion phenomenon currently experienced in motor fuel tax revenues.
User-pays and polluter-pays principles	In its least sophisticated form, this charging instrument would allow road users to pay their fair share corresponding to the damage they cause, since it would be distance-based only. In its most sophisticated form, the instrument would allow internalizing negative externalities (e.g. GHG emission, congestion, etc.), contributing to reflect the polluter-pays principle
Beneficiary-pays principle	This charging system is by nature not designed to make beneficiaries pay for roads.
Administrative simplicity	This is probably the biggest drawback. Such a large-scale charging system is only at the pilot stage in developed economies and it would unlikely be deployed in the short to middle term. It would probably be a tangible option only in the long-term in SSA and LIC. The main impediments are the following: - This system would require a huge initial investment and operating costs would represent between 5% and 13% of gross revenues - The number of users is substantial, which makes enforcement much more complicated than it is for excise taxes such as motor fuel taxes; there could be a significant evasion risk - Such a system could be easily politicized, for example due to the charging formula and privacy issues - Public acceptance would need to involve a strong support from public authorities given the novelty of such a system

Efficiency	In its most sophisticated form, this charging system would be the most capable (among the ones discussed) of sending a relevant signal price to users accounting for the real cost of use of roads and associated negative externalities. Such a system would probably have the highest chance of making road users optimize their behavior.

Annex 6 Private sector participation in the road and electricity generation sectors

I. Introduction

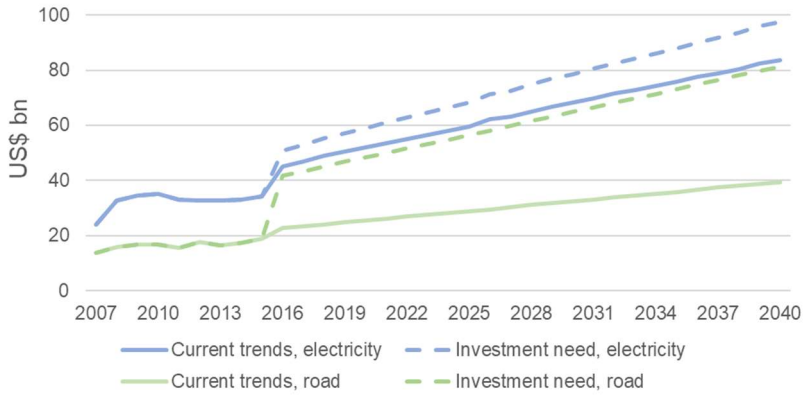
1. Investment gaps in the road and electricity generation sectors

In 2017, just over one billion people lived in Sub-Saharan Africa (SSA)[73], and the current demographic forecast predicts that number to increase to just below 1.8 billion in 2040[74]. This generates increased needs for new infrastructures and a significant upgrade of existing ones to meet forecast economic growth.

However, as encountered across the world, public debt is an important issue and to improve their fiscal space, many countries reduce public spending, which makes it difficult to increase investment in infrastructure given the already high pressure on the public budget (e.g. health, pensions). Moreover, more public debt would downgrade Sovereign credit ratings and thus increase the cost of financing for Governments[75].

In this context, SSA countries, 85% of which are classified as low-income or lower-middle income countries (LIC or LMIC) by the World Bank Group[76], are facing, as many other countries all around the world, a dire infrastructure investment gap. This gap is forecast to increase dramatically in the next decades if current under-investment trends are maintained, as depicted in Figure 3 below for the road and electricity sectors.

Figure 3: Investment trends and needs in Africa for the Road and electricity sectors (authors' adaptation from Global Infrastructure Hub outlook data[77]).



Without a significant shift in investment, the investment gap for the road sector could become twice as big as for the electricity sector in 2040.

[73] https://data.worldbank.org/indicator/SP.POP.TOTL?locations=ZG, accessed on November 2018.

[74] https://population.un.org/wpp/DataQuery/, accessed on November 2018.

[75] World Economic Forum. Recycling our infrastructure for future generations. 2017.

[76] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups, accessed on November 2018.

2. What are institutional investors and why are they key to bridging the infrastructure financing gap?

Institutional investors are different from commercial banks and hold vast amounts of assets that could be mobilized to bridging the infrastructure financing gap[78, 79]. They comprise for example insurance companies, public and private pension funds or sovereign wealth funds. It is estimated that they hold between US$80tn and US$120tn in assets.

There is potentially a good match between infrastructure financing needs (particularly in the road sector) and institutional investors' investment expectations. On the one hand, institutional investors are looking for long-term assets providing new sources of predictable income to diversify their actual asset allocation in order to match their long-term liabilities[80]. Some investors also value the opportunity for both positive impact and increased return[81] by investing in emerging economies. On the other hand, infrastructure assets[82]:

- are tangible and will always retain a residual value, which is attractive during periods of distress;
- tend to have a lower correlation with economic cycles compared with other asset classes;
- the counterparties of infrastructure assets are diversified, which helps stabilize cash-flows;
- are situated in a market with a naturally high barrier to entry, thus enjoying (quasi)-monopolistic situations;
- offer long-term and predicable cash-flows;
- may offer inflation hedges when inflation is passed through the off-taker or user;
- offer active management opportunity enabling investors to add value directly to increase returns;
- offer more potential for positive environmental and social impact especially in SSA.

Despite this potential match, the participation of institutional investors in infrastructure projects located in developing economies remains very low. This is due to, for example, the lack of a strong pipeline of infrastructure projects as an asset class to invest in.

Institutional investors show a clear preference for energy over transport projects, and they favor brownfield transport projects over greenfield ones. Energy projects have shorter gestation periods, lower construction risks and better revenue predictability through Power Purchase Agreements (PPA)[80].

---

[78] McKinsey Global Institute, Bridging Global Infrastructure Gaps, June 2016.

[79] IMF. From global savings glut to financing infrastructure – The advent of investment platforms. Working Paper 16/18. 2016.

[80] PPIAF. Institutional investment in infrastructure in emerging markets and developing economies. 2014.

[81] Mobilizing Institutional Investors to Develop Africa's Infrastructures (MIDA). Investment opportunities in African Infrastructure - Challenges and Opportunities. 2018.

[82] Deutsche Asset Management. Research report - Why invest in Infrastructure? 2017.

II. Private Sector Participation in the road and electricity generation sector – some facts[83]

1. Low amount of private sector participation in the road sector

Delving into the World Bank's Private Participation in Infrastructure database can help objectivize the comparative situations of private participation in the road and electricity generation sectors.

Figure 4 shows the number of active[84] road and electricity generation projects according to income class with a focus on LICs. The left panel concerns projects having reached financial close since 1994 and the right panel depicts more recent projects, i.e. closed during the last decade.

Figure 4: Number of projects in the Road and Electricity generation sectors having reached Financial Close (Authors' creation from World Bank's PPI database).

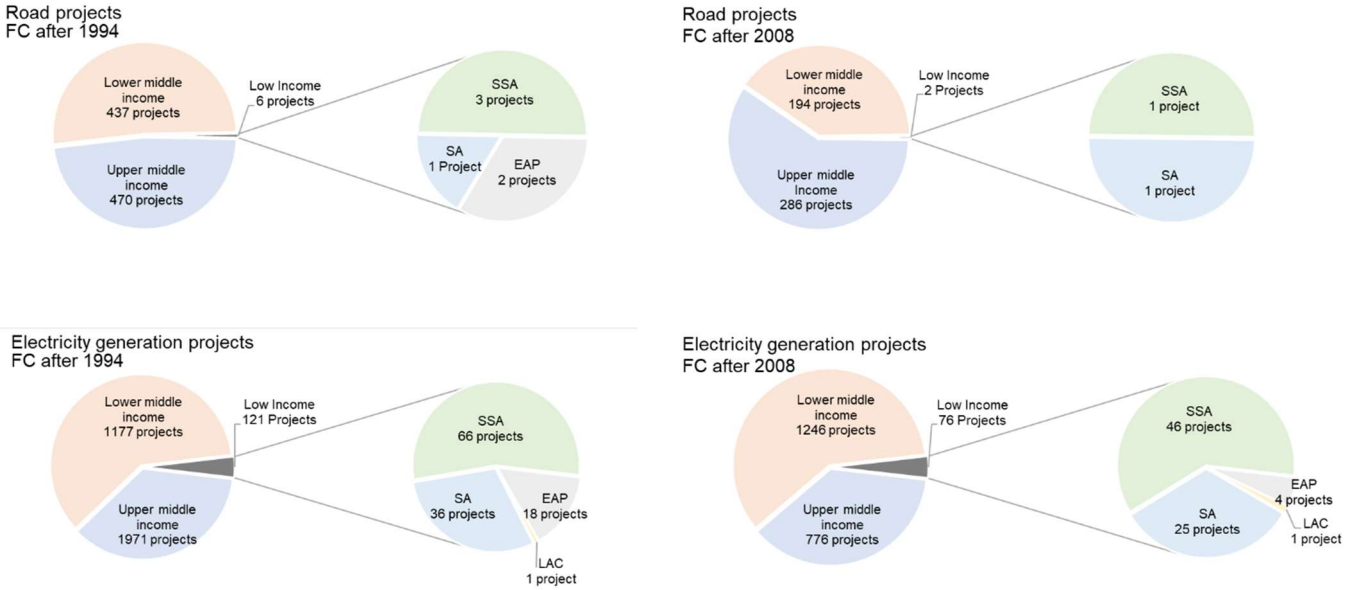


Figure 4 highlights that private participation in electricity generation projects is four times as prominent than in the roads sector in terms of project count. This discrepancy increases dramatically when focusing on LIC (20 times more or 38 times more if considering only the projects closed during the last decade).

[83] The analyses presented in this chapter derive from the World Bank's Private Participation in Infrastructure database: https://ppi.worldbank.org/, accessed in November 2018.

[84] Active means here projects that are in construction or operational. It does not include cancelled projects or projects for which the contract period has expired.

The number of road projects having reached financial close in SSA and particularly LICs, in turn, is extremely low.

2. Types of private sector participation

Looking now at the types of private participation for projects having reached financial close also reveals interesting trends.

Figure 5 shows that all income classes considered, private participation in the road sector may be observed to a higher degree in brownfield projects rather than in greenfield projects. This is even more noticeable when focusing on road projects closed more recently. On the other hand, greenfield electricity generation projects can attract 87% (95% for more recent projects) of private participation in terms of project count. For both sectors, the other types of PPI, namely divestiture and management and lease contracts[85], seem to be relatively unused either for road or electricity generation projects.

Figure 5: Types of PPI projects in the Road and Electricity generation sector (Authors' creation from World Bank's PPI database[83]).

3. Capital intensity

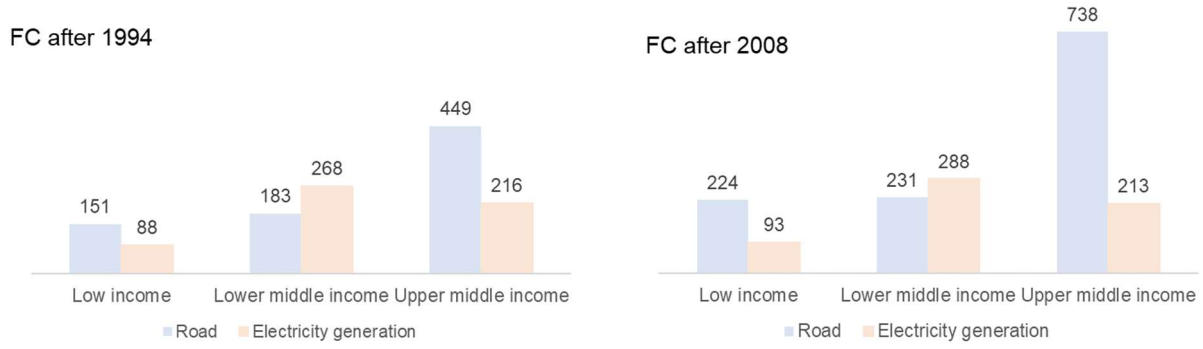
Looking at the average investment highlights that road projects are about 35% more capital-intensive than electricity generation projects, all income classes considered.

[85] PPI database considers 4 types of private participation in public infrastructures: management and lease contracts refers to a participation where a private entity takes over the management of a public asset for a fixed period while ownership and investment decisions remain with the public authority; greenfield projects refers to participation where a private entity (or public-private JV) builds and operates a new asset for a specified duration. The private entity takes on much of the financial and operational risks throughout project-life; brownfield projects are similar to greenfield projects except that the asset already exists, and the private entity makes improvements to it or expands it; divestitures refer to a participation where a private entity buys an equity stake in a SOE through an asset-sale, public offering or privatization program.

However, as shown in Figure 6, focusing only on LICs and upper-middle countries (UMICs) reveals a more prominent scale difference: road projects in LICs are 75% more capital-intensive and more than 3 times as capital-intensive as in UMICs.

Another interesting feature of average investment is that more recent road projects tend to be more capital-intensive, whereas the capital intensity of electricity generation projects is rather stable. As a matter of fact, road projects closed after 2008 require more than twice the investment than those closed before.

Figure 6: Average investment (US$ M) of Road and Electricity generation projects having reached Financial Close (Authors' creation from World Bank's PPI database[83]).



The capital intensity matters for the following reasons:

- **Affordability of the PPP for users and the contracting authority**. More capital-intensive projects will require raising more debt, and possibly involve numerous banks in a club loan or syndicated loan. In a club loan, the last bank entering in the club will be the one with the least appetite and will provide the costliest debt. As lenders are treated *pari passu* for the same class of debt, the cost of debt will be aligned on the last lender, thus increasing the cost of capital of the Project Company;
- **Attractiveness of the PPP for the lenders and equity providers**. Having more capital-intensive projects means greater tickets for each lender and equity provider. At a given risk level, each private finance provider is more exposed in terms of amount of cash invested;
- **Local contractors' absorbing capacity**. Especially in countries where there is no track-record of successful Output and Performance-Based Road Contracts (with or without private financing), more capital-intensive projects present the risk of evicting local contractors, who have weaker balance sheets and more limited technical capacities.

4. Demand risk allocation

Road projects presented to the market are mostly structured as User-Pays (a.k.a toll concession) and thus present a revenue risk much less attractive for the private sector. In LICs, 99% of Project Companies operating an electricity generation facility derive their main revenue from a PPA or Availability Payments made from the Government. For the remaining 1%, the main revenue is directly collected from users or comes from sales to wholesale market. The same trends are observed if considering only SSA countries. On the other hand, 75% of Project Companies operating road projects derive their main revenue source from tolls directly collected from users, whereas the remaining 25% derive their main revenue source from Availability Payments made by the Government (a.k.a Gov.-Pays)[86]. Irrespective of how Availability Payments are funded, Gov.-Pays road PPPs with demand risk retained by the Public Sector are the closest to a PPA-based electricity generation project from the revenue risk point of view (see Box 3).

Box 3: Revenue risk in User-Pays (e.g. toll concession) and Gov.-Pays PPP (e.g. Availability Payments or PPA structures)

Under a PPA the Project Company is paid a tariff split between an "Availability (or Capacity) Charge" and a "Usage (or Variable) Charge"[87]. The first is paid for making the facility available and providing power to the utility and covers fixed expenditures; the latter is paid for the marginal cost of generating power as and when requested by the utility.

It is key to understand that under a PPA, the revenue risk derives from the creditworthiness of the off-taker (the utility) and the capacity of the Project Company to operate the facility at the performance level required. From the debt and equity providers' point of view, this is logically less risky than revenues that depend on user demand, which is more difficult to predict.

Regarding road PPPs, there exist a variety of revenue and revenue risk allocation methods, as shown in Table 13 below. For simplification, this does not consider mechanisms to mitigate revenue risks or other potential commercial revenues (e.g. from service areas or advertising) as they represent a very small portion of a road Project Company's revenues[88]

Table 13: Most common arrangements for demand risk allocation in road PPPs

	Tolls	No tolls

[86] These figures are extracted from the authors' analysis of World Bank's PPI database, considering only projects for which this information is available.

[87] E.R. Yescombe. Public-Private Partnerships – Principles of policy and finance. 2007

[88] For example, revenues from other Commercial Operations represented about 3% of the total revenues of French Highway Concessionaires in 2015 (http://www.arafer.fr/wp-content/uploads/2016/12/Synthese-comptes-concessionsautoroutes-2015.pdf).

Demand risk transferred to Project Company	Typical User-Pays PPP where Project Company derives its revenues from tolls e.g.: French and Spanish concessions, Dakar-Diamniadio highway, Ghana road PPPs, Mexico road concessions	Shadow Toll PPP where Project Company derives its revenues from payments made by the Public Authority based on traffic level e.g.: United Kingdom road PPPs, Portugal road PPPs
Demand risk is shared	Mixed User-pays and Gov.-Pays PPP, where Project Company derives its revenues from tolls and availability payments e.g.: 4G Road PPP Program in Colombia	
Demand risk kept by Public Authority	Gov.-Pays PPP where project company derives its revenues from Availability Payments made by the Public Authority (or a dedicated agency). The payments are funded by collected tolls e.g.: Kenya Toll Road PPP program	Typical Gov.-Pays PPP where Project company derives its revenues from Availability Payments made by the Public Authority. The payments are funded by general and/or dedicated budgets e.g.: Liberia Road PPP, French "marché de partenariat"

These arrangements lead to different revenue risk profiles, but the closest arrangement to a PPA structure is a Government-Pays road PPP in which demand-risk is retained by the public sector, irrespective of how the Availability Payments are funded:

- the revenue risk is more prominent when the Project Company derives its main revenue from the collection of tolls directly from users. The risk that revenues do not match forecasts is more pronounced for greenfield projects, and important differences are often seen during the ramp-up period (first 5-7 years of commercial operations);
- if the Public Sector wishes to transfer some demand risk to the Project Company but real tolls are not practical (political choice, insufficient traffic, etc.), the shadow tolls structure can be considered. Shadow tolls involve payments from the Public Authority to Project Company in terms of the number of vehicles per day (vpd) or vehicles-kilometer (vkm). The payments are structured on a banded basis, where the first band is pitched as such levels of traffic as to ensure debt providers are taking low or no revenue risk. The second band is generally sufficient to ensure a base case equity Internal Rate of Return (IRR), and the upper bands correspond to upside equity IRR scenarios[87];
- when the demand risk is kept by the Public Authority, whether the road is tolled or not, the Project Company derives its revenue from Availability Payments. The concept of Availability Payments derives from the PPA. These payments are structured to fit costs of the Project Company (mainly debt and equity repayments

and operational expenditures) and are due if the Project Company provides the service at the level of performance required. Payment deductions are made if any portion of the road is unavailable or if performance indicators are not met. Hence, as in a PPA-based electricity generation project, from the debt and equity providers' point of view, the revenue risk derives from the creditworthiness of the off-taker (i.e. the Public Authority making the Availability Payments) and the capacity of Project Company to operate at the required level of performance.

III. Asset recycling as another potential tool to scale-up private participation in the road sector

The concept of asset recycling consists of two main components[89]:

- the monetization of existing assets generating revenues through sale or lease to the private sector, followed by
- reinvestment of the proceeds received in other infrastructure projects.

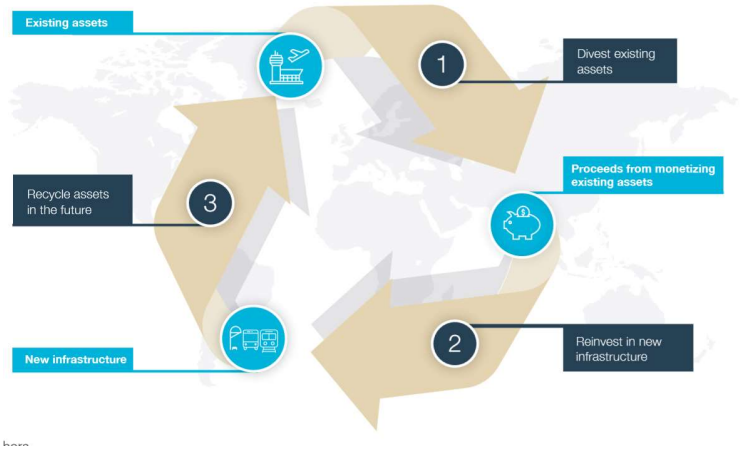
The asset recycling process cycle consists of three steps as shown in Figure 7[90]. The steps for applying the concept to the road sector in SSA countries are detailed below:

- **Step 1 – identification of existing monetized roads**: for an asset to generate proceeds when leased to the private sector, the asset must generate revenues on its own. In the road sector, it means that toll roads have this potential. A good candidate for asset recycling would be a toll road located on a vital economic corridor so that there exists a potential to increase its traffic and associated revenues;
- **Step 2 – divest the road**: there exists a variety of divestiture methods from a long-term lease/management contract to partial or complete privatization. Depending on the country context, some methods could be impractical (e.g. privatization if the general public acceptance of private sector investment and management is very low). A long-term lease/management contract seems more relevant, because the road could be leased again after it has been handed back to the Government and thus could generate new proceeds in the future;
- **Step 3 – reinvest in new infrastructure**: the proceeds from the leasing of the road should be ear-marked in a dedicated road investment fund, to ensure that the proceeds are reinvested in the road sector. A performing Road Fund could be an appropriate vehicle. The proceeds could be used to invest in the development of new roads using the variety of existing procurement tools (e.g. Design Build contract if the new road does not present the potential to be procured as a PPP, PPP if there is good potential). The proceeds could be used either to (partially) fund the CAPEX or provide credit enhancement tools for road PPPs.

[89] Marsh and McLennan companies. Infrastructure asset recycling - insights for governments and investors. 2018.

[90] World Economic Forum. Recycling our infrastructure for future generations. 2017.

Figure 7: Infrastructure asset recycling process[90].



The “build now, divest later” (or “build and flip”) approach, described below, could be integrated in the road asset recycling process or even constitute its starting point, for example if the country has little or no proven track-record of private sector involvement in road investment and management:

- the Government could build a new toll road under a public procurement method (e.g. through a Design-Build contract). The CAPEX could be funded by concessional loans to optimize the cost of finance;
- once commissioned, the road could be operated, maintained and have the tolls collected by a private sector contractor under an OPRC covering the ramp-up period (5-7 years);
- once the ramp-up period has passed, the Government could lease the road through a long-term contract to the private sector. The private participation should then be optimized because the construction and ramp-up risks, to which investors are averse, are passed. The proceeds from the lease would be used to serve the concessional debt. The net proceeds would be earmarked and would feed in the Road Fund to be further dedicated to new road investments.

Of course, the opportunity of an asset recycling program is not valid for every country and should be based on tailored technical, financial and legal diagnosis (existence of monetized road assets to be divested, willingness to pay, commercial viability, institutional and legal gaps, etc.).

The asset recycling process can also be thought of as a “network” approach rather than a single-segment approach. An interesting experience is the Highway Asset utilization model in Mexico (see Box 4).

Box 4: Highway Asset Utilization model in Mexico[91, 92]

[91] https://www.ibtta.org/sites/default/files/documents/2016/Mexico/All%20Ortiz.pdf

[92] Bloomgarden D. R., Blumenfeld D.A. The routledge companion to Public-Private Partnerships – the institutional environment for PPP. Chapter 3: The case of Mexico and Brazil. 2013.

The development of highways in Mexico during the last 60 years has first relied on public sector funding before shifting to models involving the private sector.

From the early-50s to the late-80s, Mexico has developed a toll road network of about 1000km funded by the public sector. The first concession program (toll roads with demand risk transferred to the concessionaire) was then launched but many projects had to be financially restructured due to economic downturn. Government bail-out of 23 road concessions was even necessary.

Between late-90s to mid-00s, these toll roads were operated by the public sector. Mexico then developed and strengthened its legal and institutional framework for highway development through PPPs. There currently exists three different PPP models:

- the typical toll-road concession

- the long-term service contract (Proyectos para Prestacion de Servicios – PPS - contracts) which is the equivalent of an OPRC

- the highway asset utilization model

The highway asset utilization model “bundles” existing highway concessions that were bailed-out by the public sector and have been operated at least ten years by the public sector, and new road segments to be developed. The winner of the bundled concession contract is responsible for operating, maintaining and collecting tolls on the existing toll highways, and building and operating the new highway segments.

The advantage of the Highway Utilization Asset is that it allows the Mexican government to obtain more funds for infrastructure investments (the proceeds from the bundled concession) and develop new highway segments that would have otherwise required a strong public funding.

Annex 7 Road PPP case-studies in Latin America and Sub-Saharan Africa

Contents of Annex 7

I. Federal highway concessions in Brazil

The Federal road network in Brazil experienced a significant expansion during the 1970s (12% increase for just the year 1975) with expenses in the road sector representing 2 to 3% of the GDP. This level of investment in the road sector plummeted to 0.1% of GDP in 1994 under difficult economic conditions, which amounted to just about the necessary expenses to avoid network deterioration[93, 94].

To overcome scarce fiscal space and face the necessity of investment in the economic backbone of the country, the Federal Government launched the Federal Highway Concession Program in the mid-90s.

5. The Common Concession (pure User-Pays) model remains the most commonly used option to tender Highway PPPs at the Federal and State levels

d. The common concession is the historical model; the more recent administrative and sponsored concession models have scarcely been used to tender highway PPPs

Highway PPPs in Brazil are regulated at the Federal level through a set of laws[95] that distinguish the following models[96, 97]:

- Common Concessions, for which the private partner derives its revenues only from user fees and other ancillary sources (e.g. rest areas). A Common Concession excludes payments from the public partner. This historical model used since the mid-90s is the equivalent of a “pure” User-Pays PPP;
- Administrative concessions, for which the private partner derives its revenues only from payments made by the public partner and the commercialization of ancillary services. An administrative concession excludes payments from users. This more recent model created in 2004 is the equivalent of a “pure” Gov.-Pays PPP;
- Sponsored concessions, for which the private partner derives a part its revenues from a mix of payments made by the public partner, users and the commercialization of ancillary services. This model, also created in 2004, covers User-Pays PPPs with milestone payments during the construction period or a PPP with mixed revenues (i.e. deriving from users and payments made by the public partner).

---

[93] Veron, A. Cellier, J. Private Participation in the road sector in Brazil: Recent evolution and next steps. The World Bank Groupe. Transport Papers TP-30. March 2010.

[94] PPIAF. Toolkit for PPP in roads and highways. Country case study: Brazil. March 2009.

[95] See https://bpp.worldbank.org/content/dam/documents/bpp/brazil.pdf for an exhaustive review of PPP and concession procurement at the Federal level in Brazil.

[96] Queiroz, C., Astesiano, G., Serebrisky, T. An overview of the Brazilian PPP Experience from a stakeholder’s viewpoint. Inter-American Development Bank, Technical Note IDB-TN641. March 2014.

[97] Werneck, B. Saadi M. The Public-Private Partnership Law review (4th Edition) – Chapter 4 Brazil. 2018. ISBN978-1-912228-20-1.

Other government levels (States and Municipalities) can implement road and highway PPPs under State and Municipal Laws that are compatible with the Federal Laws. Table 14 shows that the Federal Government and the State of São Paulo have made an extensive use of concessions to foster investment in the road sector, accounting for more than 60% of the active concessions to date. Other States and some municipalities have engaged in the process; however, with a lower magnitude. It is worth noting that the Common Concession model accounts for more than 90% of all Brazilian roads and Highway PPPs.

Table 14: Type and number of active road and Highway PPPs per Government level (compiled from authors' knowledge and various sources[98, 99, 100]).

	All PPP types		Of which Common Concessions	
	nb	Km	nb	Km
Federal	20	9684	20	9684
Bahia (State)	3	886	2	338
Espiritu Santo (State)	1	68	1	68
Minas Gerais (State)	1	371	0	0
Mato Grosso (State)	1	112	1	112
Pernambuco (State)	2	51	1	44
Paranà (State)	7	2720	6	2500
Rio de Janeiro (State)	4	227	4	227
São Paulo (State)	21	6130	20	6011
Municipal	3	148	3	148
Total	**63**	**20397**	**58**	**19132**

[98] World Bank's PPI database: https://ppi.worldbank.org/

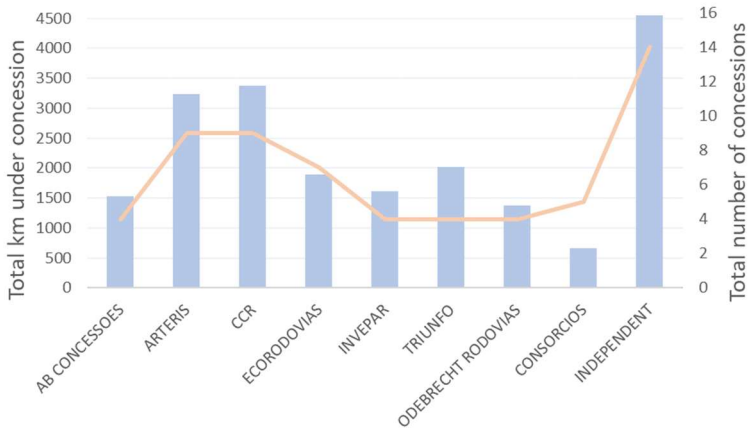
[99] Associacão Brasileira de Concessionarias de rodovias (ABCR). Annual report 2017.

[100] Agencia Nacional de Transportes Terrestres (ANTT) website: http://www.antt.gov.br/rodovias/Concessoes_Rodoviarias/Index.html

e. The highway PPP market is dominated by 8 groups with a very significant presence of local players

Figure 8 shows that the Brazilian road and Highway PPP market is structured around 8 groups, 6 of them being Brazilian-controlled[101]. These 8 groups control almost 80% of the road and highway concessionaires. The 20% remaining are controlled by independent companies.

Figure 8: Road and highway PPP market players. orange line: number of concession contract; blue bars: total length of network under concession.



These figures show that the different phases of the Federal Highway Concession program were successful in supporting the emergence of local players.

However, the situation is likely to evolve for future concessions. As a matter of fact, since 2014, the market has been changing considerably under the effect of the corruption scandals in which the major construction groups were involved[102]. These groups have reduced their engagement, leaving room for second-tier local companies. The demand for investments in the next years will be very significant, and the current construction groups will not have the possibility to meet this demand. Therefore, future concessions need to attract new players, including international ones.

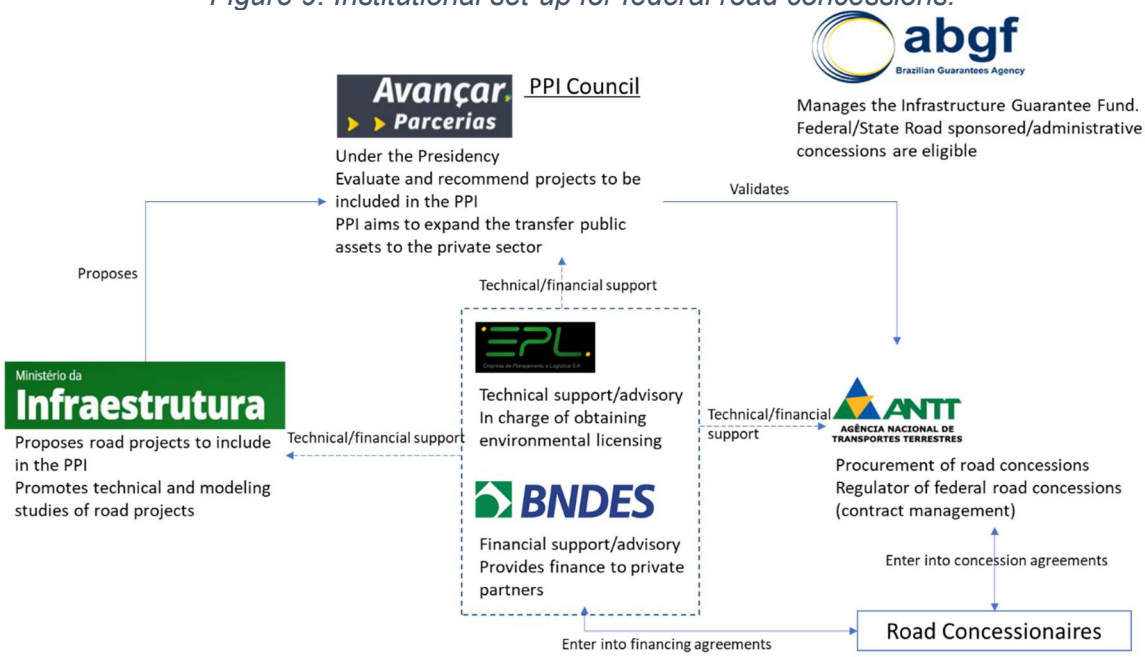
6. The institutional set-up has significantly evolved in the past 25 years toward more regulation and strategic decision-making at the highest level of the Government

Figure 9 depicts the current main institutions and their role.

[101] AB Concessoes is controlled by the Italian Atlantia. Arteris is controlled by the Spanish Abertis.

[102] World Economic Forum. Improving Infrastructure Financing in Brazil. World Economic Forum/InterAmerican Development Bank. January 2019.

Figure 9: Institutional set-up for federal road concessions.



a. The PPI (Investment Partnerships Program) Council

The PPI was created by Law in 2016 to increase private sector involvement in financing and management of public assets by promoting divestiture and public-private partnerships.

It reports to the Presidency and has absorbed the functions of previous institutions such as the Federal PPP Unit (CGPPPF), the Inter-Ministerial Council for Integration of Transport Policies (CONIT) and the Inter-Ministerial Privatization Council (CND).

Its role is to evaluate projects presented by sectoral Ministries and qualify them to be procured under PPPs or divested to the private sector[103],[104]. The PPI council is the guarantor of the integration of highway projects to be divested into broader strategies on national significance (e.g. Logistics Investment Program).

b. The Federal Ministry of Infrastructure

Until the creation of ANTT in 2001, The Federal Ministry of Infrastructure oversaw the preparation of highway concessions, their procurement and contract management.

[103] https://www.ppi.gov.br/index.php

[104] Ribeiro, K.M., Fioraventi, R.D., Da Silva Cruvinel, R.R. Concessões de Infraestruturas de Transportes no Brasil Identificação de empreendimentos, marcos legais e programas federais nos segmentos aeroportuário, ferroviário, portuário e rodoviário de 1990 a agosto de 2018. Inter-American Development Bank, Nota Tecnica TN-1532. Novembro 2018.

Its functions have been refocused and the formulation of transportation policies. It also supervises DNIT (National Department of Transport Infrastructure), which is in charge of the management and development of the non-concession-based Federal road network.

Currently, the Federal Ministry of Infrastructure is responsible for preparing feasibility studies on the road concession projects that it wishes to propose for qualification to the PPI Council. To undertake these studies, it receives the support of EPL (Planning and Logistics Company) and BNDES (Banco Nacional de Desenvolvimiento Económico e social) [93, 104, 105].

c. EPL (Planning and Logistics Company)

EPL is a State-Owned company created by Law in 2012, initially to structure one specific project (Rio-Sao Paulo High Speed Line). EPL has become the 'technical strong arm' of the Government to implement Logistics Programs, including highway PPPs.

As a matter of fact, EPL provides support to the Federal Ministry of Infrastructure to prepare the technical feasibility studies on road concession projects, and recently also takes charge of the full structuring of highway concessions, including bidding document drafting.

During the tender process, EPL supports ANTT to adapt the bidding documents in case the technical scope of the projects is updated. EPL is also responsible to obtain the environmental licensing for highway PPP projects[104, 106].

d. BNDES (Banco Nacional de Desenvolvimiento Económico e Social)

BNDES is a State-Owned Development Bank historically involved in the financing of Highway PPPs. It is to some extent the 'financial strong arm' of the Government when it comes to realizing long-term investment in various sectors.

BNDES has played a key role especially in the first phases of the federal Highway Concession Program by providing significant long-term finance at subsidized interest rates to concessionaires. BNDES has always been a key choice for concessionaires to close primary financing, whereas commercial lenders and other private debt investors have been more interested in stepping-in at refinancing.

Currently, BNDES provides its support to the Federal Ministry of Infrastructure in the preparation of financial feasibility studies of road concession projects to be proposed to the PPI Council [93, 106].

In the future, BNDES's role is likely to evolve. BNDES will strengthen its transaction advisory services (either to national or subnational clients). At the same time, rather than keep on providing the bulk of long-term finance itself, BNDES intends to become a catalyst to attract other sources of long-term finance.

---

[105] www.transportes.gov.br/index.php

[106] Brochado, M.R., Vassallo, J.M. Federal Toll Road Concession Program in Brazil: is it moving in the right direction? Journal of Infrastructure Systems, 20(02). June 2014.

e. ANTT (Agencia Nacional de Transportes Terrestres)

ANTT was created in 2001 as an autonomous regulator for ground transportation infrastructures and services delegated to private parties. It also includes the regulation of the highway concessions. As a regulator, ANTT oversees the tender processes for Federal road concessions that are qualified by PPI Councils and manages the contracts until conclusion, including toll adjustment.

In the early years, ANTT's role was rather formal, but with the evolution of the Federal Highway Concessions that include more and more mechanisms to regulate the evolution of tolls or investments to include in the contracts (see Section 7), its importance grew exponentially. To date, Federal highway concessions have been regulated by contract rather than policy [93, 100, 104].

f. ABGF (Brazilian Guarantees Agency)

ABGF manages the Infrastructure Guarantee Fund which can assist Federal as well as State or Municipal road PPPs.

To our knowledge, ABGF has not yet been involved in a Federal Highway Concession. This is probably because it has been created by the PPP law of 2004, probably to guarantee payments made by the public partner. Since at the Federal level, only the Common Concession model (i.e. pure User-Pays PPPs) has been used for highway PPPs, such guarantees have not been needed.

7. Concession contracts have been progressively refined toward a better regulation of the concessionaires' activities to the benefit of the highway users

The purpose of the first phase of the Federal Highway Concession Program initiated in the mid-90s was to increase the investment in major existing road corridors without increasing spending for the Federal budget. This explains why the Common Concession model was chosen (i.e. pure User-Pays PPP). It is important to note that before the concession program, these highways were not tolled.

An important fact to keep in mind is that before being set out as concessions, Federal highways were not tolled. It was thus paramount to keep the tolls at an acceptable level. To achieve that, only brownfield highways with existing high traffic and focusing mainly on OPEX with limited CAPEX (for targeted and sequenced upgrades and developments) were initially included in the Federal Concession Program.

The more recent highways concessions tendered during more favorable economic conditions than in the mid-90s (lower cost of capital, increased competition, more modern tolling technologies, etc.) included more CAPEX and were able to achieve lower tolls for the users at the same time. In 2017, the ABCR (The Brazilian Association of Highway Concessionaires) calculated that since the inception of the Federal Highway Concession Program, 55% of concessionaires' total spending was dedicated to investments and the remainder for OPEX[99].

Table 15 summarizes the evolution of the highway concessions throughout the different phases of the Federal Highway Concession Program. The main items are discussed in the section below.

Table 15: Main features of the different phases of Federal highway concessions in Brazil (adapted from various sources[93, 104, 106]).

	1994-1997	2007-2010	2010-2012	2012	2012-2015	2015-2017
Contract duration	20 or 25 years No extension	25 years No extension		25 years with possibility of 25 years extension	30 years with possibility of 30 years extension	
Award criterion	Largest discount to the Reference Base Toll as set in the tender documents					
Toll annual adjustment	Basket of indices related to construction costs	IPCA	IPCA	IPCA – Factor X		
Toll revision	Based on the economic conditions at commercial close		Based on a WACC defined by Public Sector, aims at maintaining the economic and financial balance of the concession agreed on initially			
Condition on toll collection	Not until initial maintenance works are completed and toll plazas installed (about 6 months)				Not until 10% of works are completed	
Trigger to realize works based on Level of Service (LoS)?	No	Yes	Yes Highway duplication or capacity increase based on traffic trigger		No	Yes Highway duplication may be anticipated based on traffic trigger
Factor D?	No	No	Yes	Yes	Yes	Yes
Factor Q?	No	No	No	No	Yes	Yes
Factor C?	No	No	No	No	Yes	Yes
Arbitrage mechanism?	No	No	No	Yes	Yes	Yes
Step-in mechanism?	No	No	No	Yes	Yes	Yes
Characteristics of works	Punctual works	Mandatory and non-mandatory punctual works			Highway duplication in the first 5 years	Highway duplication within the first 20 years
Upside sharing mechanisms	No mechanism to share refinancing gains or over-profitability of the concession (traffic significantly above initial forecasts)					
Right of Way (RoW), environmental licensing	Transferred in full to the Concessionaire			Limited transfer to the Concessionaire. If Expenses are above a defined threshold, then rebalancing		

a. The lowest toll as the sole output of the tender process

The first highway concessions (1994-1997) used a 3-stage tender process: prequalification, definition of the characteristics and schedule of investments with prequalified bidders, identification of the most competitive offer. Only construction companies could bid at that time[106], probably to help create and consolidate a new industry with local players.

The concessions tendered after 2007 used a more streamlined process reflecting an approach more in line with international PPP practices. The broad features of the investments were defined by the Public sector before tendering and the concessionaire had more flexibility in defining the technical solution.

From 2007 onward, the tender process has followed 2 steps: identification of the most competitive offer, check whether the most competitive bidder provided all the qualifying documents. Bidding consortia were also opened to other equity investors along with construction companies[106].

Common Concessions can be awarded using either the lowest toll, the highest award value[107], the best technical proposal or a combination of these criteria. But in practice, all the federal highway concessions were awarded according the lowest toll criterion and to our knowledge the Federal Government never received any award value [93,106]. Quite interestingly, airport concessions are mostly awarded using the highest award value, which is understandable since airlines are the users of airport, then it is less a political issue to have the lowest fare possible to use airports.

However, if the lowest toll for federal highway concessions is probably the most acceptable solution regarding affordability for the users, it has been the source of many problems, e.g. overoptimistic traffic forecasts to secure a winning bid, hoping to renegotiate later at the expense of the road user.

b. Tolls' evolution tends to be more strictly regulated to limit the burden on highway users [93, 106]

In the Common Concession model, the toll is basically an output of the tender process. In the early concessions, in the absence of the possibility of contract extension, the toll is also the only way to account for unforeseen risks, shifting the burden entirely to highway users.

During the structuring of the tender, the financial model developed by the Public Sector makes assumptions on inputs (CAPEX, OPEX, cost of capital, traffic), and derives a Reference Base Toll, which is the reference toll to be paid by light vehicles. Tolls for other vehicle types are simply derived from the Reference Base toll applying a multiplier to account for the number of axles. For example, a motorcycle will have a multiplier inferior to 1, whereas 3- axle and 6-axle trucks will have multipliers of 3 and 6 respectively. This simple tolling structure is not in-line with international practice and does not account for the efficiency in terms of weight distribution of having more axles.

[107] i.e. amount paid by the concessionaire to the Grantor in exchange for the right to operate the highway and collect tolls.

Based on its own assumptions, each consortium makes bids on a Base Toll. The most competitive offer is then the one offering the largest discount compared to the Reference Base Toll set by the Public Sector in the tender documents.

Furthermore, due to the low density of population in rural areas and to avoid traffic back-ups in urban areas, open toll systems have been implemented, with toll plazas far from urban centers, far from one another and large segments of concession-based highways open[108]. This means that the long-distance users subsidize the urban and the short-distance users.

The Base Toll can be contractually updated through two different mechanisms:

- Yearly adjustment to account for inflation. In the first concessions (1994-1997), the adjustment was based on a group of indices reflecting the evolution of road sector costs, but it resulted in tolls increasing faster than the purchasing power. Since 2007, the yearly adjustment is based on the evolution of consumer prices (IPCA index). The more recent concessions (>2012) also impose an "X factor" of 0.25% every 5 years to reflect productivity gains of the concessionaires (either on the cost or revenue side). The X factor is a way to share upsides to the users;
- Revision to compensate for risks not allocated to the concessionaire (e.g. force majeure, modification of the investment program, licensing and RoW expenditures above a certain threshold). For the first concessions (1994-1997 and 2007-2010), when modifying the investment program, the economic conditions at commercial close (unit costs) were used, which could lead to downsides for the concessionaires but has more probably led to a significant upside due to productivity gains. Since 2010, the concept of economic and financial balance has been introduced, which intends to consider the economic conditions at revision in order to maintain the initial economic and financial balance of the contract. This revision is based on a WACC at the time of revision (determined by ANTT from 2007 to 2010 and by BNDES since 2010).

The early years of the first concessions (1994-1997), concentrated significant general public oppositions (cancellation of concessions, impossibility to operate toll plazas, attempt of Grantor to cut tolls unilaterally, etc.). It was argued that the system was regressive (the most traffic-heavy segments had the cheapest tolls) and produced inequalities since long-distance users subsidized to a large degree the other users. Moreover, toll revisions conducted too frequently (almost yearly) have led to significant increase in real terms (in average +40% in the first 15 years of the concessions).

However, the initial general public opposition to the first tolled highways has decreased. In spite of the flaws in the tolling system, users realized what were the benefits of having upgraded as well as properly maintained and operated highways.

Moreover, the creation of ANTT in 2001 and a shift toward increased and better regulation of tolls also increased the acceptance of the Common Concession model. Added to that, the better economic conditions for the more recent concessions (less inflation, lower cost of capital, more

[108] In such a system, toll plazas are not installed at every access to the highway. Instead, only the users that go through the toll plaza are charged.

competition with a mix of experienced local and international bidders, etc.) have led to low Base Tolls. For example, Base Tolls of the concessions awarded between 2007 and 2010 were 10 times below European levels and 5 times below the Base Tolls of the 1994-1997 concessions.

The sole award criterion for Federal Highways prevents the implementation of a toll policy and thus stalls the process of improving the tolling system in regard to its identified flaws (regressive and leading to inequalities between highway users).

c. Regulation of investments by the Public Sector: from detailed work definition and planning to upstream quality check and downstream control of performance [93, 104, 106]

It is important to keep in mind that the Brazilian highway concessions are very different from greenfield PPPs or brownfield highways PPPs with significant upgrades and development to be performed in the first years of the contract. Rather, Brazilian highway concessions are brownfield PPPs for which the investments are sequenced during the whole contract.

The regulation of investments to be undertaken by the Concessionaires has undergone significant changes since the first concessions:

- 1994-1997. At that time, the administration used the concession contracts in a similar way to traditional public works contract, with detailed investments programs (quantified road works, detailed schedules, etc.) and unitary costs anchored at commercial close. This rigidity led to many and frequent Base Toll revisions when the Grantor decided to modify the investment program. Such a model did not provide any incentives to innovate or be more productive since prices and quantity of works were contractually enforced;
- 2007-2010. The major innovation was the distinction of mandatory and non-mandatory works. Non-mandatory works are the expenses undertaken by the concessionaire to meet the performance standards stipulated in the contract (e.g. pavement rehabilitation, user assistance). These works are not subject to Base Toll revision. Mandatory works are upgrade works (e.g. duplication, adding new capacity, new intersection, pedestrian footbridge, etc.) that can be modified by ANTT and are subject to Base Toll revision. Concessionaires have more flexibility to propose the technical solution for these works and ANTT ensures quality of the design upstream and control performances upstream;
- 2010-2012. The major innovation was that duplication or capacity increases must be undertaken if a traffic trigger stipulated in the contract was reached. The Base Toll revision was not anymore anchored in the economic conditions at commercial close, but aimed at maintaining the economic and financial balance of the contract;
- 2012-2015. The concession awarded during this period required full duplication of the highways within the first 5 years of the contract[109], with ANTT keeping its regulator function (quality check upstream, performance control downstream);
- 2015-2017. The concessions awarded during this period required full duplication of the highways within the first 20 years of the contract, but this deadline could be accelerated in case of a traffic trigger reached.

[109] The highway concessions during that period were thus closer to classical brownfield PPPs in terms of investment phasing.

d. Other Regulation factors considered to update the Base Toll[104, 110, 111]

Over time, as seen above, ANTT has increased its role as regulator of the concessions either by updating the Base Toll to account for inflation and unforeseen risks.

The expansion of ANTT's regulation also translates into the introduction of the following factors in the more recent concessions:

- Factor D. It is a mechanism adjusting the Base Toll in order to exempt users of the highway. It is based on the idea that if the service provided by the Concessionaire to the users do not comply with the contractual standards, then the service shall not be fully remunerated. Factor D is applied in case of non-compliance with performance standards, or failure to carry out works (either maintenance or investment);
- Factor C. It is a mechanism to adjust the Base Toll in order to compensate for contingencies that exclusively affect the concessionaire's returns. The adjustment could result in an increase or a decrease of the Base Toll depending on the type of event (e.g. creation of sectoral taxes would lead to an increase; non-use of funds put in reserve accounts would lead to a decrease);
- Factor Q. It is a mechanism to adjust the Base Toll in order to account for performance in meeting targets on the number of accidents and number of events keeping lanes unavailable for users. The adjustment could lead to an increase (to reward the performance) or a decrease.

e. BNDES and IFIs have played a key role in providing long-term financing to the highway concessionaires [93, 106, 112]

The first concessions were awarded in a difficult economic context (high inflation, high cost of capital) and there was at that time no track-record of successful concessions. As a result, debt was mostly provided by BNDES and International Finance Institutions (IFIs). Such support most certainly proved efficient to support the creation of the road concession sector with local players (cf. Figure 8).

The prevailing financing model until 2014 relied heavily on BNDES, that was able to finance up to 80% of total investments at a subsidized interest rate. Commercial banks were not accustomed to providing long-term debt or charged high interest rates for it, and thus often short-term bridge loans (about 2-year tenure) needed to be used until BNDES financing was released[102]. With the expansion of the Brazilian capital markets and more favorable economic conditions, concessionaires were able to refinance initial loans as well as acquisitions using either commercial debt or bond emission.

The average cost of BNDES long-term debt was equal to a long-term subsidized interest rate (Taxa de Juros de Longo Prazo, TJLP) fixed by the Government. However, in 2016, the

---

[110] Agencia Nacional de Transportes Terrestres. Draft concession contract – BR101/290/386/448/SC/RS.

http://www.antt.gov.br/backend/galeria/arquivos/concession_contract__final_english.pdf

[111] Chiavari, J., Rezende, L. Climate Policy Initiative. Working Paper – Improving Brazil's agricultural productivity by targeting infrastructure. March 2016.

[112] KPMG Global Infrastructure. Infrastructure Opportunities in Brazil – Primary and secondary markets. April 2016.

Government initiated the gradual elimination of the TJLP and its replacement with a market-referenced rate (TJLP was increased to 7.5% in 2016 but has remained at 6% for a prolonged time before that). As a comparison, in 2008, a AAA bond emitted by a concessionaire would be sold for over 600bps more than the interest rate offered by BNDES. Aside from the gradual elimination of TJLP, the Government also initiated the reduction of BNDES support to projects financing with an encouragement to use capital market instruments[102].

A structuring effort, and perhaps legal adaptation, must be undertaken to enable the creation of a truly competitive environment for the provision of initial financing of future concessions by capital markets, either local or international.

f. Unsolicited proposals are regulated but still have a low success rate[104, 113]

Unsolicited proposals are regulated by a Federal decree[114] and are named PMI (Procedimento de Manifestaçaõ de Interesse – Private Interest Manifestation).

Under the PMI process, the Government publishes its intentions and terms of participation for companies for a highway concession. Interested companies are to carry out studies (technical, financial, legal) for that concession.

The Government then selects the best studies that will later be part of the tender documents for the highway concession. The company who carried out the selected studies obtains the right to be reimbursed by the awardee of the highway concession tender.

This mechanism was probably initially designed to relieve the public sector from a significant part of the structuring costs, but it has faced many challenges, as evidenced by the low success rate of highway concessions structured through the PMI instrument: only 14% of projects structured through PMI were successfully tendered.

One of the challenges is that even though it was intended to save structuring costs for the Government, the PMI translated into higher transaction costs for public managers. As a matter of fact, all the studies provided by companies must be assessed to be able to select the ones to be used in the tender documents. Still, the studies provided by companies are generally not ready to be used as such, so considerable complementary work needs to be undertaken by the Government. Moreover, since potential bidders in the future tender process could propose studies, there can exists a misalignment between the public and private sector. Evidence shows that in 80% of the cases, the awardee of the concession was also the company that undertook the selected structuring studies.

[113] IFC. Estruturaçaõ de Projetos de PPP e concessaõ no Brasil – Diagnostico do modelo brasileiro e propostas de aperfeiçoamento. 2015.

[114] Federal decree 8.428/2015.

g. The Federal Government will benefit from the support of the International Finance Corporation (IFC) to structure the future highway concessions[115]

The IFC has in the past supported several States in structuring and tendering highway concessions (e.g. Bahia and Sao Paulo States). The IFC is currently supporting EPL to structure a set of federal highway transactions. These transactions either consist in the re-tendering of highway concessions whose contract will come to an end in the next few years or structuring new highway concessions. Even though there is significant experience at the Federal level, there is also some room for improvement and for leveraging the best international practices. The new highway concession model will have to address several important challenges:

- a changing long-term financing environment. The role of BNDES as the major long-term financier will be reduced. It is thus paramount to attract new financiers to provide long-term debt. Given the investment needs, not only in the highway sector, future concessions will need to be bankable for both local and international lenders;
- adapting the toll structure. Currently, the toll structure is an output of the tender process and leads to some inefficiencies and inequalities. Shifting to a policy-set toll structure could overcome these flaws but would need to be carefully assessed against bankability and risk transferred to the future concessionaires. A policy-set toll structure will be, however, enabled if the concession award criterion is adapted. The highest award value criterion would be an adequate option;
- introducing new road management techniques. Currently tolls are paid at toll plazas that are relatively far from each other. A large portion of concession-based highways are open. The option to implement free-flow tolling could be an innovative addition, reducing traffic back-ups and covering more portions of concession highways.

Finally, the Federal Highway concessions have so far focused on segments whose revenues from users are sufficient to ensure profitability without any form of financial support from ANTTself-sustaining and were implemented through the Common Concession model (i.e. pure User-Pays PPP). As more highway segments are to be set up as concessions, the Sponsored Concession model already implemented in some States will probably have to be adapted to Federal Highways, which would be an innovation.

8. Summary and key lessons learned

In just about 25 years, the Brazilian Government at different levels (Federal, State and Municipalities) has delegated the management and development of about 20,000km of roads and highways to the private sector under more than 60 PPPs.

At the Federal level, only the Common Concession model, equivalent to a “pure” User-Pays PPP, has been used to date. For the other levels of Government, it is also by far the most used model, although the Sponsored Concession model, equivalent to a mixed User-Pays and Gov.-Pays PPP, is gaining interest.

[115] https://www.globalinfrafacility.org/sites/gif/files/Brazil%20Highways%20-%20GIF%20presentation%20April%2018.pdf and https://www.globalinfrafacility.org/sites/gif/files/GIFBriefs_PPSA_April2018_Brazil%20Road%20Concessions.pdf

The highway concession market is dominated by 8 groups, controlling 80% of the concessions; 6 of these groups are controlled by Brazilian entities. This shows that the Brazilian authorities were efficient in supporting the emergence of local players in a new market. The role of Banco Nacional de Desenvolvimento Econômico e Social (BNDES), the State-Owned National Development Bank, in providing long-term financing to concessionaires, has been determinant.

However, the concession market is experiencing major changes since 2014 (corruption scandal undermining all major construction companies, reduction of BNDES's role because of a strong economic crisis). To meet its investment needs, Brazil will need to attract new sponsors and new financiers, either local or international.

In the last 25 years, the institutional set-up has undergone many reforms. Today, the decision to include new segments in the Federal Highway Concession Program is made by the Investment Partnership Program Council under the supervision of the Presidency, in order to better integrate these projects into broader national strategies. Procurement and contract management is then undertaken by the National Agency for Ground Transportation (ANTT, Agencia Nacional de Transportes Terrestres), the Federal highway concessions regulator.

Over the years, highway concession contracts have become better-balanced. Concessionaires have now more flexibility to define the technical solutions for the investments, whereas ANTT focuses on quality checks upstream and a control of performance downstream.

There is no tolling policy to date, but rather tolls are regulated by the contract and are an output of the tender process. The tolling system and structure have led to inefficiencies and produced inequalities for highway users. Moreover, to account for unforeseen events and risks, tolls have frequently been revised, resulting in a higher-than-purchasing-power growth. However, despite strong initial oppositions, the Common Concession model seems to have become widely accepted since the benefits have materialized for highway users.

The IFC is currently supporting EPL to structure a set of Federal Highways concessions. The objective is to improve the current model to address its flaws (e.g. inequalities of the tolling system and its regressive aspect) as well as to attract new sponsors and financiers, either local or international. Table 16 summarizes the key lessons from the Brazilian federal highway concessions.

Table 16: Key lessons from the Brazilian federal highway concessions.

<table>
<tr><th colspan="2">Unique features</th></tr>
<tr><td colspan="2">- Brownfield projects profitable without any financial support from ANTT ("pure" User-Pays PPPs)
- Concessionaires mainly focus on O&M. Investments are targeted and generally sequenced over the contract duration
- BNDES as the financial strong-arm of the Government until 2016</td></tr>
<tr><th>Key success factors</th><th>Key challenges</th></tr>
</table>

- Long-term financing at subsidized rates provided by BNDES until 2016 - General Public initial opposition overcome by materialized benefits - Tender process that initially focused on the emergence of local players	- "Privatize now and Regulate later" approach that jeopardized Value for Money for highway users - Tolling system and structure produced inefficiencies and inequalities - Other model (Sponsored Concession) to be used if less-profitable highway segments are to be set up as concessions - Adaptation to the Common Concession model to attract international sponsors and financiers (e.g. Direct Agreement) - Use of different selection criteria to award the concessions (from lowest tariff to highest price paid to the contracting authority)
Transferable lessons learned	**Non-transferable lessons learned**
- Support at the highest political level gives visibility to a PPP Program - The Principles of contract regulation and contract management should be adopted before tendering - Concessionaires should have the flexibility to propose the technical solutions. The public sector should rather focus on design quality check and performance control - An increase of tolls or Availability Payments should not be the only means of maintaining the economic and financial balance of a PPP contract in case of unforeseen events. Limited contract extension should be available as an alternative option - Tendering PPPs in "waves" with standardized contracts creates visibility for potential bidders, reduces transaction costs and enhances competition	- Presence or creation of a strong-financial arm such as BNDES is unlikely in LICs. Moreover, International Financial Institutions, such as the IFC, usually do not provide debt to Concessionaires at subsidized rates. The Brazilian "pure" User-Pays model does not seem replicable as is, since lenders are usually averse to the demand risk - Depending on country size, it is not necessarily realistic to support the emergence of local players as done in Brazil in the mid-90s

II. Ganta-Zwedru corridor rehabilitation PPP in Liberia[116]

1. Project's context and objectives

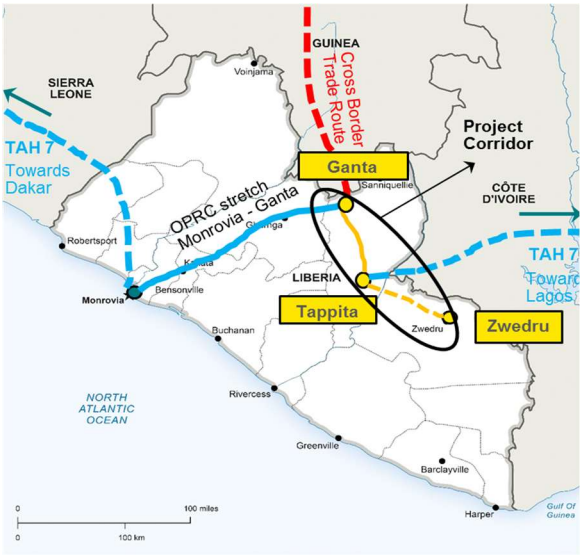
Despite considerable progress during the last 15 years, Liberia still faces tremendous challenges to recover economic capacity, human capacity and infrastructure losses from two devastating civil wars. Liberia's development is stunted by a lack of road access as evidenced by the following striking figures:

- nearly 60% of rural Liberians lack access to an all-weather road;
- 90% of paved roads are in good condition but they account only for 7% of the overall network;
- nearly 40% of the primary network is unpaved and in poor or very poor condition.

The 225km Ganta-Zwedru road corridor (cf. Figure 10), is among the highest investment priorities in the road sector for Liberia. It is currently mostly a gravel single carriageway with width between 6 and 8m. Some sections are already surfaced, but the road is in poor condition and almost impassable during the lengthy rainy season (cf. Figure 11).

In this context and building on the achievements of two OPRCs procured in 2012 and 2013, the Government of Liberia, with the support of the World Bank Group, began to structure a road PPP in 2016 to rehabilitate part of the Ganta-Zwedru road corridor.

Figure 10: Ganta-Zwedru road corridor situation map.



[116] This case-study has been drafted mostly based on two documents:

World Bank Group. Project Apparaisal Document for the Southeastern Corridor Road Asset Management Project. November 2018. PAD1849

World Bank Group. Liberia Southeastern corridor Road Asset Management Project – Arriving at an appropriate financing approach for a transport project. Internal presentation from IPG group.

Figure 11: Typical condition of critical sections under truck loading in the rainy season

2. Brief overview of the institutional context

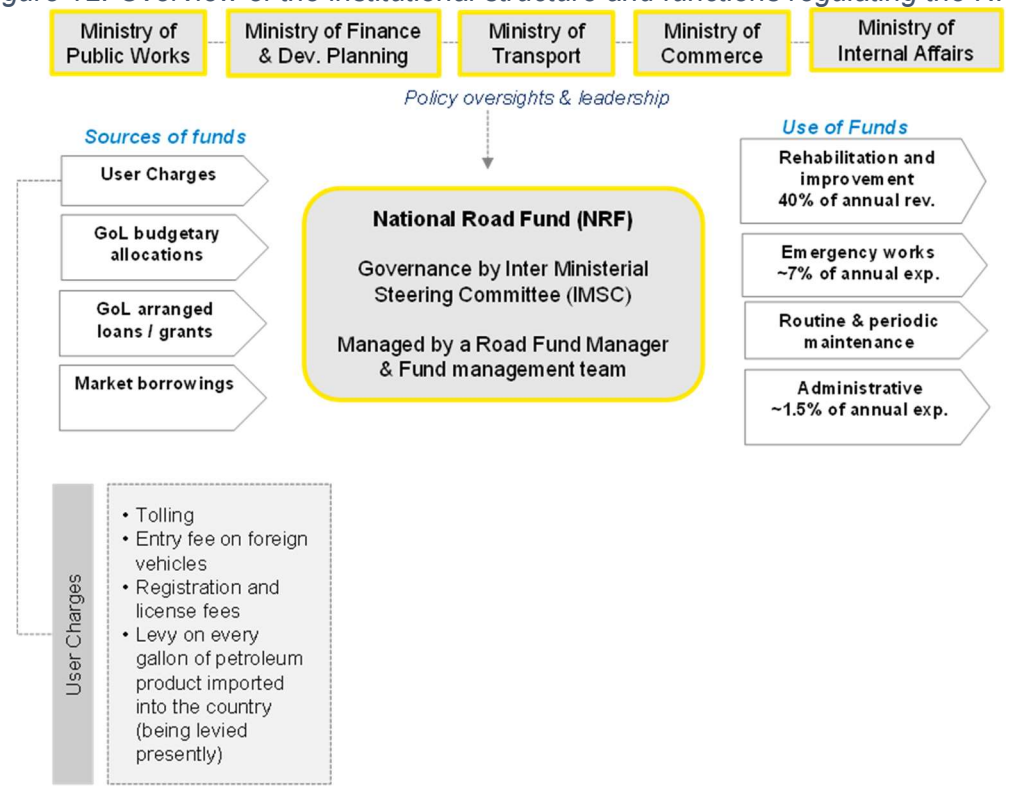
Currently, planning, construction and maintenance of transport infrastructures fall under the mandate of the Ministry of Public Works (MPW), while the Ministry of Transport (MOT) is responsible for overall regulation of the sector, overseeing Liberia's civil aviation institutions, and vehicle licensing and registration. The MPW established a Special Implementation Unit to implement Development Partner-financed projects in 2006, which was converted into the Infrastructure Implementation Unit (IIU) in 2009. The IIU continues to serve as a transitional institution but is likely to evolve into a Road Agency within the next years.

The institutional reforms were completed by the Axle Load Act of 2015 that established new regulation for axle load, and the National Road Fund (NRF) Act of 2016 that established the National Road Fund. The NRF mission is to ensure that all categories of roads have a sufficient share of the total budget to be sustained and operated as an integrated network. It also has the mission to defray the cost of loans approved by the government to extend the length of maintainable road. This window is however capped annually at 40% of the RF's revenues. It is interesting to note that to be funded by the NRF, these loans must include a provision to maintain the road it financed for at least a period of 5 years.

NRF revenues can stem from 8 different sources, but to date they only rely on the collection of a fuel-consumption based charge of US$0.30/gallon, which is expected to generate at least US$31M/year[117].Figure 12 summarizes the framework of the NRF (oversight, sources and uses of funds).

[117] The Investment Window is thus projected to be capped at US$12.4M/year.

Figure 12: Overview of the institutional structure and functions regulating the NRF.



Overview of project's features, timeline and structuring

In the first half of 2017, the World Bank and GoL were preparing to procure an OPRC to improve a portion (40km) of the Ganta-Zwedru corridor when they received an unsolicited proposal to improve the same corridor. A preliminary analysis found that a road PPP could enable the rehabilitation of a much larger section (at least 100km).

The GoL, supported by the World Bank and a transactional advisor then undertook a market sounding exercise which evidenced a private sector appetite for the project structured as a PPP with appropriate IDA support.

Expressions of Interest for the PPP were completed in October 2018 and are currently under review. A shortlisting of consortia followed by the release of a Request for Proposals is expected to take place in the next months. The private partner will be selected through a two-stage international competitive process.

Table 17 shows the main features of the road PPP project; Table 18 shows the sources and uses of funds during the construction period and Figure 13 outlines the commercial structure designed for this project. It is worth underlining that:

- contrary to most Gov.-Pays PPP projects, GoL has decided to fix *ab initio* the value of Availability Payments to be made to the SPV during commercial operations. After market sounding, GoL and its advisor considered that with Availability Payments during operations associated with the milestones payments during construction would be enough to improve

at least 100km of the Ganta-Zwedru corridor. The bidders will thus be assessed on the length they offer to improve and further maintain above the minimal 100km requirement;

- to date, GoL and its advisor have designed a very attractive risk allocation scheme. For example, usage and traffic risks would be almost entirely borne by the public sector. In this context, it means that if maintenance costs are more prominent due to higher traffic than initial forecasts, the project agreement would consider it as a compensating event;
- Right-of-Way that is usually a major issue in transportation projects, especially in SSA countries, will be 90% cleared before commercial close. GoL commits to clear the remaining part within the first year of the contract;
- IDA guarantees up to US$48M will be part of the tender documents. It will be up to bidders to determine whether they choose one or both guarantees, depending on their risk perception. The Payment Guarantee will backstop payments under a revolving letter of credit to be issued by a commercial bank. It is designed to ensure that Availability Payments to the SPV will be made on time even in the event of an NRF revenue shortfall. The Termination Payment guarantee is designed to backstop part of the termination Payment in case of Government event of default.

Figure 13: Structure of the Ganta-Zwedru corridor rehabilitation PPP.

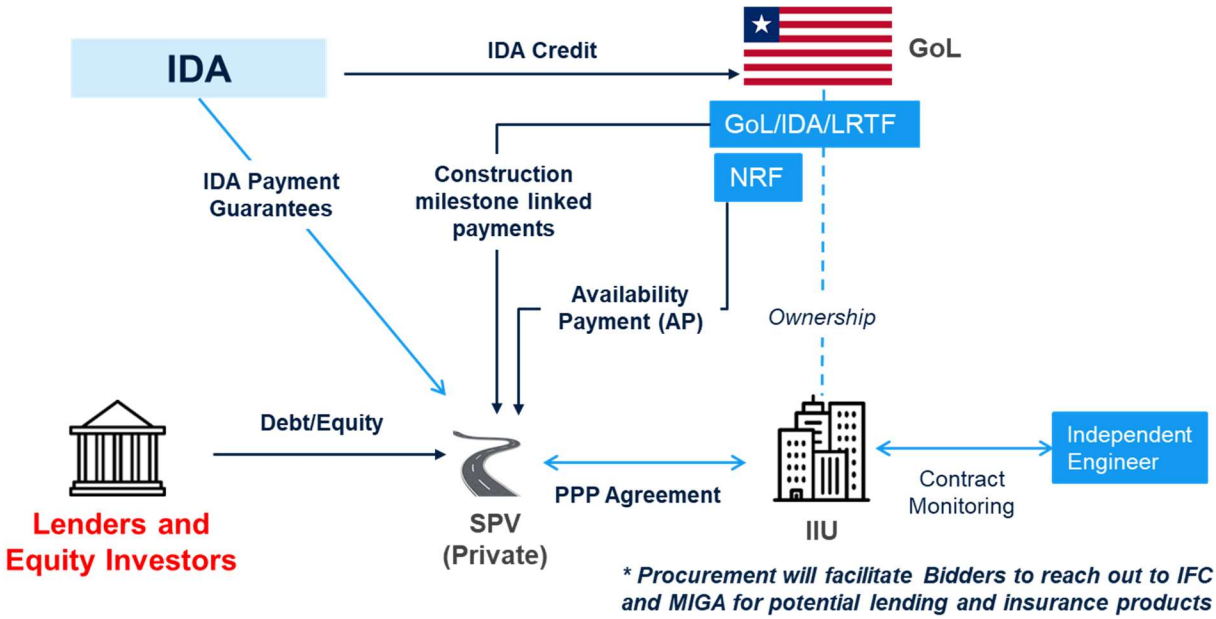


Table 17: Ganta-Zwedru PPP features

Feature	Description
Length	At least 100km
Technical features	2x1 lane carriageway of 3.75m width with additional 1.5m width surfaced shoulder In towns and villages, additional 1.5m width paved pedestrian walkways
Type of PPP project	Brownfield Gov.-Pays PPP (traffic risk retained by the public sector)
CAPEX	US$100M (including interest during construction)

Milestones payments during construction period	US$39M
Contract duration	15 years including a 3-year construction period
Grantor	Government of Liberia
Private partner revenues	Availability Payments paid quarterly by the NRF Fund and fixed at US$8M[118] per year.
IDA Support to the private partner	Up to US48M$ for an IDA Payment Guarantee and/or an IDA Termination Guarantee

Table 18: Sources and Uses of funds for the Ganta-Zwedru PPP project during construction period.

Sources of funds		Uses of funds	
IDA[119] Credits	US$12M	CAPEX including idc	US$100M
LRTF[120]	US$23M	Involuntary resettlement costs	US$6M
GIF[121]	US$2M	Consultancies and supervision	US$7M
Government of Liberia	US$20M	Guarantee Fee paid by SPV	US$5
Private sector financing (debt and equity)	US$61M		
Total	**US$118**	**Total**	**US$118M**

Table 19: Sources and Uses of funds for the Ganta-Zwedru PPP project during operation period.

Sources of funds		Uses of funds	
Availability Payments from NRF	US$107.3M[122]	OPEX	US$20.8M
		SPV's Debt Service	US$59.25M
		SPV's Equity distributions	US$26.3M
		Recurring IDA Guarantee fee and Standby Letter of Credit	US$1M
Total	**US$107.3M**	**Total**	**US$107.3M**

[118] Part of the Availability Payments will however be indexed to reflect inflation.

[119] International Development Association, an entity of the World Bank Group

[120] Liberia Reconstruction Trust Fund

[121] Global Infrastructure Facility is a partnership between governments, multilateral development banks, private sector investors and financiers. GIF is hosted by the World Bank and aims at supporting governments in bringing well-structured and bankable infrastructure projects to the market.

[122] Availability Payments are given in nominal terms using a 2%/y indexation assumption.

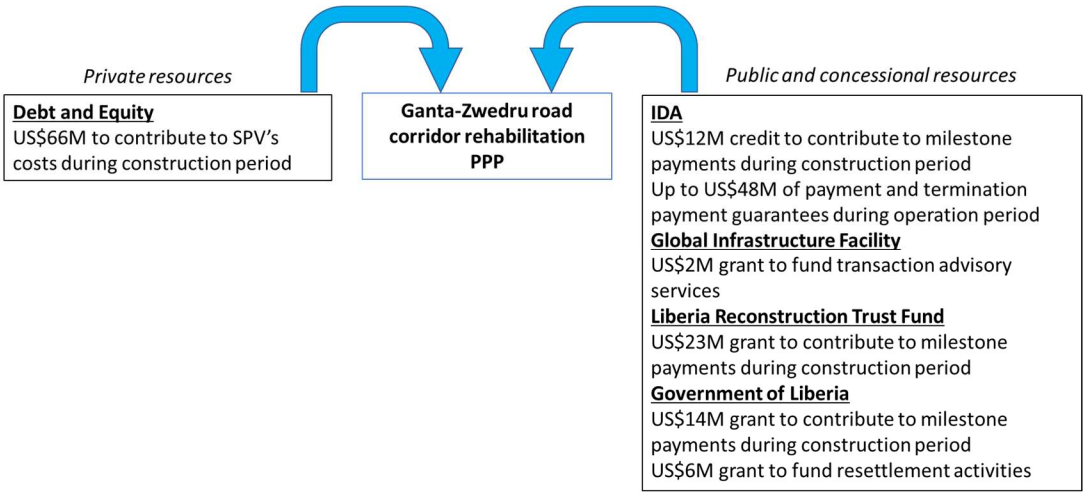
3. A blended finance approach to mobilize private financing through a bankable and affordable PPP structure

The present project is built on the achievements of the LIBRAMP Project mainly consisting of a standard IDA credit to co-finance the rehabilitation of the Monrovia-Ganta road through a 10-year OPRC.

In November 2018, the WBG board approved a proposed IDA credit and IDA guarantees, which complete a set of other public resources (cf.

Figure 14) to contribute to making the project more affordable for GoL and more bankable for investors.

Figure 14: Blending finance approach for the Ganta-Zwedru rehabilitation PPP project.



These blended resources are directed toward a specific goal and the timing of these resources in the project cycle also provides optimized additionality:

- GIF grants are used in the preparation (through an initial market sounding) and structuring (transaction support) phases;
- GoL budgetary allocations are used before commercial close (resettlement) and during construction phase (milestone payments);
- IDA credit and the LRTF grant are used during the construction phase;
- IDA guarantee would be used during the operation phase.

The form of the proposed IDA guarantees is interesting because it gives the opportunity for bidders to choose which option (or mix of options) they feel most comfortable with: either the letter of credit payment guarantee, whose purpose is to enhance the creditworthiness of the NRF responsible for making Availability Payments, or the direct payment guarantee for termination, whose purpose is to enhance the creditworthiness of GoL in case of early termination.

The timing of IDA guarantees approval (coinciding with tender process inception) is also a good practice worth replicating: it can give more visibility and comfort to potential bidders, thus

enhancing competition; it can also optimize the whole tender process by avoiding unnecessary back-and-forth between bidders and GoL since the principles of these guarantees (including indicative term sheets) are already approved.

4. Summary and key lessons learned

Liberia is a fragile country, facing tremendous challenges in recovering after two civil wars. Road access is among those challenges, as 40% of the primary network is unpaved and in poor or very poor condition.

However, in the past ten years, Liberia has made significant reforms to improve road asset management: through the creation of the Infrastructure Implementation Unit in 2009 likely to evolve into a RA and the Axle Load and National Road Fund Acts in 2015 and 2016.

Building on the achievements of the OPRC for the Monrovia-Ganta road corridor, the WBG is currently supporting the GoL a to structure a Gov.-Pays PPP to rehabilitate part of the Ganta-Zwedru road corridor. The NRF will fund the Availability Payments using a capped portion of its resources, thus being the counterpart of the Project Company in terms of revenue risk.

The structuring of this project embraces the Maximizing Finance for Development (MFD) agenda using a blended financing approach. Various public and concessional resources are mobilized at different phases of the project (World Bank Technical Assistances, Trust Funds, Government contributions, International Development Association - IDA - credit and guarantees). Each US$ of these resources would enable mobilizing more than one US$ of private financing (either debt or equity).

The project is being tendered, it is therefore too early to draw definitive lessons from it. Table 20 summarizes key lessons to date.

Table 20: key lessons from Ganta-Zwedru corridor rehabilitation PPP.

Unique features	
- Using the National Road Fund as a creditworthy cash-flow vehicle to fund Availability Payments - Fixing *ab initio* the level of Availability Payments and assessing bids on the extension of the corridor to be rehabilitated and maintained for that amount	
Key success factors	**Key challenges**
- Long-term country engagement from WBG provides comfort to private sector - Board Approval of the IDA credit and guarantees at an early stage of the tender process brings additional certainty for potential bidders	- Secure budgetary discipline on the newly created RF. IDA guarantees are “last resort”. The creditworthiness of the RF will thus rely on its ability to secure funding and make timely payments;

Transferrable lessons learned	Non-transferrable lessons learned
- Significant de-risking (e.g. right-of-way and resettlement issues, demand risks including maintenance costs almost fully retained by the Public Sector, etc.) has enhanced private sector interest as evidenced by the number of consortia that applied for prequalification; - Presenting to the market the right project's profile (brownfield, of moderate-scale, no demand risk transferred) is necessary to build a track-record of private sector investment in roads - If the project is successful it will demonstrate that the right use of blended financing at the right time in the project cycle make it possible to attract private finance in the road sector, in a fragile country	

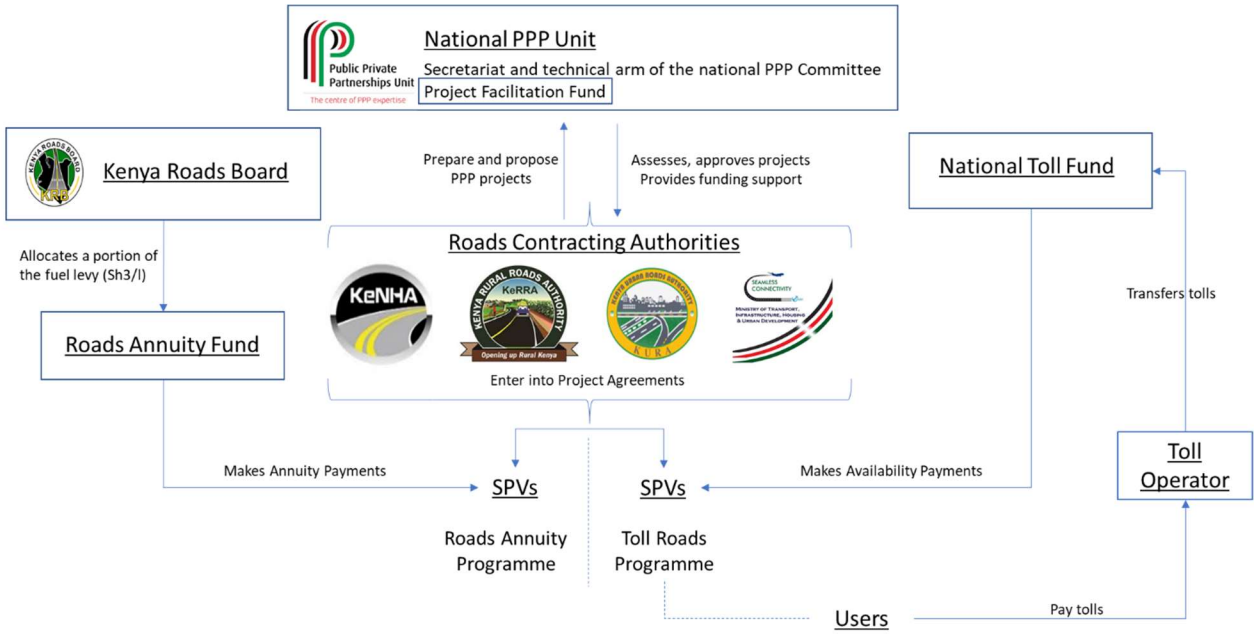
III. Toll Roads and Roads Annuity Programs in Kenya

1. Overview of the legal and institutional framework for Road PPPs in Kenya

According to the World Bank PPI database[123], private participation in public infrastructure in Kenya has been on-going for more than two decades. As for many SSA countries, most of the private sector participation went to electricity generation projects, and to date the road sector did not experience any private sector participation.

It is only recently that a formal legal and institutional framework regulating the use of PPPs has been set in Kenya[124, 125, 126, 127]. These recent reforms, together with the laws and regulations related to the road sector[128,129, 130] constitute the legal and institutional framework regulating Road PPPs in Kenya as depicted in Figure 15.

Figure 15: Institutional set-up for Road PPPs in Kenya.



[123] https://ppi.worldbank.org/

[124] Republic of Kenya. Policy Statement on Public-Private Partnerships. November 2011.

[125] Republic of Kenya. The Public-Private Partnerships Act. Kenya Gazette supplement, 27. January 2013.

[126] Republic of Kenya. The Public-Private Partnerships Regulations. Kenya Gazette Supplement, 166. December 2014.

[127] Republic of Kenya. The Public-Private Partnerships (Project Facilitation Fund) Regulations. Kenya Gazette Supplement, 66. May 2017.

[128] Republic of Kenya. Kenya Roads Board Act. 1999

[129] Republic of Kenya. The Kenya Roads Act. 2007

[130] Republic of Kenya. The Public finance management (Roads Annuity Fund) Regulations. Kenya Gazette Supplement, 35. April 2015.

a. The National PPP Committee and the National PPP Unit

The National PPP Committee is the top PPP-policy organ in Kenya. It is chaired by the Principal Secretary of the National Treasury and is composed of the Principal Secretaries from various ministries (including Transport and Energy), private sector stakeholders, a representative from the Attorney General's office, and the director of the National PPP unit which acts as the secretary of the Committee.

The National PPP Unit acts as the technical arm of the Committee. Its role is to assess and approve projects prepared by Roads Contracting Authorities. The Unit also manages the Project Facilitation Fund (PFF) whose purpose is to:

- Offset (part of) the Contracting Authorities' costs in the preparation of PPPs, including land acquisition costs (to be reimbursed by the Contracting Authorities to the PFF) or transaction advisory services;
- Support the activities of the Unit, e.g. capacity building programs;
- Provide viability gap funding (VGF) to PPP projects, including capital subsidies, loans, equity or other reimbursable advances;
- Provide a source of liquidity to meet contingent liabilities arising from projects.

It is not clear whether the PFF has been operationalized yet and whether PFF offers other resources than the amounts appropriated by Parliament from the national budget.

b. Roads Contracting Authorities

According to the PPP Act of 2013, any State Department, Agency, State Government, or County Government can be a contracting authority under a PPP scheme. In the road sector, to date, the following have acted as Contracting Authorities: the Ministry of Transport and Infrastructure, Kenya National Highway Authority (KeNHA), Kenya Urban Roads Authority (KURRA) and Kenya Rural Roads Authority (KeRRA).

Each Roads Contracting Authority willing to develop a project under a PPP scheme is required to establish a PPP Node (an in-house team of specialized staff). On behalf of the Contracting Authority, the PPP Node oversees the implementation of all the phases of the PPP, from project identification and screening to contract management after commercial close.

c. Kenya Roads Board and the Roads Annuity Fund

The Kenya Roads Board (KRB) is a central institution in the road sector although it is not directly involved in Road PPPs. The Board co-ordinates the optimal utilization of funds stemming from a portion of the fuel levy (corresponding to KSh18/l since 2015), international transit tolls and an agricultural cess. Funds managed by the Board are allocated to Roads Authorities and Counties to implement programs related to the maintenance, rehabilitation, and development of the road network.

Since 2015, The Board is required to transfer the equivalent of KSh3/l of the fuel levy it receives to the Roads Annuity Fund. The Roads Annuity Fund is hosted by the National Treasury and overseen by a Committee that includes Principal Secretaries from various ministries (Transport, Planning), a representative from Attorney General's Office, a representative from Kenya Bankers

Association and qualified members. The Committee is chaired by the National Treasury Principal Secretary.

At its creation, the Road Annuity Fund was capitalized by a KSh5,000M (equivalent to US$50M) apportionment from the National Budget by the Parliament. Revenues for this fund are to stem from various sources including fuel taxes as mentioned above.

The amounts in the Roads Annuity Fund are to be used to make annuity payments to SPVs that entered into a Project Agreement with Roads Contracting Authorities under the Roads Annuity Program.

d. The National Toll Fund and the Toll Operator

The Government of Kenya (GoK) has prioritized a pipeline of road PPP projects to be tolled on the following basis[131]:

- The development of the tolling system is to be delegated to a private sector operator through a PPP scheme;
- The tolling operator will collect tolls for all the projects included in the Toll Road Program;
- Tolls collected will flow into a National Toll Fund. The funds collected will be used to make Availability Payments to the Project Companies that will enter into Project Agreements with Roads Contracting Authorities under the Toll Road Program;
- Roads will be tolled only after completion of construction or when a long-term O&M contractor is in place;
- Toll levels will be consistent with the Tolling Policy to be adopted by the Government and will consider the fact that there will not be any free alternatives to the tolled roads.

The tolling rationale has not been put to the test yet, as the National Toll Fund has not yet been set up, or the Toll Operator recruited. There have been previous attempts to toll some roads in Kenya in accordance with the Public Road Toll Act of 1984[132]. But these attempts faced opposition from the trucking industry as well as the general public. The Government ended up by abolishing tolls and replacing them with a fuel levy as a road maintenance funding instrument in 1993 (enacted by the Road Maintenance Levy Fund Act)[133].

2. The Roads Annuity Program

In 2014, the classified road network in Kenya was about 160,000km, of which less than 9% was paved. The Government of Kenya at that time set a target to pave 10,000km of roads in 5 years,

[131] Kenya National Highway Authority. Nairobi-Nakuru-Mau Summit highway – Project Information Memorandum. November 2016.

[132] Republic of Kenya. Public Roads Toll Act. 1984.

[133] https://www.standardmedia.co.ke/article/2000229074/government-s-long-running-headache-of-manning-road-toll-stations

thus doubling the paved network. The road sector itself had an infrastructure funding gap of US$44M per year despite contributions from the national budget and the fuel levy[134].

To face this challenge, the GoK designed a Roads Annuity Program (RAP) involving private sector financing as a delivery method alternative to traditional public procurement.

a. The rationale for the Roads Annuity Program and its achievements

The RAP is in essence a large pipeline of Gov.-Pays Road PPPs focused on the upgrade (mostly pavement) of rural roads (about 80% of the pipeline) and highways. The roads to be upgraded through this program are those not likely to generate enough revenues from tolling users to offset construction and maintenance costs.

To make them sizable, each PPP, called Lots, includes several roads packaged into a single contract.

Table *21* below summarizes the key features of the PPPs included in the Roads annuity Program.

Table 21: Features of the Roads Annuity PPPs[134, 135,136].

Lots features
Design standards for low-volume sealed roads
Average aggregate length of 107km
Average contract value of US$120M
Construction
No more than 3 years
Milestone Payments: max 30% of CAPEX
Average Debt/Equity: 82/18
Operation
No more than 8 years
OPEX and private investments covered by equal instalments (annuities)
Annuities paid from the Roads Annuity Fund

The Government intended to reduce construction costs through the RAP by adopting standards for low-volume sealed roads, as rural roads with low traffic represent the majority of the roads included in the Program. As a matter of fact, until 2015, the minimum road pavement design standard was 1M Cumulative Equivalent Standard Axles (CESA) resulting in frequent overdesign

[134] Kidenda, M.O. Road Infrastructure Stakeholders Conference – Program for alternative financing mechanism for road infrastructure development. Kenya National Highway Authority. July 2014.

[135] Disclosure portal of the National PPP Unit: http://5.196.68.29/

[136] https://www.oraro.co.ke/2018/06/27/on-the-way-a-look-at-kenyas-new-road-annuity-program/

and consequently high construction costs. The Government targeted to achieve a unit cost of US$200-250k/km for low-volume roads and US$500-800k/km for trunk and urban roads[134].

Initially the plan of the Government was to complete 2000km in FY15, 3000km in FY16 and 5000km in FY17. However, the RAP did not ramp-up as expected, since to our knowledge, only 3 Lots reached financial close (totaling 311km for a total value of US$342M), whereas 6 Lots are still in procurement (for another 650km).

b. The example of Lot 6

From information publicly available, it seems that at least the Request for Qualifications (RFQ) has been standardized for all projects in the Roads Annuity Program, whatever the Roads Contracting Authority. Our assumption is that the Request for Proposals (RFP) and the draft Project Agreements have also been standardized to some extent.

The example of Lot 6, currently being tendered by KeNHA and whose tender documents (RFQ, RFP, draft PA and schedules) are publicly available, is taken as a proxy to the projects included in the RAP.

Overview of Lot 6 features

Figure 16 presents the location of the 7 roads that are included in Lot 6. It is striking that these roads are located far from each other (about 110 miles between the northern and southern roads).

Figure 16: Situation map - roads included in Lot 6 of the Roads Annuity Program (authors' creation).

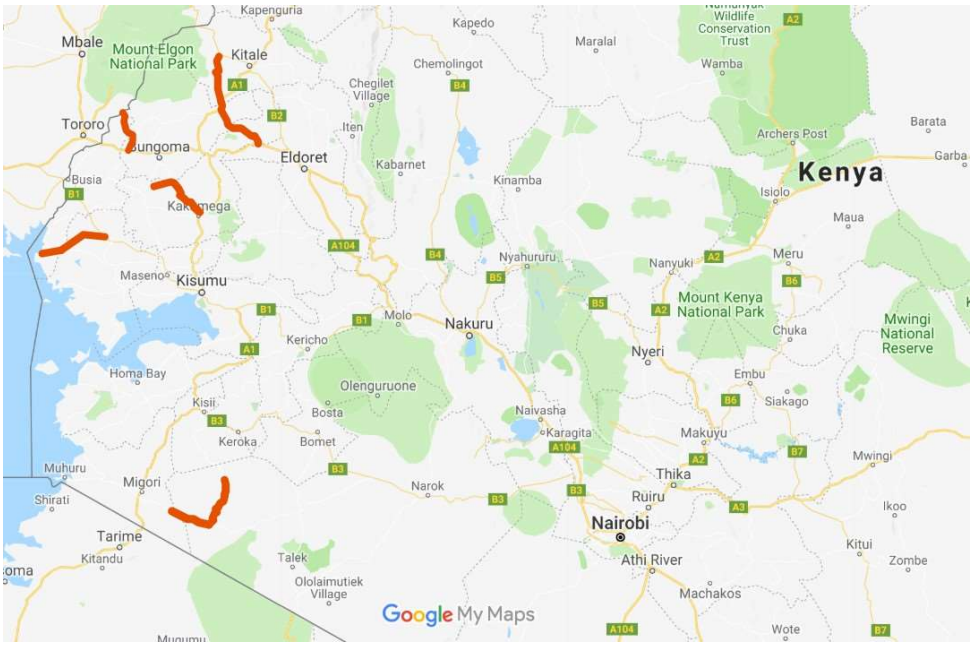


Table 22 summarizes the features of Lot 6.

Table 22: Lot 6 features.

Feature	Description
Length	7 Roads totalling 233km
Scope	Upgrading to paved standards of gravel/earth roads. Rehabilitation/reconstruction of existing paved roads, including bridges, culverts, roads intersection, etc. and maintenance thereof.
Type of PPP project	DBFOM Brownfield Gov.-Pays PPP (traffic risk retained by the public sector)
CAPEX	N/A, but should be around US$250M given value of other Lots
Milestones payments during construction period	N/A, but CAPEX subsidy up to 30% is probable[137]
Contract duration	10 years including a 2-year construction period
Grantor	Kenya National Highway Authority
Private partner revenues	Annuity Payments quarterly paid from the Roads Annuity Fund
Gov Support	N/A, but Letter of Support from Ministry of Finance is probable[138]

Overview of tender process

A classical two-stage tender process is implemented consisting of pre-qualification and bidding stages as depicted in Table 23. The tender is open to international bidders, however with some restrictions. At the end of the process, the Lot is awarded using only the Lowest Annuity Payment.

Table 23: Overview of tender process.

Request for Qualifications (issued in July 2014)	
Conditions to participate	Open to international bidders. No more than 3 members in a consortium, with at least one member incorporated in Kenya. At least 10% of the consortium's equity to be held by Kenyan Nationals or members incorporated in Kenya and not controlled by foreigners. Comment: While opening the competition internationally, there is a clear intention to involve local companies in the Roads Annuity Program. The restriction on the numbers of members in a consortium is a bit unusual.
Qualification criteria	First: Eligibility (e.g. conflict of interest) and completeness of application on a pass/fail basis.

[137] As was the case for Lot 33 that reached financial close.

[138] A letter of Support from Ministry of Finance has been issued for Lot 33 that reached financial close.

	Then: Technical Capacity, Financial Capacity, Capacity to mobilize project finance, Strategy to support local economic growth, CVs of key future SPV staff. The capacities are assessed using a mix of minimal criteria and qualitative assessments. Comment: Technical Capacity, Financial Capacity and Capacity to mobilize PF are classical qualification criteria. However, it should be noted, that the requirements on these criteria are not optimally balanced. On the one hand, the technical and financial capacities are not very high (e.g. participation to only one contract with a value of US$50M substantially completed in the last 5 years; capacity to have an aggregate cash-flow capacity of US$5M per year; minimal construction activities turnover of about US$50M per year), and on the other hand, the capacity to deliver Project Finance is very high at this stage (requiring commitment letters). The criteria related to Local Economic Growth and CVs of key staff are unusual at this stage. It would probably have been more efficient to insert clauses in the Project Agreement related to local subcontracting, local employment and social inclusion (gender issues or minorities).
Request for Proposal (issued in September 2017)	
Process and content of bids	Only one phase (one bid). Bidders had 3 months to submit their bid after issuance of the RFP. Bid comprises 4 parts: 1. Other Submissions which consist of a number of documents to be filled by bidders (e.g. cover letter, power of attorney, etc.) 2. Technical proposal 3. Financial proposal 4. Bid Security Comment: The period between RFP issuance and bid submission is very short. Some of the documents included in the RFP are not complete. For example, there is no location map of the roads included in the Lot (only textual description), the list of bridges and other structures is not complete. These missing items make it more difficult for bidders to adequately price their proposal in this short period.
Evaluation and Selection of Preferred Bidder	First: Opening of Other submissions and Bid Security on a pass/fail basis Then: 1. Evaluation of technical proposal based on weighted grading of subcriteria (design, safety, skill transfer, local

	economic growth, etc.) on a pass/fail basis (minimum of 70% of the total number of points) 2. Evaluation of the financial proposal based on weighted grading of subcriteria (e.g. strength of commitment from financiers, financial robustness of the structure) on a pass/fail basis (minimum of 70% of the total number of points) Then, among the bidders that passed these evaluations, the preferred bidder is the one asking for the Lowest Annuity Payment. There may be negotiations with the preferred bidder
Timeline	Almost 3 months to assess bids and issue a Letter of Acceptance (LOA) Commercial Close 3 months after issuance of LOA Comment: Again, the timeline initially proposed is very tight. Commercial close has still not occurred for Lot 6 even though the RFP was issued in September 2017.

Key issues and challenges to the tender process may be highlighted:

- The criteria for participation are not optimally balanced. There is a clear intention to allow local contractors to participate in the process. However, the minimal technical qualifications (e.g. experience in similar construction and/or O&M) and the financial qualifications (e.g. available cash to reflect ability to commit to equity) are low, whereas candidates to qualifications are required to provide commitment letters and term sheets which is unusually demanding at this stage;
- Due to political push (cf. the objective of the RAP as set by GoK), KeNHA encapsulated the whole process in a very tight timeline in which they were not able to deliver. Almost 3 years passed between RFQ and RFP issuance, almost one year and a half after RFP issuance, there is still no preferred bidder. This is a major problem regarding the credibility of the program and of KeNHA as a Contracting Authority;
- Documents included in the RFP were not complete enough making it difficult for bidders to price adequately. For example, there were no situation maps showing the alignments included in the Lot. Furthermore, the inventory of bridges and other structures to rehabilitate and reconstruct is incomplete. Lastly. It is also quite striking that roads included in the Lot are located far from each other, which increases the logistics challenge for the private partner during construction and operations.

Project Agreement – Overview of the main clauses

Table 24 below provides a brief overview of the main clauses, including the payment mechanism and a sample of “bankability” and “acceptability” clauses.

Table 24: Overview of Payment mechanism and main clauses.

Payment Mechanism
Quarterly Payment from start of contract, based on a single Annuity (output of the tender process). Annuity is adjusted in the following 3 steps. Step1: Adjustment of Annuity using an index reflecting escalation in prices (the index is to be determined after discussion with shortlisted bidders) Step 2: Calculation of a set of deduction to Annuity reflecting the achievement of performance standards: a. PS1: During construction period, automatic deduction to indexed annuity to reflect that Performance Standards in terms of construction/rehabilitation of the roads are not met. This automatic deduction is updated every six months to consider achievement of milestones. If milestones are met, automatic deduction is gradually decreased and should be 0 at the end of construction period; b. PS2: During operation periods, the assets' condition (surfaces and footways) is assessed every six months. If the target is not met, there will be a deduction on the Annuity c. PS3: During operation period, failure to comply with availability and performance targets will generate Service Points. There will be a deduction to the Annuity if accumulated service points in any month amount to >1000 (termination event if in any revolving 12 months periods, accumulation of 9000 points) Step 3: Calculation of other adjustments reflecting e.g. previous amounts due to one party by the other, deductions reflecting failures to comply with reporting requirements, etc. The sum of PS1, PS2, PS3 and the other adjustments cannot exceed 70% of the indexed Annuity. Comment: It is odd to adjust the whole Annuity for escalation in prices, since part of this Annuity is dedicated to debt service and equity repayment that are theoretically priced to include future inflation. It is more usual to adjust only the portion of the Annuity dedicated to fund operation and maintenance. The Payment Mechanism is difficult to understand compared to other Gov.-Pays PPPs in the Road sector. The Guidance on Payment Mechanism included in the Schedule to the Project Agreement could be more user-friendly.

Main bankability clauses	
Right-of-Way	Must be cleared and granted without encumbrances to SPV before financial close.
Utility Reallocation	Utility reallocation is budgeted and included in the Annuity. SPV bears reallocation costs up to 85% of this budget and KeNHA bears costs over that ceiling. Comment: It is not clear whether there is a reduction of Annuity in case if the utility reallocation cost is in the end below the ceiling.
Lenders' step-in rights	Rights of lenders (either step-in, substitution of the private partner, right to outstanding debt repayment in case of early termination, etc.) is regulated in a Direct Agreement between KeNHA, the private partner and the lenders.

	Comment: This is good practice and reinforces bankability
Force majeure	The definition is classical: a force majeure event is beyond reasonable control, unforeseeable, not possible to overcome by the exercise of due diligence and has a material adverse effect. The contract then distinguishes between non-political force majeure and political force majeure: - Non-political events: act of God, any judgment or order against SPV (other than failure of private partner), geological conditions, toxic contamination on the site ➔ Extension of project term and dates ➔ Each party bears its respective costs - Political events: nationalization, unjustified revocation or refusal to renew a permit, riots/blockades, war ➔ Extension of project term and dates ➔ Annuities continue to be paid Comment: The classification of geological conditions and toxic contamination as a non-political force majeure event is favorable to the private sector as these risks are usually partially transferred to the private sector.
Traffic of Heavy Goods Vehicles	If %HGV is higher than anticipated and it is demonstrated that it results in higher maintenance costs (compared to assumptions in the financial model) or results in the deterioration of roads' condition which is not a failure of the SPV, then the SPV can be compensated for the extra-maintenance costs. However, if during contract a change in law allowing the SPV to enforce axle load regulation occurs, then the SPV will be solely responsible for any additional costs due to higher HGV traffic.
Compensation events and change of law	The contract distinguishes: delay events (force majeure events), relief events (e.g. embargo, strike, or dispute affecting the road sector), relevant event (change of scope, change in law). The principle is that the financial model will be updated on a "no-worse-no-better-principle". In practice, the Annuity will be adjusted to apply this principle to DSCR and equity IRR. In case a change in law leads to an increase of CAPEX after completion of construction period, then the Contracting Authority assumes 97.5% of the extra-CAPEX.
Early Termination Payments	The contract distinguishes among several types of early termination: 1. SPV Default The contract provides an exhaustive list of default events (e.g. more than 4-month delay to complete any construction milestone, more than 6-month delay to complete construction, unauthorized change of ownership, etc.)

	If contract is terminated during construction period, then the termination payment covers 90% of outstanding debt (no equity payment) If contract is terminated during operations, then the termination payment covers 80% of the outstanding debt (no equity payment) 2. Force Majeure The contract may be terminated if there is a subsistence of force majeure for 6 months over a continuous period of 1 year. The termination payment is different depending on the type of force majeure: - Non-political event: payment covers 100% of outstanding debt and 100% of outstanding equity - Political event: cf. contracting authority default 3. Contracting Authority Default The contract provides an exhaustive list of default events (e.g. failure to make payment exceeding 30% of the Annuity, etc.) The payment then covers: 100% of the outstanding debt + 100% of all equity cash-flows from termination date to expiry date, discounted at the equity IRR (23%) + EPC and O&M sub-contract breakage costs Comment: The termination payment in case of SPV default during operations is actually very unfavorable to lenders. To accept to take the risk to lose 20% of outstanding principal, they must be very confident about the quality of the SPV and its subcontractor. Since the technical capacity criterion during the pre-qualification was low, this might be a bankability issue. The termination payment in case of contractor's default does not seem balanced. On the one hand, it does not include any swap breakage cost (which can be a major issue for both the private partner and the contracting authority). On the other hand, it is too generous for the equity-related payment. It is fairer to distinguish between termination during construction and termination during operations. If the termination occurs during construction. it is fairer to only compensate for equity actually paid at a rate less or equal to equity IRR.
Main "acceptability" clauses	
Refinancing gain sharing	The gains will be shared on a 50/50 basis. The contracting authority's share can be claimed either through a single payment or a deduction in the remaining annuities.
Contracting Authority step-in rights	In case of SPV default, the contracting authority has the right to suspend Annuity Payments. The suspension period can last 6 months with a possible extension up to 3 months. During the suspension period, the Contracting Authority may provide in-house services, or in

	accordance with direct agreement opt for the substitution of the private partner.
Contracting Authority control and audit	The contract lists a multitude of reports to be provided by the private partner to the contracting authority and its advisors: - Monthly progress reports during construction period - Quarterly Status reports during operation period (compliance with output specifications, and maintenance program, level of annuity adjustment in case of unavailability, occurrence of force majeure event) - Inspection by an Independent Engineer at least every 6 months - Independent Expert can require tests to be carried out to check compliance with output specifications - Weekly unusual occurrence report (e.g. deadly accident) - Annual audited financial accounts <u>Comment:</u> There is no doubt that the private partner will be able to deliver these reports. However, the considerable number of reports raises the ability of the contracting authority to properly audit them and enforce its control power.
Social inclusion	There are no social inclusion clauses (e.g. minimum percentage of subcontracting to locals, minimum percentage of local staffing/women staffing, etc.). However, there was a criterion in the pre-qualification phase related to the strategy of economic growth.
Assets' transfer regime	The SPV is required to cure all project assets in compliance with Output specifications. An inspection will be undertaken 3 months before transfer by an Independent Expert. The Expert may require curing any subsisting default Transfer costs are 100% borne by the SPV.
Shareholding changes regime	All acquisition of equity of at least 15% of total Equity requires written approval from Contracting Authority. Moreover, the lead member of the SPV always commits to hold at least 26% of equity during the contract. Other members must always hold at least 10% of equity in aggregate. <u>Comment:</u> The regime is flexible for the shareholders. In principle, the contracting authority should give its written approval to any shareholding changes, and strictly limit/forbid changes that could jeopardize the quality of outputs: e.g. no shareholding changes during construction period, EPC contractor must keep its share at least during the duration of the works guarantee, etc.

Overall, except for the early termination payment in case of Project Company's default during operation period and the complexity of the Payment Mechanism, the contract supports the bankability of the project. From the contracting authority's point of view, however, some clauses of the contract could be more balanced without deteriorating bankability (e.g. equity payment in case of early termination due to contracting authority default, shareholding change regime).

The main concern of this contract and of the RAP as a whole is the capacity of the contracting authority to enforce its control and audit rights, and make timely payments. There is a great amount of reports to be audited by the contracting authority and the complexity of the payment mechanism encapsulates both parties in tight schedules. The appropriate staffing of roads contracting authorities is a key parameter of the Roads Annuity Program success.

c. Reasons for underachievement

As mentioned in Section 2.a., the least we can say is that the achievements of the RAP are far from the ambitious objectives set by the GoK: 10,000km of roads were supposed to be tendered in three years, whereas to date, only 311km of roads have been successfully tendered, and another 650km are still being tendered.

There is very little publicly available feedback on this underachievement. It was reported that somehow the program turned out to be unaffordable for the Government. As a matter of fact, bidders quoted twice as much than what GoK's assumption was for building a km of road under this program. Moreover, the cost of debt also turned out to be higher than GoK's assumption (12-13%)[139, 140]. These two factors have led to Annuities being higher than anticipated by GoK.

From the way the RAP was structured and from the analysis of the Lot 6 tender documents, additional explanations can be drawn for this underachievement:

- 10,000km of roads in 3 years, with Lots comprising an average of 107km makes more than 90 PPP contracts to tender in 3 years or 30 contracts to tender per year. Even with completely standardized tender documents for all these contracts, this is simply unrealistic. To date, there is no proven track record of road PPPs in Kenya. This is undoubtedly a sign that the PPP unit and the Roads Contracting Authorities, despite the political will, were not appropriately staffed to face such a sizeable workload;
- Since there is no track record of road PPPs in Kenya, the concept of raising private finance and getting paid based on availability and performance might be too disruptive for Kenyan road contractors. To our understanding, the decision of GoK to launch the RAP and the issuance of the first RFQs were almost simultaneous, probably indicating that not enough time was taken to explain to the private sector the rationale of the program, and to explain the payment mechanism;
- Project selection (i.e. Lots packaging) appears to also be suboptimal. Taking the example of Lot 6, the roads are far from each other, which raises important logistics and staffing issues for the Project Company and its EPC and O&M subcontractors. This has undeniably contributed to the significantly higher construction costs, particularly considering the short construction period (2 years);
- The short period of operation (8 years) is also an issue that can have an adverse effect on affordability (i.e. the Annuity amount). First, 8 years coincide more or less with the first periodic maintenance. Meaning that shortly before the end of contract, Project Companies will have to bear significant costs without having the possibility to amortize them, thus increasing the Annuity. Second, a longer operation period goes with a longer period to

[139] https://mman.co.ke/content/kenya%E2%80%99s-roads-10000-program-roads-annuity-fund-and-ppps

[140] https://www.oraro.co.ke/2018/06/27/on-the-way-a-look-at-kenyas-new-road-annuity-program/

amortize debt and a variety of financing strategies (e.g. mini-perm with one or two refinancing). The shorter the amortization period, the higher the Annuity.

3. The Toll Road Program

As part of its Vision 2030[141], aiming at making Kenya a middle-income country by 2030, GoK identified a pipeline of strategic roads/highways to be upgraded and developed using Gov.-Pays PPP schemes. GoK intends to toll these strategic roads to contribute to the funding of associated Availability Payments.

a. The Toll Road Program and its achievements to date

Table *25* summarizes the projects included in the Toll Road Program (TRP).

Table 25: Overview of the projects included in the Toll Road Program (compiled from different sources[131, 135, 142]).

Project Name	Type	Length (km)	Cost (US$M)	Grantor	Development Stage
Nairobi-Nakuru-Mau Summit highway	Brownfield DBFOM Gov.-Pays PPP	175+58	1,500	KeNHA	Preferred bidder (Vinci + Meridiam) appointed early March 2019. Process under legal challenge by evicted bidder due to error in tax calculation
2nd Nyali Bridge	Greenfield DBFOM Gov.-Pays PPP	0.6	200	KURA	3 shortlisted bidders have been selected in early October 2018: - Vinci + Meridiam - IHI + Acciona + JOIN - Strabag
Mombasa-Nairobi Highway	Initially DBFOM Gov.-Pays PPP	485	2,530	KeNHA	KeNHA is in exclusive negotiation with Bechtel to DB the project and finance it with OPIC and US EXIM. Highway likely to be leased to an O&M operator once constructed
Nairobi-Thika Highway	O&M	50	30	KeNHA	Project Feasability study approved in 2016. Project structuration ongoing. O&M services for 10 years including major maintenance and renewal plus other

[141] http://vision2030.go.ke/

[142] https://ijglobal.com/data/search-transactions

					additions (foot bridges, street lighting)
Lamu-Garissa-Isiolo Highway	DBFOM	530	620	KeNHA	Unsolicited proposal attributed to Group Five. Deal for the financing signed in 2017 with Development Bank of Southern Africa. 25 year contract. It is not clear whether it is greenfield or brownfield and whether it is a Gov.-Pays or a User-Pays PPP
Nairobi Southern Bypass	O&M	30	177	KeNHA	Project constructed under DB modality by China Road and Bridge Corporation. Project Feasibility Approved in 2016. Project Structuring is on-going to lease the bypass to an O&M operator.

To our understanding, once completed, all of these projects will be tolled using the same tolling system operated by the same operator. The recruitment of the tolling operator is currently on-going.

b. The example of Nairobi-Nakuru-Mau Summit highway

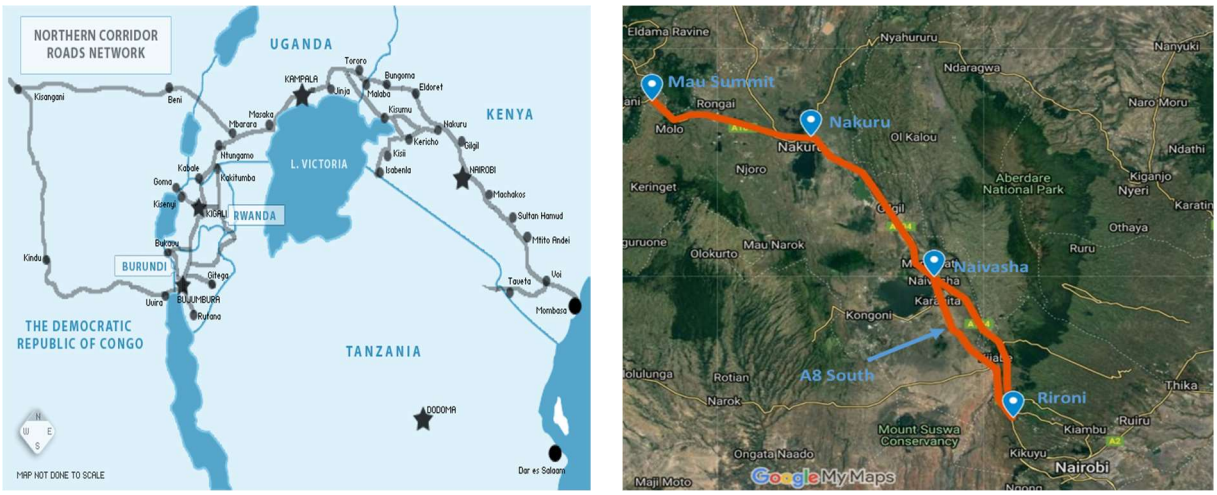
Overview of Project's features, timeline and structure

The current Nairobi-Nakuru-Mau Summit road is part of the A8 highway and of the Northern corridor which connects the Port of Mombasa via Nairobi to Malaba at the border with Uganda and onwards to Kampala. The Northern Corridor is the busiest and most important transport corridor in East and Central Africa and provides a gateway through Kenya from Mombasa Port via road, rail and pipeline to landlocked countries of Uganda, Rwanda, Burundi, South Sudan and DRC[131].

The project comprises (cf. Figure 17):

- the widening of 175km of the A8 highway between Rironi and Mau Summit for its development into a 4-lane dual carriageway and in due time its further development into a 6-lane carriageway depending upon traffic volumes;
- the strengthening of 58km of the A8 south highway between Rironi and Naivasha via Mai Mahiu.

Figure 17: Northern Corridor and Project's situation map.



Currently, the A8's pavement is mostly in fair condition, and existing geometrics are of fair standards, although some sharp horizontal curves can be found in the hilly section. Congestion is observed around urban areas and capacity saturation is achieved in most rural areas.

The situation is a bit worse concerning the A8 South whose pavement is in distress due to considerable HGV traffic. Geometrics are substandard and severe congestion is experienced.

The Average Daily Traffic on both A8 and A8 South reaches 16,000, with ADT levels exceeding 40,000 near Nakuru. Freight vehicles account for about 30% of the ADT[131].

Prior to tender, KeNHA already possessed 93% of the necessary Right-of-Way for the initial widening and began land acquisition before tendering for the remaining 7%. In any case, Right-of-Way is expected to be 100% cleared before construction begins[131].

Table 26 summarizes the project's features and Figure 18 depicts its structure.

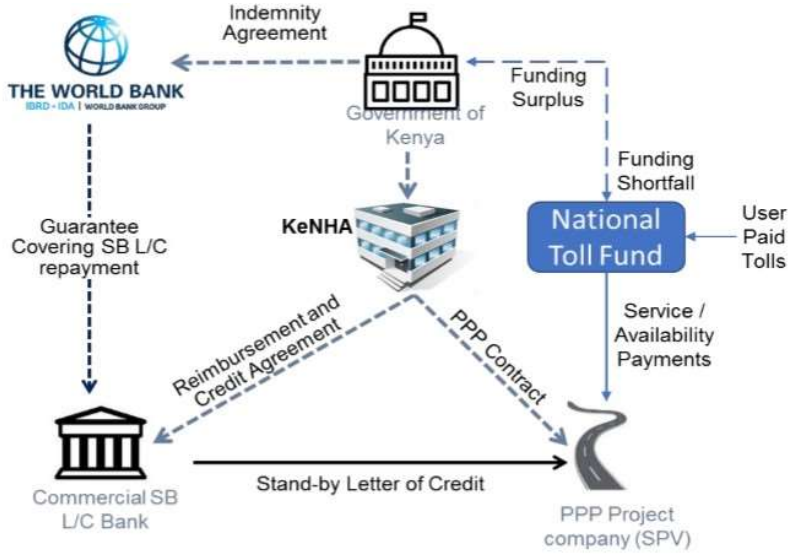
Table 26 Nairobi-Nakuru-Mau Summit PPP features.

Feature	Description
Length	233km total (175km for A8, 58km for A8 South)
Technical features	2x2 lane dual carriageway, to be further widened to 3x2 lane dual carriageway
Type of PPP project	Brownfield Gov.-Pays PPP (traffic risk retained by the public sector)
CAPEX	US$1,500M
Milestone payments during construction period	None
Debt/equity ratio	75/25 (to be confirmed)

Contract duration	30 years including construction period
Grantor	KeNHA
Private partner revenues	Availability Payments paid from the National Toll Fund.
IDA Support	IDA Payment Guarantee in the form of a standby letter of credit to be issued by a commercial bank (structure and amount to be confirmed)[143].

It has to be noted that the scope of the project has been significantly modified during tender process. At RFQ stage, the project also included O&M of the A8 stretch between Gitaru and Rironi (about 12km), as well as O&M of the Nairobi Southern Bypass. These O&M components have been removed, but the total CAPEX has been at the same time multiplied almost 3 times. The project Information Memorandum estimated the total construction cost at around US$550M.

Figure 18: Structure of the Payment Guarantee.



Overview of the tender process

To date, among the tender documents, only the RFQ is publicly available. This section thus builds on the RFQ and on other information either gathered from the press or through bilateral meetings.

A classical two-stage tender process is implemented consisting of a pre-qualification and bidding stages as depicted in. The bidding stage includes a competitive dialogue. Table 27: Overview of the RFQ.

Request for Qualifications (issued in November 2016)	
Conditions to participate	Usual restrictions to participate in case of conflict of interest, reprehensible practices or blacklisting by major DFIs. No restriction on nationality of entities.

[143] World Bank. Project Information Document/Integrated Safeguard data sheet. Long term finance for PPP – Nakuru Nairobi Toll Road Project. January 2018.

Qualification criteria	First: Eligibility (e.g. conflict of interest) and completeness of application on a pass/fail basis. Then: 1. Technical qualification requirements: PPP experience: experience in similar PPP projects in the last 5 years and proof that entity holds more than 5% of equity on said PPP's SPV Construction Experience: constructed at least an aggregate of 5000 lane.km in the last 10 years O&M experience: at least aggregate 3500 lane.km of O&M similar projects in the last 10 years, with a minimum duration of 5 year for the contracts 2. Financial requirements: Demonstrate an aggregate net worth of at least US$1Md in the last audited Financial Statements Demonstrate an average annual turnover from construction activities of at least US$850M over the 3 last years 3. Other requirements: Submission of at least 2 indicative letters of support from two or more Banks and financial institutions to provide debt for the project. Evaluation is strictly based on a pass/fail basis regarding the minimum criteria for the technical, financial and other requirements. <u>Comment</u>: The qualification criteria are high, and it is clear that KeHNA is targeting top international players. Contrary to Lot 6 of the Roads Annuity Program, there is no mandatory participation of local companies (though there could be social inclusion clauses in the RFP and PA).

The tender process ran rather quickly given that it included a competitive dialogue phase, save for an unusually long period to select the preferred bidder after submission of final bids (almost one year):

- Feasibility study approved in November 2016;
- RFQ issued in November 2016;
- RFP issued in February 2017;
- Final bids submitted in April 2018;
- Preferred bidder announced in March 2019.

The analysis will be updated as other bidding documents (RFP and Project Agreement) are made publicly available.

c. Key-takeaways

Even if the award of Nakuru-Nairobi-Mau Summit PPP is being challenged by an evicted bidder, the project has attracted significant interest from the private sector. A bilateral meeting with a representative of Meridiam Office in Addis Ababa, showed that to date, the preferred bidder received a letter of interest from DFIs and commercial banks covering more than the debt needs. Interested commercial lenders proposed tickets of about US$100M.

To date, the following key-takeaways can be drawn from the TRP:

- The funding mechanism is not socially and practically proven, yet it is clear and self-sustainable enough to attract investors. Availability Payments for the PPPs included in the Toll Road Program will be funded from a National Toll Fund receiving the tolls collected by a unique toll operator to be procured. In case of Toll Fund revenue shortfall, Availability Payments will be backstopped by the GoK which could decide to loop-in the currently unused Roads Annuity Fund. In short, to date, there is reasonable assurance that cash will be available to face Availability Payments;
- As the risk of revenues from tolls is retained by the Public Sector, the fiscal risk assessment is paramount. GoK intends to develop major projects on top of the RAP. It is expected that at some point as the first major PPPs are procured, and the funding mechanism ramps up, GoK will probably have to prioritize projects to match its fiscal space;

The issue of capacity and the decision-making process in the Public Sector is raised. PPP projects take considerable time to prepare with peaks during the structuration phase and further during the tender phase. Moreover, to support credibility of the program from the private sector's point-of-view, the whole process including key decisions needs to be encapsulated in a realistic and reasonable timeframe. The road PPP agenda is very busy in Kenya and long tender processes probably reveal suboptimal staffing in the Roads Contracting Authorities, or frictions between relevant institutions in the decision-making process.

4. Summary and key lessons learned

Kenya aspires to become a middle-income country by 2030. To support this objective, the GoK intends to invest massively in its infrastructure and to attract private sector participation to accelerate these investments.

Private sector participation in infrastructure in Kenya has been on-going for about two decades, but most of it has been concentrated in electricity generation projects. To date, the road sector has not received any participation from the private sector.

Kenya has recently completed an important set of reforms in the roads sector and regarding PPP regulation. The country seems ready to develop its first Road PPPs through its RAP and its TRP.

a. The Roads Annuity Program

The RAP is in essence a large pipeline of Gov.-Pays Road PPPs focused on the upgrade (mostly pavement) of rural roads (about 80% of the pipeline) and low trafficked highways. To make them sizeable, each PPP, called a Lot, includes several roads packaged into a single contract (average

aggregate length of 107km). Annuities (equivalent to Availability Payments) are to be funded by the Roads Annuity Fund which is allocated KSh3/l of the fuel levy since 2015. Each PPP of the RAP has a duration of 10 years, including 7 to 8 years of operations.

The achievements of the RAP to date are far from the initial ambition. Only three Lots (totaling about 311km of roads) have reached financial close and 6 others Lots are still being tendered (totaling about 650km of roads), whereas the objective was to upgrade 10,000km in 3 years.

Overall, Project Agreements in the RAP are attractive even though there is room for improvement regarding bankability. The funding of Annuities through a Roads Annuity Fund ring-fencing a portion of the fuel levy is attractive. However, some clauses could be more balanced (e.g. debt coverage in case of early termination, complexity of the payment mechanism, etc.).

Reasons for underachievement can be drawn from the way the Roads Annuity Program was originally prepared and structured and from the type of private partner targeted.

Kenyan Roads Contracting Authorities were probably not properly staffed to face the workload and to achieve these unrealistic objectives. 10,000km of roads in 3 years, with Lots comprising an average of 107km adds up to more than 90 PPP contracts to tender in 3 years or 30 contracts to tender per year. Even with completely standardized tender documents for all these contracts, one may doubt that the PPP unit and the Roads Contracting Authorities, despite the political will, were appropriately staffed to face such an overwhelming workload.

Kenyan contractors were clearly targeted but not necessarily ready to enter into the road PPP sector. Without any prior track record in road PPPs, the concept of raising private finance and getting paid based on availability and performance might have been too disruptive for Kenyan road contractors. To our understanding, the decision of GoK to launch the RAP and the issuance of the first Request for Qualifications were almost simultaneous, probably indicating that not enough time was taken to explain to the private sector the rationale of the program, and the payment mechanism.

Project preparation and selection was not optimal and has led to difficulties to appropriately price the contracts. Taking the example of Lot 6 (7 roads totaling 233km), it may be noticed that roads included in the Lot are far from each other, which raises important logistics and staffing issues for the Project Company and its EPC and O&M subcontractors. This has undeniably contributed to the significantly higher construction costs compared to GoK expectations, particularly considering the short construction period (2 years).

The contract duration is too short and has led to affordability issues. The short period of operation is also an issue that can have adverse effect on affordability (i.e. the Annuity amount). First, 8 years coincide more or less with the first periodic maintenance. Meaning that shortly before the end of contract, Project Companies will have to bear significant costs without having the possibility to amortize them, thus increasing the Annuity. Second, the shorter the amortization period, the higher the Annuity. A longer operation period goes with a longer period to amortize debt and enables a variety of financing strategies (e.g. mini-perm with one or two refinancing).

b. The Toll Roads Program

The TRP identified a pipeline of 6 strategic roads/highways to be significantly upgraded and developed using a variety of schemes including Gov.-Pays PPPs. Once upgraded, GoK intends to toll these strategic roads to contribute to the funding of associated Availability Payments. To our understanding, the same tolling system will be used for these roads and it will be implemented and further operated by a private sector toll operator whose recruitment is on-going. Tolls thus collected will flow into a National Toll Fund from which Availability Payments will be made.

The Nairobi-Nakuru-Mau Summit highway PPP project is currently the most advanced: the preferred bidder, a consortium including Meridiam and Vinci, has been selected early March 2019. Even though the toll funding mechanism in neither socially or technically proven, the project has raised significant interest from International Finance Institutions and commercial lenders. The preferred bidder would have already received letter of interests totaling more than the debt needed.

Contrary to the RAP, major international players were targeted for this project, and overall KeNHA was able to deliver a rather quick tender process, save for the unusually long period between bid submission and preferred bidder selection. Moreover, the scope of the project seems to have significantly evolved during the tender process with investments multiplied by 3 and totaling US$1.5bn. These elements suggest frictions in the decision-making process or deficiencies in the project preparation.

Table 20 summarizes key lessons to date.

Table 28: Key lessons from the Roads Annuity and the Toll Roads Programs in Kenya.

Unique features	
- A strong political will to leverage private sectors skills and finance to massively invest into the road sector, including rural roads; - Even though the revenues from the fuel levy are insufficient to cover all the maintenance needs, GoK has been able to raise the levy's tariff to a significant level and decided to allocate a portion of the revenues to a Roads Annuity Fund	
Key success factors	Key challenges

- A clear and sustainable funding mechanism for the Roads Annuity Program - Top international players clearly targeted to develop PPPs included in the Toll Roads Program	- Implementation of the tolling system given the failed attempts in the 80s - Roads Contracting Authorities, need to find resources to tackle at the same time the Roads Annuity Program and the Toll Roads Program - The philosophy of the Roads Annuity Program is great in theory, but it needs to be revamped realistically considering the local context (capacities in the public sector to efficiently tender and further manage the contracts; capacity of the private sector to deliver works and financing)
Transferrable lessons learned	Non-transferrable lessons learned
- For the credibility of a PPP Program (and contracting authorities), realistic objectives must be set. Public sector entities must be staffed adequately to tender the contracts in a reasonable timeframe (and further manage them); - When several roads are packaged in the same PPP contract, strategic bundling rationale need to be undertaken to enable the private sector to price adequately; - Gov.-Pays road PPPs need to have a sufficiently long contract duration (e.g. not less than 15 years) or their affordability is likely to be challenged; - A clear diagnosis of the local road contractors' capacities must be undertaken prior structuring of a road PPP program. Based on this diagnosis, the best strategy to involve the local private sector can be determined.	

IV. 4G Road PPP Program in Colombia

1. Significant private sector participation in roads since the mid-90s

a. Brief summary of Road PPPs (1994-2014)[144, 145]

Private sector participation in the roads sector began in the mid-90s in Colombia under User-Pays schemes thanks to the adoption of a law[146] establishing the general principles of public procurement and guidelines to execute concession contracts. In two decades, Colombian authorities granted about 20 concessions to private sector concessionaires under 3 Generations of road PPPs:

- First Generation (1994-1998): concerned mostly the rehabilitation and maintenance of existing alignments that included very localized capacity increase or greenfield sections. The First Generation represented a total investment of about US$890M. The public sector transferred several key risks such as: right-of-way clearance, environmental licensing, demand risk (but there was a lack of reliable demand studies at the same time). On the other hand, the public sector retained other risks such as cost overruns, since anticipated payments were authorized. The road PPPs were of fixed term;
- Second Generation (1999-2002): also concerned brownfield including localized capacity increase and greenfield sections. The Second Generation represented a total investment of about US$1.2bn. The allocation of key risks was similar to 1G contracts. For the demand risks, more reliable demand studies were prepared, and the duration of the contracts could be extended in case the forecast income did not materialize. The first two generations did not prove successful because among others (1) traffic was often overestimated and, as a consequence, so was investment, (2) lack of fiscal space at that time lead to tolls as the sole output of the bidding process, which generated public opposition (3) advanced payments to concessionaire before they finished construction works did not provide incentives to achieve Value for Money;
- Third Generation (2002-2010): this generation was based on new principles to select projects (corridor with large demand, projects that can be almost self-sustainable with user charges, etc.) to early mitigate demand risk. During contract execution, the payment mechanism was equivalent to a shadow toll including a revenue guarantee mechanism during the ramp-up period. The duration of the contract was variable as in the 2G contracts, and could also be extended by another 60% if new investments were undertaken by the concessionaire;
- Ruta del Sol (2010): this road was initially to be tendered through three PPPs, but only two reached closing. These PPPs transitioned between the 3G and the 4G road PPPs. The payment mechanism comprised Availability Payments and tolls. A portion of the Availability Payments could be denominated in US$ to mitigate the currency risk.

[144] IDB Group. Participacion privada en infraestructura - su evolucion en Colombia y el apoyo del Grupo BID. 2018

[145] Agencia Nacional de Infraestructura. Informe de gestión 2011-2018. 2018

[146] Ley 80 de 1993 (Octubre 28) por la cual se expide el estatuto general de contratación de la Administración Pública.

It was assessed that the first three generations were not successful in providing value for money (due to frequent renegotiation during contract life) and crowding in sufficiently private sector participation. A weak regulatory framework and an inadequate risk allocation were the most important reasons for this underachievement.

b. The 4G Road PPP Program: objectives and achievements[145, 147]

During the 2002-2012 decade, Colombia was able to achieve on average a yearly GDP growth of 4.4% and to reduce extreme poverty to 28% under favorable economic condition and good public financial management. However, in 2013, low road connectivity and road quality translated into a poor ranking (126 out of 140) regarding the World Economic Forum Infrastructure Pillar[148]. The complex geography of the country (most Colombians live in the Andean areas) coupled with high transport costs and time hamper Colombia's potential.

To face that challenge, the Government decided to launch the 4G road PPP program. The program aims at consolidating a nationwide network of toll roads (totaling 8100km for about US$26Bn in investment) by leveraging limited public resources to mobilize the private sector.

To support this ambitious objective, Government of Colombia (GoC) passed several sectoral and cross-sectoral laws and decrees. Among others, the PPP law of 2012[149] incorporated lessons from the first three generations of road PPPs, including for example: the preparation of projects before tendering them; the modification of the payment mechanism of the private partner that eliminates anticipated payments and authorizes payments only when the infrastructure is available; the introduction of a cap of additional works addition at 20% of the initial contract value to avoid renegotiation reducing value for money; or the division of each project into several Functional Units to facilitate contract financing.

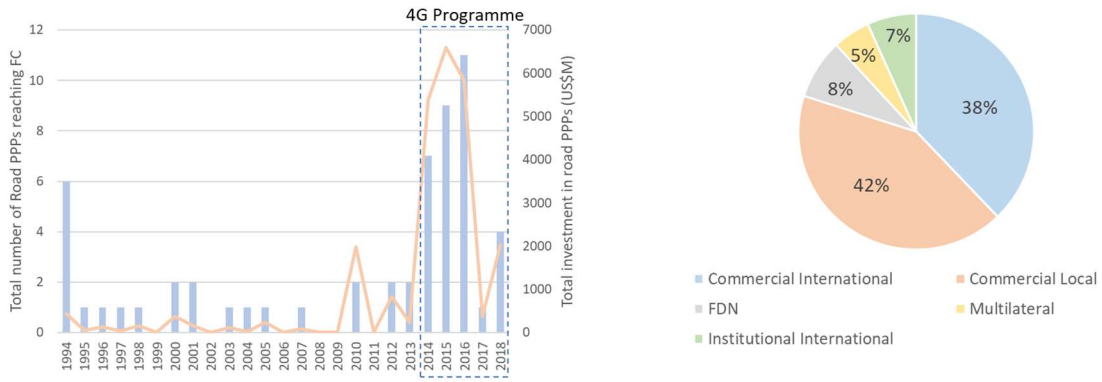
To date, the achievements of the 4G Program are very significant: 32 PPPs (including 10 'Iniciativas Privadas', the equivalent of an unsolicited proposal) reached commercial close. The 4G Road PPPs so far represent 80% of the total investment in road PPPs since 1994 (see Figure 19). Moreover, 87% of the debt raised comes from commercial lenders, either international or local. The remaining 13% comes from IFIs or FDN (see section IV.2.b).

[147] World Bank Group. Colombia Roads – Maximizing Finance for a nationwide road program. November 2017.

[148] In 2018 Colombia ranked 83 on 140, highlighting significant progress on road connectivity and quality: http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf

[149] Ley 1508 de 2012 "Por la cual se establece el régimen jurídico de las asociaciones público-privadas, se dictan normas orgánicas de presupuesto y se dictan otras disposiciones".

Figure 19: road PPPs in Colombia (number of contracts and associated investment – left panel). Type of debt mobilized for 4G Road PPPs (right panel)[150].



2. Overview of major institutions

a. ANI (Agencia Nacional de Infraestructura) [144, 145, 151, 152]

Before 2003 and the creation of INCO (Instituto Nacional de Concesiones), there was no public institution exclusively dedicated to the execution of road PPPs. INCO was created as a response to the institutional and technical capacity need, to overview the planning, the structuring and the execution of projects with private participation.

However, INCO experienced systematic issues like difficulties to determine which projects to execute or poor managerial administration. INCO was reformed in 2011 and became ANI, changing also its legal nature.

ANI is now a decentralized and fiscally/technically independent state agency. The agency is responsible for planning, coordinating, structuring, procuring, executing, managing and assessing all concessions and other forms of PPP in the transport sector[153]. Among others, ANI's resources comprise appropriations from the national budget and tolls collected on publicly managed tolled road. Since its creation, ANI has displayed a financial execution close to 100% each year, demonstrating an efficient use of its resources.

ANI's Board is chaired by the Minister for Transport and includes representatives from other ministries and from the Presidency among others. During the preparation of the Program, ANI's role has been paramount, as the agency has thoroughly conducted public hearings a well as Q&A sessions with local and international stakeholders (with the support of the IFC). Many of the

[150] Authors's creation from World Bank Private Participation in Infrastructure database.

[151] Ministerio de Transporte. Decreto 4165 por el cual se cambia la naturaleza jurídica, cambia de denominación y se fijan otras disposiciones del INCO. November 2011.

[152] IFC. Fourth Generation Toll Road Program – Lessons Learned. Confidential document.

[153] Transport projects executed and managed under traditional procurement schemes fall are under the scope of other Agencies (e.g. INVIA: Instituto Nacional de Vias for the road sub-sector).

comments received were incorporated in the revised versions of the standardized documents and ANI formally responded to stakeholders' queries and published the responses for public information.

b. FDN (Financiera de Desarrollo Nacional) and Infra CDV (Infrastructure Collective Debt Vehicle) [147, 154]

FDN emerged from the Financiera Energetica Nacional (FEN) which was an inactive SOE established to finance energy sector development.

FDN was created in 2014, with IFC and CAF (Development Bank of Latin America) acquiring about one third of equity from GoC. FDN is now a private sector entity no longer governed by regulations and procedures applicable to SOEs. FDN's board has expanded and GoC's representation reduced to a passive voice. Sumitomo Mitsui Banking Corporation bought half of IFC's shares in 2015.

FDN intends to be a catalyst in developing an infrastructure finance market in Colombia. It offers products (market-priced) critical to this aim and that are currently absent from the local market (e.g. long-term loans, subordinated debt, credit enhancement mechanisms). FDN also proposes advisory services (capacity building, project preparation and structuring, etc.) to sub-national entities willing to engage into PPP schemes.

To mobilize local institutional investors (e.g. pension funds), FDN and IFC created Infra CDV (Colombia Infrastructure Debt Vehicle), which is the first infrastructure debt vehicle in Colombia. The purpose of this vehicle is to allow pension funds providing senior debt to road projects in Columbia, which would not be possible otherwise.

c. MHCP (Ministry of Finance and Public Credit), CONFIS (Fiscal Policy National Council), CONPES (Economic and Social Policy National Council) and DNP (National Department for Planification) [144, 147, 149]

There is no national PPP unit *per se* in Colombia. However, other national entities have a significant role to play in the approval of Road PPPs.

First, CONFIS has the power to authorize the so-called 'Vigencias Futuras' which is a mechanism allowing the Gov. to commit to multiannual expenditures and plan beyond the current budget year. 'Vigencias Futuras' are paramount in the success of the 4G Program. Private Partners are partly remunerated through Availability Payments made by ANI, and those Availability Payments are funded by such 'Vigencias Futuras'. Since 'Vigencias Futuras' are validated at contract inception, the mechanism gives private partners sufficient visibility and comfort to be convinced that ANI will have the financial capacity to make those payments.

CONPES authorizes the maximum amount of all these 'Vigencias Futuras' in accordance with CONFIS proposal and the country's macroeconomic program.

[154] IFC. Infrastructure Finance – Colombia and FDN. EM Compass, note 4, April 2016.

Prior to this, MHCP should have approved the draft project agreement, and particularly the financial conditions on a non-objection basis.

DNP does not have a role in the preparation and structuring of PPPs in Colombia, rather its role pertains to:

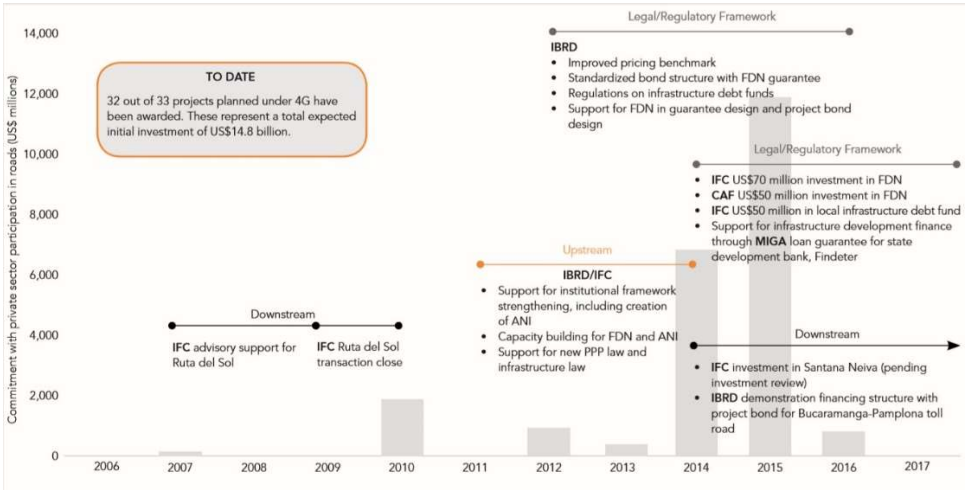
- consolidating data on PPPs at the national level;
- defining the main parameters for the analysis to justify the use of a PPP (similar to a Value for Money analysis);
- give its opinion on this analysis and the 'Vigencias Futuras'.

3. A decade of WBG support

The 4G Program and its achievements have built on almost a decade of WBG support to the GoC, mobilizing a wide array of financial and non-financial instruments (Technical Assistances, Development Policy Loans, Advisory Services, Capital Market Deep Dive, Equity Investment, etc., see Figure 20):

- between 2007 and 2010, IFC provided advisory services to prepare and structure Ruta del sol PPP as a pilot project transitioning between 3G and 4G road PPP;
- starting 2011, IFC and IBRD supported GoC to strengthen the PPP regulatory environment and the transport sector regulations. The existing regulations were perceived as constraints for private sector participation. The creation of ANI was also followed by significant capacity building
- starting 2012, IFC provided advisory services to develop standardized documents for the 4G road projects and acted as advisor of the advisor for the first 3 transactions
- starting 2013, IBRD IFC and MIGA conducted a Capital Market Deep-Dive to help mobilizing private sector resources other than traditional commercial banks to finance the 4G program (e.g. local pension funds)
- in 2014 IFC invested equity in the newly created FDN, contributed to its reform to support the development of the 4G Program. IFC also invested in Infra CDV.

Figure 20: World Bank Group support to develop the 4G Road PPP program[147]



4. 4G Road PPP standardized contracts

a. Typical features of a 4G Road project

The typical features of a 4G Road PPP are outlined in

Table *29*.

Table 29: typical features of a 4G Road PPP[155].

Feature	Description
Length	About 200km
Scope	Upgrade of existing alignment and construction of localized new sections (including tunnels and bridges). Installation and O&M of tolling plazas O&M of road after construction period
Type of PPP project	Mostly brownfield (about 80% of total length) Mixed Gov.-Pays and User-pays
CAPEX	US$450M
Debt/Equity ratio	65/35[156]
Milestones payments during construction period	None, but project is divided into independent Functional Units, that are completed throughout the construction period. Once completed, each functional unit triggers a portion of Availability Payments and the collection of tolls.
Contract duration	Between 25 and 29 years including a construction period up to 6 years
Grantor	ANI (Agencia Nacional de Infraestructura)
Private partner revenues	<u>Availability Payments</u> Represent about 45% of Project Co. Revenues Paid annually by ANI based on 'Vigencias Futuras' A portion can be denominated in US$ (up to about 40%) Availability Payments after substantial completion: up to US$35M/y <u>Tolls</u> Represent about 55% of Project Co. Revenues
GoC support	'Vigencias Futuras' mechanism to fund Availability Payments Minimum revenue guarantee for tolls, including possible contract extension.

'Vigencias Futuras' are particularly important as reminded in Section IV.2.c, since ANI's resources come mostly from the national budget. In the case of Colombia, it opened a credible fiscal space necessary to sustain a large PPP program, and enhance ANI's creditworthiness[152].

[155] Agencia Nacional de Infraestructura. Proyecto "tipo" Programa 4G. Informe general de un Proyecto hipotetico. Julio 2013.

[156] In average using the available information extracted from World Bank's PPI database.

b. Standardization of tender documents

Overview of tender process[152, 157]

A classical two-stage tender process is implemented, consisting of pre-qualification and bidding stages. International entities can participate. The bids' assessment is organized as follows:

- First, a verification that the offer from the bidders contains all the enabling requirements
- Then an assessment of the technical offer, the support to local industry, the quality factor and the economic offer is conducted. Points are allocated to each item
    - The technical offer is related to a percentage of employment in Project Co. of local workers from the municipalities affected by the project;
    - The support to local industry is among others related to a percentage of services sub-contracted to local entities;
    - The quality factor is related to the offer to build additional works determined in the RFP (e.g. an intersection)
    - The economic offer is calculated as the present value of all the Availability Payments discounted at a rate defined in the RFP. The economic offer is the most important criterion in terms of affected points

One of the main criticisms addressed at the tender process was that the prequalification criteria, in order to address the broadest audience possible, were too low. It resulted in the qualification of large number of consortia[158]. That led to a "lottery" system to limit the numbers of bidders to 10 prequalified consortia.

Moreover, 4G projects were launched in 3 waves, each consisting of 8-9 projects tendered within days of each other. Added to the important number of prequalified consortia, this put the whole project finance industry under stress. In this context, overwhelmed with demand for finance, the few local financiers had no incentive to provide competitive pricing, resulting in high cost of debt for the peso-denominated debt.

Project Agreement – Overview of the main clauses

The GoC and ANI were criticized for delays in the launch of the 4G program, but to their credit, they took an adequate time to craft a standardized project agreement and to conduct an open consultation process of the draft among relevant stakeholders. The final standardized contract benefitted from all this feedback and is certainly one of the key success factors of the 4G program. Standardized documents cut down the due diligence expenses and incentivize bidders to present offers to multiple projects[152].

The standard project agreement of the 4G program consists of two main documents:

- The General Part ('Parte General') which is common to all 4G projects. It governs the rights and obligations of ANI and Project Co. and frames the payment mechanism among others.

[157] Agencia Nacional de Infraestructura. Licitación Publica No. VJ-VE-IP-LP007-2013. 2013.

[158] For example, 15 consortia were prequalified for the Pacifico 1 Project, see[157].

- The Special Part ('Parte Especial') which is a template to be adjusted with the items specific to the project being tendered (e.g. the features of Functional Units) or the items specific to the winning consortium bid (e.g. Availability Payments, equity drawdowns, tariffs for the different categories of vehicles to be tolled, schedule of completion of Functional Units, etc.)

Table *24* below provides a brief overview of the main clauses, including the payment mechanism, as well as a sample of "bankability" and "acceptability" clauses.

Table 30: Overview of Payment mechanism and main clauses.

<table>
<tr><th colspan="2">Payment Mechanism[159]</th></tr>
<tr><td colspan="2">The Project Co. derives its revenues from three streams:
- Availability Payments ('aportes ANI'). ANI makes these payments on a yearly basis to the Concession Trust (see below in the bankability clauses), and the amount (in real term) in the contract is adjusted to reflect general inflation. The portion denominated in US$ is also adjusted to reflect the foreign exchange rate at the end of the tender process, thus neutralizing any adverse effect for the Project Co.
- Tolls. The tariffs are adjusted on a yearly basis to reflect general inflation. Tolls collected by Project Co. flow into the Concession Trust ad valorem
- Ancillary services. The associated revenues flow into the Concession Trust ad valorem. 2.2% of these revenues are retained by ANI and will contribute to any payments due by ANI in application of the contract.

Each month, the Concession Trust pays the Project Co. an amount equal to Availability Payments + Tolls collected + 97,8% of revenues from ancillary services – Deductions.

The deductions are capped at a fixed % of the monthly payment. It includes the performance deductions and any liquidated damages.

NB: This is a simplified outlay of the payment mechanism. In reality, the Monthly Payment in divided into portions of payments related to each Functional Unit.</td></tr>
<tr><th colspan="2">Main bankability clauses</th></tr>
<tr><td>Right-of-Way and socioeconomic compensations</td><td>As a condition precedent to construction works, Project Co. must have cleared at least 40% of the Right-of-Way of the first Functional Unit (i.e. the Functional Unit receiving the first interventions according to agreed work schedule).

The same rule then applies before starting interventions on the remaining Functional Units.

In case the cost of Right-of-Way clearance and socioeconomic compensations is lower than anticipated, the resulting gains are shared between Project Co. (60%) and ANI (40%).</td></tr>
</table>

[159] This is a simplified brief of the Payment mechanism. Each Monthly Payment is divided into payments for each Functional Units according to their weight in the project and percentage of work completion.

	Otherwise, Project Co. will support 100% of the first 20% overruns, and 30% of the next 80% overruns. Delays in obtention of properties Right-of-Way clearance after judicial or administrative clearance are considered as force majeure event relieving Project Co. from some of its obligations.
Utility Reallocation	Before construction works begin, Project Co. realizes an inventory of all utility networks. In case costs of utility reallocation are higher than anticipated, the cost overruns are shared: Project Co. supports 100% of the first 20% overruns, 30% of the next 80% overruns. ANI will support 100% of the overruns above. During construction works, the identification of any utility network that could not be identified during the inventory is considered as a force majeure event.
Environmental compensations	As a condition precedent to construction works, Project co. must have obtained environmental licenses. In case environmental compensations are higher than anticipated, the cost overruns are shared: Project Co. supports 100% of the first 20% overruns, 30% of the next 80% overruns. ANI will support 100% of the overruns above. A delay in the obtention of environmental licenses over 150% of anticipated date, is considered a force majeure event relieving Project Co. from some of its obligations.
Lenders step-in rights	Lenders can step-in when Project Co. is in default regarding the financial agreements or when notified by ANI before an early termination due to Concessionaire default. Step-in rights can materialize through the following options: - Cession of the contract to another Project Co. - Modification of the Project Co.'s shareholding Any cession or modification of shareholding because of lenders' step-in rights must be approved by ANI.
Overload of Heavy Goods Vehicles control	Project Co. oversees the development, operations and maintenance of the overload control facilities. Project Co. also controls HGV loads. In case of overload, Project Co. reports the infraction to the highway patrol which is the enforcement authority.
Compensation events/relief events/force majeure	Relief events are defined as any event beyond the reasonable control of the parties that substantially, and adversely affects the fulfillment of obligations after having performed all reasonable and possible acts to avoid its consequences. It includes Force majeure events and the other events qualified as force majeure (cf. delays in obtaining right-of-way, etc.). Relief events generally do not lead to any compensation, rather the affected party is relieved from its contractual obligations.

	Generally, Project Co. assumes the cost incurred by the relief event, except in a few situations where these costs are supported by ANI (e.g. war, coup, terrorist attack, etc.)
Demand risk mitigation mechanism	This mechanism includes two features: - at year 8, 13 and 18 of the contract, the discounted value of projected toll income is compared to the discounted value of collected tolls and ANI commits to compensate the difference; - the term of the contract (25 years by default) can be extended up to 29 years in case the projected discounted value of tolls is not reached before default term.
Change of toll tariffs	The tariff structure is included in the Special Part of the Project Agreement. If this structure is modified by the Ministry of Transport (e.g. introduction of exemption, decrease of the tariff), and leads to a difference in tolls collected vs. tolls forecast, then ANI will compensate Project Co.
Early Termination Payments	The contract distinguishes among three broad categories of early termination: - early termination due to a Project Co. default (e.g. when the Performance Deduction cap is reached, or when the Liquidated Damages cap is reached) - early termination due to ANI's default (limited to a delay of payment of more than 6 months when the amount to be paid is above a cap set in the contract) - early termination due to events external to the parties (e.g. when a relief event prevents the execution of the contract in full for more than 3 months) - early termination in case the contract is declared null by a judicial authority The contract proposes several formulas to compute the early termination payments. However, only a detailed and complicated modeling could determine the exact coverage of debt and equity. It seems however that the formulas should lead to the coverage of outstanding debt at early termination. Nevertheless, it is probably better to state clearly the coverage of debt in order to make the contract more easily understandable[152]. It should be noted that the time lag to receive the payment is very long amounting to at least a year and a half. This could be even longer when the amount to be paid is challenged by either ANI or Project Co. party.
Concession Trust	All revenue streams are administered by a third-party Concession Trust ('Patrimonio Autónomo'). The constitution of this trust is a legal obligation according the 2012 PPP Law[149]. The Concession Trustee manages the cash-flow waterfall of all project revenues (Availability Payments, tolls, ancillary services revenues) and other compensations (e.g. early termination payments) between the different project accounts. As the Concession Trustee ensures that all payments are made in due time, and cash-flows are managed in an apolitical way, this feature,

	despite adding some complexity to the project agreement, is useful to make sure the project funds are properly allocated
Main “acceptability” clauses	
Refinancing gain sharing	There is no refinancing gain sharing mechanism.
Overprofitability gain sharing	As part of the demand risk mitigation mechanism, there is a mechanism for sharing potential upsides between Project Co. and ANI. In the case when the projected discounted value of tolls is reached before default term (25 years), Project Co. is entitled to receive a fixed percentage of actually collected tolls after the date when the abovementioned value is reached (this percentage is set at 11% in the draft standard agreement). It also means that ANI may retain 89% of the collected tolls after the abovementioned value is reached.
Minimum Equity contribution	Project Co. must reach Financial Close within the date specified in the contract and it is its responsibility and risk to do so. It can define the best financial solution, including for example the type of debt instruments, or the debt to equity ratio. The contract nevertheless sets a floor to equity contribution.
Concession Trust	As explained above, the Concession Trust is useful from the bankability point of view. But it is also useful to ensure that resources of the project either flowing from the users or ANI are appropriately used. This feature has also the benefit of increasing transparency for the general public.
Contracting Authority step-in rights	In case of early termination due to a Project Co.’s default, if the lenders do not enforce their step in-rights, ANI can contract another Project Co. to finish the execution of the contract.
Contracting Authority control and audit	Technical report published on the web and available at any time to ANI, that includes information related to works conducted, e.g. studies undertaken, plans, localization of utility networks, etc.
Social inclusion	There is no social inclusion clause. Rather the tender documents include two criteria related to this issue. However, these criteria are not given high importance in the bid assessment compared for example to the economic offer criterion.
Assets’ transfer regime	The asset transfer phase occurs at the end of the contract and by default lasts 6 months, which can be extended to 1.5y in case of early termination. The transfer process includes an inventory and an appraisal of all assets. A failure to comply with the indicators anticipated does not lead to an extension of the transfer phase. Liquidated damages and other financial consequences are settled according the Law at the end of the contract.
Shareholding changes regime	During construction period, the shareholders identified as the lead or that have financial capacity accreditation in the winning consortium must

	maintain their original participation. The others must at least maintain a cumulated 25% of the shares. There is no restriction during the operation period. ANI must be informed before any shareholding change.

5. Summary and key lessons learned

Colombia has accumulated significant experience of private sector participation in the road sector since the mid-90s, through brownfield User-Pays PPPs. From 1994 to 2010, about 20 concessions were granted under 3 generations of road PPPs. However, it was assessed that these road PPPs were not successful in providing Value for Money and did not crowd-in enough private sector finance to face the considerable needs that faces the Colombian road sector. Inadequate risk allocation and a weak regulatory framework among others were the most important reasons for underachievement.

However, despite a decade of significant GDP growth (2002-2012), during which Colombia reduced extreme poverty, roads' low connectivity and quality hampered the country's potential. In 2013, Colombia ranked 126 out of 140 in the World Economic Forum's Infrastructure Pillar. The complex geography of the country, with most Colombians living in Andean regions, and insufficient road quality and connectivity, have led to high transportation time and costs.

The Government of Colombia (GoC) launched in 2014 the 4G Road PPP Program, a pipeline of more than 30 projects, to consolidate a nationwide network of toll roads. The program aims at upgrading 8,100km of highways for a total investment of about US$26Bn. GoC aspired to deliver this program in a tight schedule while leveraging limited public resources to mobilize private financing.

To support this Program, GoC conducted several sectoral and cross-sectoral reforms (e.g. PPP regulatory framework, capital market mobilization). Among these reforms emerged two key institutions: ANI (Agencia Nacional de Infraestructura) which is a financially and technically independent State Agency in charge of the planning, coordination, structuring, procurement, execution, management and assessment of all concessions and other forms of PPP in the transport sector; FDN (Financiera de Desarrollo Nacional) which is a national development bank acting as the catalyst to develop the infrastructure finance market in Colombia by providing key products filling the gaps in the local market (e.g. long-term debt, credit enhancement mechanisms, etc.).

A typical 4G Road project is mostly brownfield and structured as a mixed Gov.-Pays and User-Pays PPP. It may contain some greenfield sections, but 80% of the total CAPEX is dedicated to upgrading existing alignments. About 55% of the Project Company's revenues derive from Availability Payments, a portion of which can be denominated in US$. Tolls typically represent about 45% of revenues.

Tender documents of the 4G Road PPPs have been standardized, cutting down due diligence expenses and incentivizing bidders to participate into several projects. The standardized project agreement contains several “high bankability” innovations, among others:

- **The mechanism of ‘Vigencias Futuras’**. This mechanism allows GoC to commit to multiannual expenditures and plan beyond the current budget year. Availability Payments, made by ANI, are funded by these Vigencias Futuras that are approved at contract inception giving visibility and comfort to financiers;

- **The demand risk mitigation mechanism**. This mechanism has two features: at year 8, 13 and 18 of the contract, the discounted value of projected toll income is compared to the discounted value of collected tolls and ANI commits to compensate the difference; the term of the contract (25 years by default) can be extended up to 29 years in case the projected discounted value of tolls is not reached before default term;

- **The division of each project into several independent Functional Units**. Functional Units are thought to be independent subprojects within the project, meaning that the completion of a Functional Unit triggers tolls collection and the right to receive Availability Payments. This is an important cash-flow optimization since construction period in a typical 4G project can last up to 6 years;

- **The management of all the project cash-flows by a third-party Concession Trust**. The Trustee receives all of the projects revenues (tolls, revenues from ancillary services, Availability Payments), and manages the cash-flow waterfall between the different project’s account according principles set in the project agreement, thus in an apolitical way.

Despite areas for improvement, the 4G Program has proved highly successful, since 32 4G projects have reached at least commercial close since 2014. This includes 10 ‘Iniciativas Privadas’ (the equivalent of Unsolicited Proposal). The 4G Road PPPs so far represent 80% of the total investment in road PPPs since 1994. Moreover, 87% of the debt raised comes from commercial lenders, either international or local. The remaining 13% comes from International Financial Institutions or FDN. In 2018 Colombia ranked 83 out of 140 in the World Economic Forum’s Infrastructure Pillar, highlighting significant progress on road connectivity and quality.

A decade of WBG support mobilizing a large array of financial and non-financial instruments was instrumental in the achievements of this Program. This variety of instruments spans from International Bank for Reconstruction and Development (IBRD)’s technical assistance to support the reform in the transport sector, to IFC Advisory services to prepare and structure the standardized tender documents, an equity investment of IFC in FDN to support its reform and a WBG capital-market deep-dive to help mobilize unconventional private resources to finance infrastructure.

Table 31 summarizes key lessons to date.

Table 31: Key lessons from the 4G Road PPP Program in Colombia.

<table>
<tr><th colspan="2">Unique features</th></tr>
<tr><td colspan="2">- Two decades of private sector participation in the roads sector before designing the 4G Road PPP Program
- Proven willingness to pay from users since the previous generations of road PPPs were structured as User-Pays</td></tr>
<tr><th>Key success factors</th><th>Key challenges</th></tr>
<tr><td>- A strong political will to conduct enabling reforms, as well as to appropriately staff the newly reformed ANI and FDN
- A deep understanding of the enabling conditions necessary to attract significant private sector participation
- Strong WBG support, including for the preparation and structuring of bankable project agreements refined after extensive stakeholder engagement
- Standardized project agreements cutting down due diligence expenses and incentivizing sponsors to participate in several bids</td><td>- A high number of qualified bidders coupled with a high number of projects tendered within a few days have sometimes put considerable stress on the market, including a disincentive for the few local commercial lenders to provide competitive pricing;
- Structural weaknesses in the project agreement, regarding for example timing of certain payments to be made by ANI, have led FDN to develop tailor-made liquidity products to bridge these gaps</td></tr>
<tr><th>Transferable lessons learned</th><th>Non-transferable lessons learned</th></tr>
<tr><td>- Prequalification criteria must be balanced to attract enough serious bidders and at the same time eliminate the weakest ones;
- A funding mechanism that does not depend upon a yearly budgeting process is key to enhance the creditworthiness of the institution responsible for making Availability Payments
- Even in an upper-middle country with a strong track-record of User-Pays PPPs, a bankable (from the local or international commercial players' point of view) PPP scheme does not fully transfer the demand risk.</td><td>- A National Development Bank, such as FDN or BNDES in Brazil is an asset to deliver an ambitious road PPP Program, but it is expected that one does not exist in many SSA countries</td></tr>
</table>

V. Two examples of User-Pays road PPPs in Sub-Saharan Africa

1. Dakar-Diamniadio toll highway in Senegal

The Dakar-Diamniadio toll highway is a greenfield project consisting in the construction of 32km of high-standard dual-carriageway of two or three lanes per direction with grade-separated intersections. About one third of the project has been delivered through traditional public procurement whereas the remaining two thirds were developed under a 30-year User-Pays PPP that included a public sector investment subsidy of about 60% of the total CAPEX. The Project Company fully completed works in 2013 after more than 3 years of construction. This flagship project, one of the first User-Pays PPPs in SSA (outside South Africa), has greatly improved urban mobility in the Dakar area by dividing by 3 the travel time between Downtown Dakar and its peripheral areas.

Following this achievement, the Government of Senegal (GoS) granted (after direct negotiations) the extension of the highway to the recently built International Airport Blaise-Diagne to the same Project Company. This extension of 16km was granted in 2014 and inaugurated in 2016. The GoS co-financed about 70% of the total CAPEX in the form of a public sector investment subsidy. Additional debt and equity brought by the Project Company financed the remaining part.

More details can be found in Box 5.

Box 5: Dakar-Diamniado toll highway in Senegal[160, 161, 162, 163, 164]*:*

The contracting authority is GoS represented by the Ministers in charge of Finance and Transport; the structuring and tendering phases have been led by APIX (Agency for the Promotion of Investment and Major Projects). The Road Agency led the preparation and tendering phases of the section that was delivered through traditional public procurement.

The legal framework has evolved during project preparation and tender phases to bridge legal gaps. These evolutions intended for example to adopt best international practices for arbitration and to make it possible for project modifications to be undertaken by Project Co. without having to organize another public tender. First, this shows that the PPP legal framework was perhaps not fully operational before deciding to undertake this PPP. Second, it demonstrates a strong political support to enable these evolutions in the constraints of the project timeline.

The project induced major Right-of-Way and resettlement issues that were handled by the public sector. The Right-of-Way clearance for this project involved the relocation of 30,000 people. In 2013, the resettlement of these people was not fully done. Right-of-Way and

[160] Peter Brocklebank. Private Sector Involvement in road financing. SSATP working paper no 102. December 2014

[161] PPIAF. L'autoroute à péage Dakar-Diamniadio au Sénégal : une opération pionnière appuyée par le PPIAF. PPIAF impact story. May 2015.

[162] Nodalis. Memorandum d'information – Autoroute Dakar-Diamniadio. Aout 2009. Confidentiel

[163] https://ijglobal.com/

[164] Société Eiffage de la Nouvelle Autoroute Concédée. Rapport semestriel N°8 S1 2017. Juillet 2017. Confidentiel

resettlement alone have cost about US$160M. This cost was supported by the Public Sector and funded with GoS budget and MDBs' contributions. For comparison purposes, the cost of resettlement alone represents about 70% of the total investment costs.

Three international consortia submitted bids and the consortium led by Eiffage and its Senegalese subsidy were awarded the contract. The tender process had three steps: prequalification, submission of a technical bid followed by discussion between bidders and APIX, then submission of final bids. The tender phase lasted around 2 years. One of the main criteria to assess bids was the level of public sector investment subsidy required by bidders.

It took almost two years to reach financial close; only a small portion of the finance raised can truly be qualified as private participation. 60% of the investment costs were co-financed by public sector investment subsidies (funded by GoS and MDBs), the remaining 40% were financed by a mix of debt and equity (debt to equity ratio is about 60/40). Most of the debt was brought by MDBs and less than 10% came from a truly commercial bank. Debt was refinanced by the same initial lenders when financial close was reached for the extension to the International Airport Blaise Diagne.

Despite publicization during construction period, tolls were suspended for a few days shortly after commercial operations began due to taxi drivers' protests. It shows the sensitivity of tolling even though tariffs are set at a relatively low level (which is why the project needed an important public sector investment subsidy).

As in any typical User-Pays PPP, the vast majority of Project Co.'s revenues are expected to flow from tolls collected from users, and a very small portion from ancillary services. The contract does not include mechanisms to mitigate demand risk or share refinancing gain. However, there exists an "overprofitability gain sharing" mechanism, which can only be triggered 15 years after contract inception.

2. Henri Konan Bedie toll bridge in Ivory Coast

The Henri Konan Bedie toll bridge is a greenfield project consisting in the construction of two 1.5km three-lane carriageways over a bridge and 5 km of new roads that include an interchange, two stretches of motorways and a tolling plaza. In 1996, the Government of Ivory Coast (GoIC) tendered the project as a 30-year User-Pays PPP. It was awarded to a consortium led by Bouygues in 1997 and it excluded at that time any public sector investment subsidy or demand risk mitigation mechanism. The project was then put on hold for 15 years after a coup and almost a decade of civil unrest. The financial close of this US$326M project was reached in 2013 and commercial operations started in December 2014. The project has many benefits, among others: reducing travel time between two of Abidjan's main district from an hour to 15mn; demonstrating that the country is ready to welcome foreign investment after a decade of unrest.

The risk allocation has significantly evolved during the 15 years that separated commercial and financial closes; the project agreement has been amended three times to reflect these changes. Among other provisions, the amendments: introduced the contribution of GoIC to CAPEX *via* a public sector investment subsidy, established a demand risk mitigation mechanism, and reduced the scope of the "overprofitability" gain sharing mechanism. The Multilateral Investment Guarantee

Agency (MIGA) played a significant role in reaching financial close providing Political Risk Insurance covering US$145M of foreign investments for a duration of 15 years. The investors are particularly insured against the risks of transfer restriction, expropriation, war and civil disturbance and breach of contract.

More details can be found in Box 6.

Box 6: Henri Konan Bedie toll bridge in Ivory Coast[163, 165, 166, 167]:

Only a small portion of the finance raised can be truly qualified as private participation. The public sector investment subsidy provided by GoIC accounts for 28% of project costs. Outside of this contribution, the debt/equity ratio is 65/35. Most of the debt is brought by multilateral or bilateral development banks, and only 10% comes from a truly commercial bank. Interestingly, GoIC through different state-owned entities took a 10% stake in the Project Company's equity. Unfortunately, there is no feedback on this mode of participation from GoIC in the project.

The demand risk is mitigated thanks to a mechanism introduced after commercial close. Initially, the project was structured as a "pure" User-Pays PPP, but the amendments introduced among other provisions a demand risk mitigation mechanism. This mechanism establishes a special reserve account on which the GoIC commits to maintain at least 25% of annual debt service at any time during debt tenure. Then, the difference between guaranteed revenues and revenues collected is paid quarterly to the Project Co. from the proceeds available in this account. The effect is to isolate the lenders from the demand risk. The equity providers are somehow protected by a mechanism introducing the concept of the right to the financial equilibrium, which is linked to the expected equity IRR. These mechanisms have been triggered shortly after commercial operation began when, among other reasons, GoIC decided unilaterally to modify toll tariffs and set them at a lower level than what was contractually agreed.

Another interesting feature of the contract is the existence of a mechanism mitigating currency and foreign inflation risks. A portion of the debt and of equity is denominated in a hard currency. Moreover, a portion of Project Company's costs (either OPEX or major maintenance and renewal costs) is denominated in a hard currency since some of the inputs are imported. To mitigate the currency mismatch and the foreign inflation risks, toll tariffs are adjusted on an annual basis to reflect foreign exchange as well as the foreign inflation variations.

3. Key lessons learned

Lesson 1: transferring demand risk to Project Co. requires either high public sector investment subsidy or tailor-made mitigation mechanisms to make the project bankable. Lenders will require a comfortable Annual Debt Service Coverage Ratio to ensure that Project

[165] World Bank Group. Public-Private Partnerships briefs. Côte d'Ivoire: Toll Bridge. April 2015.

[166] World Bank Group. Independent Evaluation note 2017 – Henri Konan Bedie Bridge. 2017. Confidential

[167] Multilateral Investment Guarantee Agency. Underwriting paper. February 2012. Confidential

Company is able to service its debt even under lower traffic scenarios. Since toll tariffs must be set at an affordable level for users, the transfer of demand risk directly impacts the level of debt that can be raised and calls for public sector investment subsidy to bridge the funding gap. Moreover, lenders and equity providers may require tailor-made mitigation mechanisms and charge a higher cost related to the higher risk profile.

Lesson 2: based on these examples, greenfield User-Pays PPPs do not represent the solution to scale-up private sector participation in low-income countries. It is seen that for these two greenfield projects only a small portion of finance (debt or equity) raised by Project Company truly comes from private sector entities. Moreover, due to different reasons, the preparation of these projects was long and required a strong implication of MDBs. Of-course these projects have provided a track-record to their host countries, but one may question the replicability of these models in other SSA contexts.

Annex 8 Simulation of the Restoration Concept - Snowball effect

Contents of Annex 8

I. How to use the simulation tool

Note: The simulation tool is a separate Excel Workbook provided with the Main Report and the Annexes.

1. Main objectives and outputs of the simulation tool

The study team has designed a simulation tool to test the impact of three possible changes in the way Road Funds structure their contribution to the restoration[168] of existing national priority roads.

The first change deals with financing. It assumes that Road Funds leverage a portion of their stable government-funded resources to raise funds through long term financial debt, for the purpose of funding road restoration programs.

The second change deals with contracting. It assumes that Road Funds enter into Public Private Partnership contracts for the localized reconstruction, improvement and subsequent maintenance of roads. Under these PPPs, the Private Partners bear a significant share of the reconstruction and improvement investment costs during the construction phase of the contract.

The third change deals with revenues. It assumes that the restored roads can produce revenue through tolling. The tolling revenue collected becomes an additional resource of the Road Fund as the PPP is structured as a Government-pays PPP and the government bears the demand or traffic risk.

The simulation tool allows to test the impact of these changes individually or in combination. The primary output is the forecast evolution of the cumulated cash position of the Road Fund Window set up to fund road restoration ("Road Restoration Window " or RRW described in the main report) up to a 43 year period – to be able to test a post-restoration period when all the restoration contracts have been completed[169] and the only liability of the RRW is the payment of the follow-up maintenance contracts. Based on this indicator, the number of restoration projects undertaken over the period is increased up to the tipping point, when the cumulated cash position would cease to be positive. This provides the maximum number of projects made sustainable under the changes tested, and by way of consequence the total length of roads restored and subsequently kept in good in condition under end-to-end 10-y performance-based maintenance contracts.

Finally, in the case when introduction of tolling is considered feasible, the simulation tool allows to measure whether and when the revenue stream of tolls triggers a snowball effect, meaning that the net cash revenues generated by completed restoration projects exceed the ongoing

[168] See definition of restoration in the main report.

[169] In the example presented in the model, the last restoration contract is launched at year 27, the related road section is restored at year 30, tolling if any starts at year 32, and the restoration contract completes at year 41 and at years 42 and 43 the RRW will only fund the maintenance contracts on all the restored road sections.

maintenance costs, increasing the net resources of the RWW and allowing for a further scaling up of the number of restoration projects supported by RWW contributions.

2. Fixed assumptions

The fixed assumptions define the environment within which the financing, contracting and revenue changes are going to be tested. They deal with the mix of roads subject to restoration, the cost of works, the structure of the RWW institutional funding, the types of contracts used to underpin restoration projects[170], the availability of financing through debt, and a few macroeconomic assumptions regarding inflation and the evolution of currency exchange rates.

3. Types of roads being restored

The simulation tool considers four types of national priority alignments exhibiting the typical condition found in most SSA countries and by extension, the volume of repair, reconstruction, strengthening, and maintenance necessary to bring them to good condition throughout, and of improvement required to substantially raise the traffic safety level and adapt critical drainage, slope protection and river crossing works to climate change. The roads targeted for restoration are the high-demand priority alignments where the traffic volume is high. The traffic assumption is set at 8,000 vpd but can be modified.

The unit cost of the various works required is drawn from a recent study commissioned by the African Development Bank. The length of all road restoration projects has been set at 100 km.

4. Institutional resources of the Road Fund available for restoration projects

The Road Restoration Window (RWW) is the autonomous unit of the Road Fund dealing with road restoration. The RRW receives a fixed share of the annual resources of the RF. Both the Road Fund Resources and the share allocated to the RWW are assumed to be stable (i.e., environments where the resources institutionally allocated to the Road Fund vary significantly over time, or the payments from the State to the RF are significantly unreliable, do not fall within the scope of the simulation tool).

Until such time the restoration program is declared completed, all income generated by the roads subsequently to their restoration on RRW funds becomes a resource disbursable solely by the RRW (i.e., it is earmarked for road restoration projects and does not become a fungible resource the other units of the Road Fund can tap into).

[170] Ideally, all the restoration contracts should be PPPs as the discounted cost of a PPP is lower than an equivalent OPRC. However, for various reasons, RFs may elect to use a mix of PPPs and OPRCs to procure the restoration contracts. In particular they may use OPRC for lower cost contracts that would not attract private financing and whose bundling might be not be advisable.

5. Contractual tools used to support road restoration projects

As explained above, the RRW can use two road restoration contracts: OPCRs and PPPs. OPCRs are 10-year contracts, while the duration of the PPPs is 15 years. Regardless of the contract chosen, the first three years cover the so-called "construction" period during which the reconstruction and improvement works are executed.

Under the PPP contract, private partners fund a significant share of the capex investment during the "construction" period through a mix of equity and borrowed funds (debt). The balance of the investment capex is funded by the RF, either through its own resources or through debt. While both the RF and the private partners resort to debt, the RRW is assumed to have access to concessional lending and benefits from better borrowing terms than the private partners.

Once the "construction" period is completed, the private partners maintain the road with a clear set of performance targets. During this "O&M" period, which covers the last 12 years of the PPP contract, the private partners receive two payments from the RRW. One is an averaged remuneration covering the annual cost of maintenance, including project costs (overheads). The second is an availability payment computed to cover the repayment of the equity they brought into the project, the cost of this equity, as well as the cost of their financing through debt for the share of the capex they did not fund through equity.

6. Macroeconomic assumptions

All costs and revenues are stated in US dollars, with a US rate of inflation assumed to be 2% and constant over time. The depreciation of the local currency versus the dollar is expected to reach about 6% per year. Note that while this is consistent with a pool of East and Central African currencies vs the US dollar over the recent period, it does not hold true when dealing with local currencies pegged to the Euro, as in the case of the West African CFA Franc.

7. Variable Assumptions

The variable assumptions are highlighted in yellow in the "Assumptions" sheet of the model. For the purpose of testing four types of roads and two types of contracts, the plausible default values have been highlighted in red.

8. Cost Simulations, Graphs and OPRC vs PPPs sheets

Based on the set of variable assumptions, the sheet "Cost Simulations" provides the detailed annual costs of each A1 and B1 and C3 and C4 types of road treated as PPPs and OPRCs respectively on year 1 of the program. It also provides the annual costs of the follow-up end-to-end 10-y OPRC maintenance contracts. These annual costs are represented as graphs in the sheet "Graphs". The upper graphs refer to the costs without debt financing of the milestone payments by the RF and the lower graph refers to the discounted costs with debt financing of each A1, B1, C3 and C4 type of roads where A1 and B1 are contracted as PPPs and C3 and C4 as OPRCs. For the purpose of comparing the discounted costs of OPRCs and PPPs, this sheet also features the annual costs of A1 and B1 treated as an OPRC and conversely C3 and C4 treated as PPPs. The results are brought into the sheet "OPRC vs PPP" and show that whether

or not the RF can debt finance its milestone payments, the discounted cost of a PPP is always lower than an OPRC's.

9. Cost Simulations Y2 to Y28 sheets

The sheets "Cost Sim Y2" to "Cost Sim Y28" provide the annual costs adjusted for inflation and depreciation of the above contracts when launched in year 2 to year 28. They are used to input the restoration contracts in the "Snowball" sheet.

10. Snowball sheet

The restoration program can be simulated in the "Snowball" sheet. The name snowball makes sense if the restored roads are tolled and the toll revenues exceed the cost of the follow-up maintenance contracts. The default values of the tolling are set at a coverage of 50% of the restored alignment, an average daily traffic of 8,000 vpd, an average toll of USD 5c/km and tolling operational costs of 10%. The cost of the supply and installation of the tolling infrastructure and equipment is included in the contract at $2M at year 1. Of course, the restoration program can be simulated if no tolls are raised – which was done and returned the results provided in the main report. Normally if no tolling is considered, the $2M representing the cost of the tolling infrastructure should be removed but the model does not allow that. Therefore, in the case no tolling are raised, the investment costs are overstated by about 5%.

The RF resources can be customized, however, in the example presented they have been set at $112.5M equivalent, an amount that eight out of eleven analyzed RFs equaled or exceeded in 2017. The corresponding RRW's resources amount at 16% or $18M[171]. These resources are adjusted for inflation in line with the customizable assumptions (2% p.a. representing the US$ inflation) and depreciation (since RF resources are denominated in US$ and it is assumed that the government is committed to maintain 100% of their year 1 value in US$, there is no adjustment for currency depreciation).

Toll collection, if any, can start in year 5 of the restoration contract. First, the road must be repaired and improved, the tolling infrastructure installed, and the toll operator hired; this will happen after 3 years. Second, one year is granted for testing toll operations and finalizing tolling arrangements – communication with road users on the national toll policy and program is undertaken concurrently and separately.

Toll revenues are collected in local currency and are subject to depreciation against the US$. The model also assumes that the traffic volume reaches its set value on the first year and increases at 3% p.a. thereafter. Conversely, the model assumes that the nominal maintenance costs remain constant. The increase of traffic will induce a higher volume of maintenance, but the model

[171] On average in SSA countries, 80% of the RF resources are allocated to the maintenance of national roads and 20% to the maintenance of lower category roads. The former is managed by the Road Agency and the latter growingly by local governments. The RRW is proposed to fund the restoration of national priority alignments using 20% of the envelope earmarked for the maintenance of national roads.

assumes that the combined effects of competition, economy of scale and improved skills will keep the nominal cost of maintenance constant.

The model assumes that toll revenues will be adjusted for US$ inflation every year (most likely by a government allocation) and protected against currency depreciation by an adjustment of the toll applied every five years. The depreciation set in the model is 5.39% p.a., in line with an average 30% depreciation of relevant SSA currencies against the US$ over the period 2013-2017. As a result, the annual toll revenue denominated in USD will decline under the combined effect of an annual decrease of 5.39% (depreciation), and annual increases of 2% (US$ inflation) and 3% (traffic) until every five years when the toll is adjusted to catch up with the depreciation.

Two things should be noted. Number one, that CFAF countries in Western and Central Africa have their currency pegged to the Euro and therefore their depreciation is much lower. Some other countries may experience a significant drop in their exchange rate with hard currencies (100% in Malawi, Zambia and Mozambique over 2013-2017). And number two, that the model assumes that 100% of the contract payments will be made in US$. In reality, over time a growing portion of the works will be paid in local currency up to 100 per cent when they will be executed by local contractors. A growing portion of debt and equity will also be raised in local currency over time. However, when the program starts, it is likely that qualified private parties will be foreign and require debt and equity payments in hard currency.

The number of restoration contracts (A1 and B1 PPPs and C3 and C4 OPRCs) that can be launched each year from year 1 to 27 must be input in the column C cells. The model will load the annual costs of the restoration contracts and of the follow-up maintenance contracts automatically – the model adjusts the costs and revenues to the launch year on its own. The net available cumulated RRW fund resources must be kept positive at all time. This rule decides whether a contract can be launched or not any given year. As shown in the example, no contract can be launched during years 5 to 8, 11, 12 and 17.

The example assumes that the RF will finance 100% of the milestone payments with a soft loan from the government. The model also assumes the government will not require the RF to keep a minimum reserve.

The results after are computed from columns AW to CN. In this example it is assumed that the restoration program will be halted from year 27 because the 10,000 km target of restored roads and 5,000 km of tolled roads will be reached (actually reached on year 30 because it takes 3 years to restore and improve the last road section).

Two graphs respectively show (1) the quasi-exponential progression of restored and fully maintained roads when tolls are raised under the assumed traffic volume, percent coverage, and toll level (if no tolls are raised the progression increases linearly with the RF resources), and (2) the evolution of RF and toll revenues vs contract expenditures.

The simulation also shows that the length of roads that can be restored and fully maintained increases exponentially with the tolling coverage (see section II immediately below).

II. Other findings

The following findings were obtained by modifying the assumptions in the simulation tool.

Table 32 below shows the number of restoration[172] and follow-up maintenance contracts a sample of RFs could fund over 30 years without raising any toll if the fuel levy was adjusted to the global recommendation of US$15c/l equivalent. Only 16% of the resources would be used and managed by a special Road Restoration Window.

Table 32: Adjusted resources of a sample of Road Funds.

Country	2017 fuel levy USD c/l	Adjustment to 15 c/l	2017 Resources	Adj Resources	Rest Cont w/o tolls
IVC	4	3.75	183	586	22
Mozambique	5	3.00	283	736	28
Namibia	8	1.875	164	279	11
Ghana	8	1.875	182	309	12
Cameroon	10	1.5	100	280	11
Senegal	12	1.25	127	152	6

Senegal appears to receive less fuel levy resources than collected

Adjustment of Cameroon resources also includes removing the 50% cap on RUC

Figure 21 below shows the linear relationship between the resources level of a Road Fund (year 2017), and the number of restoration and follow-up maintenance contracts that could be funded over 30 years, without raising any toll on the restored roads.

Figure 21 : Number of restoration contract in terms of the annual resources commended by a Road Fund.

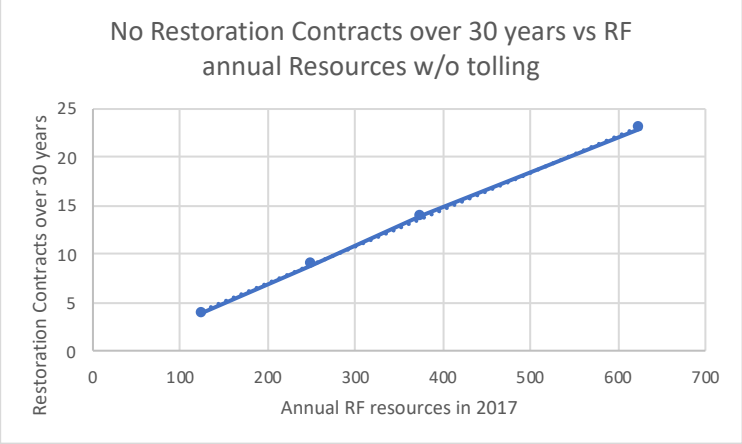
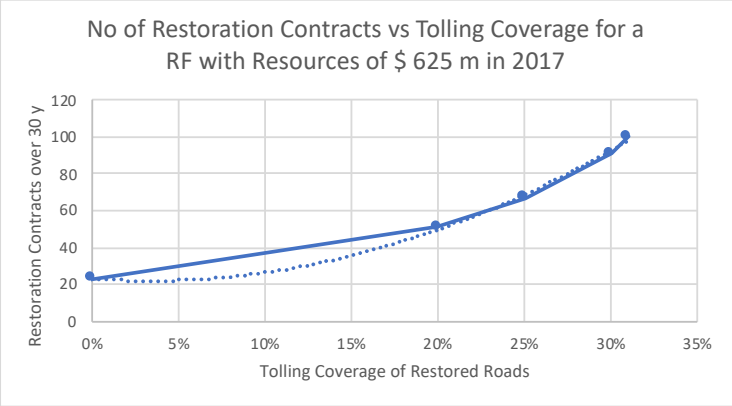


Figure 22 below shows the quasi-exponential relationship between the number of restoration and follow-up maintenance contracts that can be funded and the average tolling coverage expressed in percent of the restored sections' length.

[172] Restoration contracts are either OPRCs or PPPs for a 100km long priority alignment.

Figure 22: Number of restoration contract in terms of the portion of tolled restored sections.



Annex 9 A proposed model for Road Restoration PPPs

Contents of Annex 9

I. Proposed typical features of a Road Restoration PPP

Feature	Description
Type of PPP project	DBFOMT Brownfield Gov-Pays with demand risk retained by the public sector
Scope	Rehabilitation/reconstruction of existing paved roads, including bridges, culverts, roads intersection, etc. Localized upgrading (from gravel to pavement) and capacity increase Operation and maintenance, including major maintenance and renewal.
Length	Length to be determined, but should cover a significant portion of a Priority Alignment
CAPEX	To be determined regarding affordability for the public sector. Possibility to bundle several Priority Alignments under the same contract to make contract sizeable and if practical from a technical point of view
Milestone Payments	To be determined regarding affordability for the public sector
Contract duration	Not less than 15 years, including a construction period of about 3 years. Contract duration could be longer (e.g. 20-25 years) for affordability reasons or for technical reasons (life duration of specific assets)
Contracting Authority	Road Agency
Project Co. revenues	Availability Payments (semestrial or quarterly) made by the Road Fund
Gov. Support	As owner of both the Road Agency and the Road Fund, the Government would be expected to step-in in case of revenue shortfall regarding Availability Payments or early termination payments.
Potential World Bank Group (WBG) support	The WBG can provide a broad range of instruments to make Road Restoration PPPs affordable for the public sector are attractive for the private sector. Support to the public sector: - IDA/IBRD credit/loans to contribute to milestone payments - IFC Advisory services e.g. to prepare a pipeline of projects, draft standardized tender documents and potentially tender projects Support to the private sector: - IDA/IBRD guarantees e.g. to backstop Availability Payments or backstop early termination payments - MIGA political risk insurance for equity investors and lenders - IFC loan to the Project Co. - IFC equity to the Project Co. - IFC guarantees Support to be determined considering specificities of project and country context. To the extent it is possible, Guarantees and Insurance Products should be made available as part of the tender documents.
Other support	Application for Global Infrastructure Facility funding to fund advisory services (either project definition or project preparation and structuring activities).

II. Proposed typical commercial structure of a Road Restoration PPP

1. Project Finance structure derived from a PPA structure

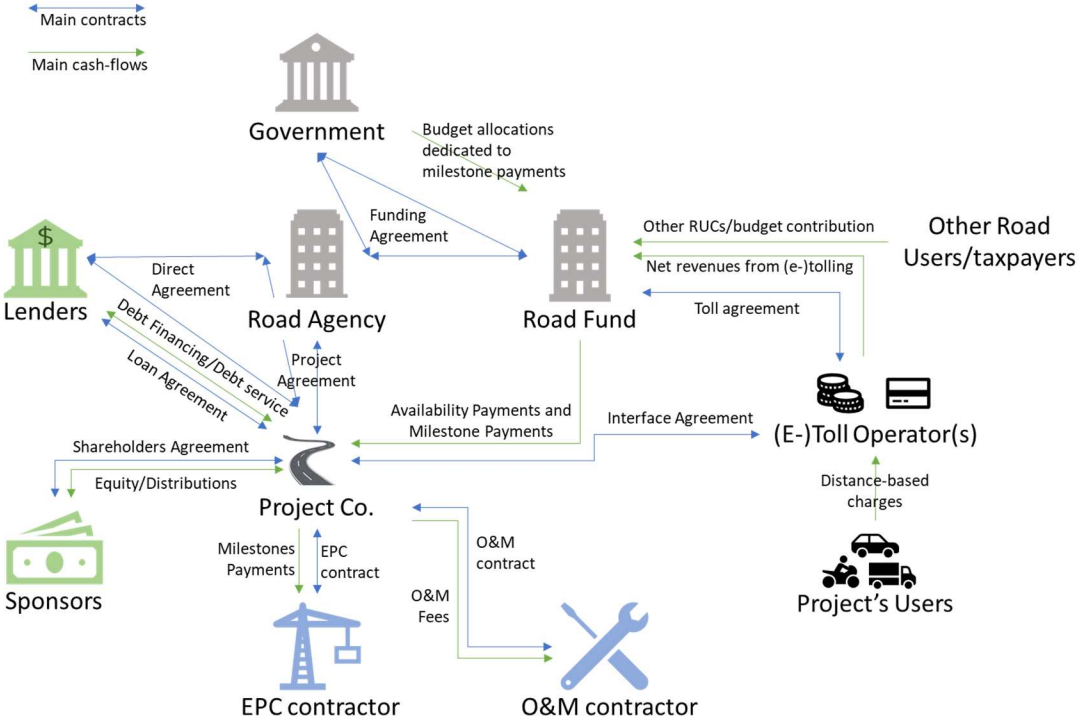
By analogy with a PPA, the Road Fund is proposed to act as the "off-taker". The Road Fund would then be required to pay the Project Co. the agreed Availability Payments if the road is made available at the required level of service, irrespective of the traffic.

For simplicity purposes the proposed structure does not display WBG support like IDA/IBRD credit/loan and guarantees, MIGA Political Risk Insurance or IFC Guarantees. However, the mobilization of these instruments in the Road Restoration PPP project cycle is discussed afterwards (see section III).

Alternative commercial structures can be adapted without substantially changing the rationale to account for:

- specificities in countries' institutional framework (e.g. no Road Agency, or the National PPP Unit as the Contracting Authority);
- alternative toll operator(s) scheme, with another contracting authority (e.g. the Road Agency), or another legal arrangement (e.g. toll-operating SOE);
- alternative funding scheme for the potential milestone payments, which could be done directly by the Road Agency or the Gov.

Figure 23: Commercial structure for the proposed Road Restoration PPP.



2. Overview of typical contracts included in the proposed structure[173, 174, 175]:

The proposed structure includes contracts that are typically found in any other PPP structure:

- **project agreement**. This is the central contract in the structure. It frames the scope of the project and governs the rights and obligations of the parties (Road Agency and Project Co.). It must also frame how changes and risks affecting the outcome of the project are treated;
- **EPC contract**. It is a turnkey, fixed price, date-certain and back-to-back contract through which the obligations of Project Co. related to design and construction are passed (including Liquidated Damages);
- **O&M contract**. Back-to-back contract through which the obligations of Project Co. related to operations and maintenance of the road are passed. Usually signed at least at financial close. There may be different O&M contractors during the whole contract duration, because Project Co. might try to obtain more competitive O&M prices from another contractor. Project Co. may also decide to separate major maintenance and renewal from routine maintenance and operations;
- **Loan Agreement[176]**. It is one the financing agreements[177]. It governs how funds are provided to the Project Company by lenders and how they are recouped. Among the key terms are the debt features (amount, price, fees), the draw-down requirements and repayment profile, the financial covenants and other ratios to measure and ensure financial robustness, default events that may lead to anticipated reimbursement of outstanding principal;
- **Shareholders' agreement[178]**. It derives from the consortium agreement into which the member of the winning consortium entered during the tender phase. It addresses issues including: Project Co. Board representation and voting rights, Project Co.'s governance, budgeting and dividend distribution policy, management of daily activities, as well as the shareholders' exit process.
- **Direct Agreement**. Signed between the Project Company, the Road Agency and (optionally) the lenders. This agreement establishes or reinforces the lenders rights (cure rights, step-in rights, substitution rights) in case of occurrence of a Project Company event of default.

---

[173] ADB, EBRD, IDB, IsDB, MIF, PPIAF and WBG. The APMG Public-Private Partnership certification guide. Chapter 1: PPP – Introduction and overview and Chapter 5: Structuring and drafting the tender documents and contract. 2016.

[174] https://pppknowledgelab.org/glossary/direct-agreement

[175] IFC. Sao Paulo Roads Project – Transaction structure. 2018

[176] For simplification this structure does not make any assumption on the debt solution adopted (bonds/commercial debt, tranching, club deal/syndication, etc.).

[177] Other financing agreements are for example: inter-creditor agreement or project account agreements.

[178] For simplification this structure does not make assumptions on the equity solution adopted (equity bridge loan/equity/shareholders subordinated debt, etc.).

3. Overview of contract specific to the proposed commercial structure

The proposed commercial structure includes other contracts that are specific to this model:

- **Funding agreement**. This agreement would be signed between the Government, the Road Agency and the Road Fund. It would be part of the tender documents to give visibility to bidders on how public payments to the Project Company will be governed. It should also give enough confidence that payments due will be made on time. This contract would address *inter alia*: responsibilities for making milestone payments, availability payments, and early termination payments, payment system including the approval process, etc;
- **Toll agreement**. Some of the Priority Alignments will be tolled once restored. Whether there will be only one or several toll operators depends on governmental decisions. The toll agreement would be signed between the toll operator and the Road Fund. It would govern *inter alia*: the technical specificities to ensure interoperability in case several toll operators will co-exist, performance objectives in terms of toll collection, organization of flows from the users to the Road Fund (potentially with a fiduciary). The toll system could be developed and managed under various schemes (from traditional public procurement to PPP options).
- **Interface agreement**. Based on the assumption that the tolling system would be developed and managed by a third-party (i.e. not the Project Company itself). This interface agreement, would govern *inter alia*: technical issues like access to the site to install the system and to operate/manage it, mutual liquidated damages, etc.

III. World Bank Group support for affordable and attractive Road Restoration PPPs[179, 180]

Entities of the WBG can provide a range of financial instruments (loans/credits and guarantees) to either the Project Company or the Government (and its agencies). Table 33 and Table 34 respectively address how these instruments[181] could be mobilized in the context of a Road Restoration PPP.

Table 33: Overview of World Bank Group loans and credits in the context of a Road Restoration PPP.

	IBRD[182]	IDA[182]	IFC
Client	Governments[183] of Middle-Income or creditworthy Low-Income countries	Governments of poorest countries Or Governments of "blend countries"	Project Company
Terms	Favorable market terms, with Interest Rates (IR) close to those available for AAA countries	Concessional credit with: zero (or low) IR, 25 to 40y maturities, 5 to 10y grace period Or Concessional credit with: IBRD IR, long maturities, fully flexible repayment	Loans with market pricing, up to 15y maturity, grace period A-loan: senior secured debt B-loan: syndication where a portion of senior secured debt is sold to commercial Banks C-loan: subordinated debt with features to compensate for higher risk
Sovereign Guarantee required	N/A		No
Timing in the PPP project cycle	Negotiations begin at the end of identification and screening phase. Loan/credit approval by the Board as soon as possible in the PPP project cycle, ideally before Tender phase		Negotiations with bidding consortium begins during tender phase. Loan approved by the Board at the end of Tender Phase

[179] World Bank Group. Maximizing Finance for Development in Transport. Getting from concept to investments. Report 2: Operational Guidance. 2019.

[180] World Bank Group. World Bank Group Guarantee Products, Guidance note. April 2016.

[181] IFC's guarantee products are however rarely used in the context of PPPs.

[182] IBRD/IDA loans/credits provided as IPF (Investment Project Financing) or PforR (Program for Results) are the most suitable in the context of a Road Restoration PPP. IDA is also able to provide grants to countries at risk of debt distress.

[183] IBRD may also lend directly to Project Company, which would require a sovereign guarantee.

Objectives	Co-finance milestone payments during construction period[184]	Co-finance the bulk of private finance raised by Project Company[185]
Benefits	Lowering the cost of capital of the PPP and increasing affordability	Increase affordability with long maturities Mobilize commercial banks with B or C loans structures

Table 34: Overview of World bank Group guarantees and insurance products in the context of a Road Restoration PPP.

	IBRD/IDA	MIGA	IFC
Client	Lenders of Project Company Or Project Company	Cross-border investors (lenders or equity providers)	Lenders (either national or cross-border)
Terms	IBRD/IDA loan/credit equivalency Loan guarantee covering up to 100% of debt service against government actions or inactions Or Payment Guarantee[186] against payment default from government (or entities owned by government)	Based on administrative costs as well as country and project risks Credit enhancement and Insurance against political risks (currency convertibility and transfer restrictions, expropriation, war and civil disturbance, breach of contract, non-honoring of financial obligation) Coverage of up to 95% of debt (99% in special circumstances) and 90% of equity (95% in special circumstances)	Market pricing. Partial and full credit guarantees covering shortfall in debt service for any case of default Guarantees can be denominated of local or international currencies
Sovereign Guarantee required	Yes, counter-guarantee from Government required	No, but approval of Government before	No

[184] In countries where governments wish to hold shares in a PPP Project Company, IBRD/IDA loans/credits could finance this participation.

[185] On top of providing loans to Project Companies, IFC is also able to invest in equity.

[186] Either provide as direct payment guarantees or guarantee to a standby letter of credit provided by a commercial bank.

		issuance of guarantee	
Timing in the PPP project cycle	Negotiations during Appraisal phase. Market sounding should highlight the need for guarantees. Guarantees approved by the Board ideally before Tender Phase and proposed as part of the tender documents	Market sounding should reveal the need for guarantees. Negotiations with bidding consortia during Tender phase.	
Objectives	Cover (part of) the debt service, Availability Payments or Early Termination Payments	Provide insurance to cross-border investments (either debt or equity).	Provide insurance to debt provider against any case of default leading to a debt service shortfall
Benefits	Enhance creditworthiness of the Road Fund/Road Agency/Government. Give visibility and comfort to private financiers	Give comfort to cross-border financiers by de-risking the project.	Give comfort to lenders by providing credit enhancement.

These instruments are not exclusive and can be blended to address specific needs of a country and project. Moreover, other non-financial instruments can be mobilized to support project definition, structuring and tendering (IBRD/IDA Technical Assistances or IFC Advisory services).

To summarize on WBG instruments that could be mobilized to support Road Restoration PPPs:

- **Timing of mobilization**. To accelerate implementation and create a competitive environment, it is important to enable a quick tender process giving visibility and comfort to bidders. A market sounding conducted during Appraisal phase should reveal gaps and specific needs of the private sector to engage into Road Restoration PPPs. To accelerate the Tender phase, it would be interesting to propose as much WBG guarantees as possible as part of Tender documents, as was done for the Ganta-Zwedru road corridor rehabilitation PPP in Liberia;
- **How to optimally mobilize WBG financial and non-financial instruments to prepare and implement Road Restoration PPPs?** PPPs are complex tools that require significant project management skills and different financial and non-financial instruments to be implemented. From the country client perspective, it may be hard to have a complete picture of what needs to be done to implement Road Restoration PPPs, particularly if there

is no proven track record in the country. The coordination of WBG interventions[187] thus seems a key issue, to offer client countries solutions that could for example address:

- **Road PPP diagnosis**: identification of gaps in the legal/institutional framework to implement PPPs in the Road sector.
- **A Priority Alignments diagnosis**: identification of priority alignments to restore and further toll. Preparation of a strategic program
- **Diagnosis of the local construction industry**: identification of local road contractors and their technical and financial capacities to enter Road Restoration PPPs; based on this diagnosis, elaboration of a strategy to ensure that the restoration concept benefits the local industry (sub-contracting, capacity building, etc.);
- **Diagnosis of the local financial industry**: identification of local commercial banks and their ability to provide commercial debt with the desired features; capacity building; identification of local institutional investors (e.g. pension fund, insurance companies) and the legal gaps preventing them from providing finance to road PPPs; identification of existing National Infrastructure Bank to play a role in the implementation of road PPPs;
- **Project Preparation and Road Restoration PPP programming and structuring**: market sounding to evoke private sector interest and identify market gaps. Propose WBG financial instruments to address gaps. Drafting of standardized tender documents (RFQ, RFP, project agreement, direct agreement, funding agreement, toll agreement, interface agreement). If the market sounding reveals the necessity of WBG guarantees, these products would need to be prepared with the client country so that they can be made available as soon as possible in the tender process;
- **Assistance for transaction advisory funding**: prepare and manage application process for GIF funding (could be compatible with either a Transaction Advisory mandate executed by an independent advisor or by IFC)
- **Assistance for contract management**: identification of skills and staff needed to manage the PPP contracts, capacity building.

[187] The scaling solar initiative () or IDB's PPP framework (https://blogs.iadb.org/bidinvest/en/support-structuring-public-private-partnerships/) are interesting turnkey solutions

IV. Proposed typical Risk Allocation Matrix for Road Restoration PPPs and associated mitigation mechanisms[188, 189, 190]

Risk	Allocation	Description	Mitigation
Risks related to construction phase			
Land availability	Contracting Authority	Risk of delay and cost overruns in the acquisition of the land necessary to develop the project.	Right-of-way should be almost fully cleared before commercial close. The remaining right-of-way (e.g. for service areas proposed by bidders) should be cleared within a specified date and should be a condition precedent for drawdown of IBRD/IDA loans/credit. This risk is mitigated by the fact that a Road Restoration PPP would focus on brownfield project and thus limit land acquisitions.
Site risks	Shared	Risk of delay and cost overruns due to conditions of the project's site (geotechnical, pollution and hazardous materials, latent defects, utility reallocation, etc.)	In preparing the project, the Contracting Authority should produce detailed surveys to investigate and collect relevant information and make it accessible to bidders. In the event some portions of the project are still under warranty, the Contracting Authority should transfer the right to claim the previous contractor to the Project Co. If for some risks, the surveys show very low probability of occurrence but high materiality, the contract should organize a limited exposure to the risk both in terms of costs and delays. Consequences should be retained by the Contracting Authority above that cap (e.g. qualification as compensation or relief events detailed below)

[188] https://ppp-risk.gihub.org/risk_category/road/

[189] APMG Guide chapter 5

[190] PPP in Infrastructure Resource Center for Contracts, Laws and Regulations (PPPIRC). Matrix of risk distribution for roads. March 2008.

Environmental and social risks	Shared	Risk of delays and cost overruns in obtaining environmental clearance and conducting resettlement of impacted population	During preparation of the project, an Environmental and Social Impact Assessment (ESIA) will be conducted and approved by the Government according local regulations and WBG environmental safeguards. As part of the full ESIA, a Resettlement Action Plan and an Environmental Action Plan should be approved. The Contracting Authority should implement the Resettlement Action Plan before commercial close. The Project Company should be responsible of the implementation of the agreed environmental action plan during the whole contract duration.
Other permits including commissioning	Shared	Risk of delays and cost overruns in obtaining other technical permits and clearances (e.g. detailed design, testing before commissioning, etc.).	It is the Project Co.'s responsibility to conduct the permitting process in accordance with local regulations and contractual clauses. Failure to comply with contractual clauses will lead to Liquidated Damages which are usually transferred back-to-back to the EPC contractor. The Contracting Authority will set a contract management framework including a consolidated completion schedule of the project with the contractual periods to review documents submitted by Project Co. Some permits granted by other authorities may have a material impact on completion schedule. These permits should be identified during project preparation and tender phases. The Contracting Authority may need to take some responsibility in case of delays in approval (e.g. qualification as relief or compensation events detailed below).

Design risks	Project Co.	Delay and cost overruns caused by defects in the design of asset being built leading to a change of project Increase in O&M costs caused by defects in the design of built asset leading to underperformance	The Contracting Authority usually provides a preliminary design as part of the tender documents. Bidders are responsible for errors if they adopt this preliminary design for their detailed design. These risks are transferred back-to-back to the EPC contractor
Construction risk	Project Co.	Risk of delay and cost overruns caused by any event (excluding where compensation/relief regimen applies), such as strike on work site, interface between subcontractors, project management, quality of construction, etc.	Delay in completion (milestones or substantial completion) of the project will lead to Liquidated Damages that are usually capped. Project Co. transfers all these risks back-to-back to the EPC contractor through a date and cost certain contract. The EPC contract will contain a warranty period during which the EPC contractor will have to rectify any defect.
Risks related to operation phase			
Demand/revenue risk	Contracting Authority	Risk that resources collected from users of the project will be different from the forecast revenues.	Availability Payments will be made by the Road Fund irrespective of whether the forecast revenues are met or not. The Road Fund will use its resources (including tolls if any) to meet its payment obligations
Off-taker/revenue risk	Project Co.	Risk that the Road Fund will not be able to fulfill its payment obligations (e.g. making the Availability Payments in due time according to contractual clauses).	The Funding Agreement as well as financial and annual reports of the Road Fund will be made available to bidders during Tender phase. Since the concept of carving out a Road Restoration Window within the existing Road Fund will be new, a payment guarantee from the government, counter-guaranteed by IBRD/IDA should be also included in the tender documents.

Maintenance and operations costs	Project Co.	Risk that maintenance (including routine and periodic) and operation costs of the project will be higher than expected.	There are three different aspects in this risk: (1) periodic maintenance and renewal costs, (2) the share of Heavy Goods Vehicles, and (3) the Axle load regulation enforcement (1) This risk refers to life-cycle management of the road, and should be thus transferred to the Project Co. To face the periodic maintenance costs, lenders will require the Project Co. to use a portion of the Availability Payments to flow into a specific reserve account. (2) Project Co. will make its own traffic studies that will be reviewed by the lenders to determine the cost of maintenance (particularly the share of heavy goods vehicles), in principle this risk should be transferred to Project Co. (3) The case of the axle load regulation enforcement might need specific mitigation since it is usually a major issue in Sub-Saharan African countries. If the enforcement of axle load regulation can be legally undertaken by the Project Co. then it should retain this risk. Otherwise, the Project Co. should be compensated to account for the extra cost of overloading, if authorities are unable to enforce axle load regulations.
Other operating costs	Shared	Risk that other costs (general Project Co. costs, utility costs, etc.) will be higher than forecast	Some of these risks are usually fully transferred to the Project Co. (e.g. general costs) and are mitigated by the provision as part of the bid of a detailed resource planning and budgeting. Utility costs (e.g. electricity to light the road) may be difficult to manage and a shared approach (e.g. capping the total utility costs, sharing the extra-cost and sharing the upside in case of lower cost; paying bills *ad valorem* but with deductions to account for over consumption of electricity if any). Insurance costs as well may be difficult to anticipate and a shared approach could be needed to account for premium significantly increasing over inflation.

Availability and performance	Project Co.	Risk that the road will not be available for use or will fail to meet expected performance levels	This risk is retained by the Project Co. which organizes its transfer to its sub-contractors. From the Project Co. point of view this risk materializes through Deductions and Liquidated Damages that will decrease the Availability Payments. For the Contracting Authority, since the road may be tolled, it is necessary to provide the right incentive to Project Co. to meet expected performance and enhance willingness to pay. This is achieved by: - Selecting adequate Key Performance Indicators and setting challenging and reasonable targets - Setting a balanced maximum Deduction/Liquidated Damages that can reduce equity Internal Rate of Return and O&M contractor margin but not conduct to insolvency and then bankruptcy
Hand-back conditions	Project Co.	Risk that the road will not meet performance requirements at the end of the contract	The contract will clearly define what technical condition the road must meet before being handed back to the Contracting Authority, so that the bidders can take these costs into account in their financial model. Inspections and Availability Payments retentions in the last years of the contract are mechanisms that can be set to incentivize Project Co.
Financial and economic risks			
Availability of finance	Project Co.	Risk that debt available at financial close has less favorable conditions than anticipated in bids (shorter tenor, higher DSCR, higher risk margin and fees, etc.)	Although this risk is transferred to the Project Co., the Contracting Authority can contribute to mitigating it by conducting market sounding during appraisal phase.

Interest rate before financial close	Contracting Authority	Risk that the base interest rate is different at financial close than anticipated in the bids	Base interest rate variations between bids and financial close cannot be managed by the Project Co. It can result in an upside or a downside. The awardee financial model will be updated to reflect the base interest rate at financial close. The Availability Payments will be adjusted consequently.
Interest rate after financial close	Project Co.	Risk that the base interest rate varies after financial close	Base interest rate variations after financial close can be managed by the Project Co. by contracting hedging products (Interest Rate Swaps).
Foreign exchange risk	Shared	Risk of mismatch between currencies in which revenues and debt/equity are denominated (cross-border investments only)	Depending on country context, there are different options to mitigate this risk. The Contracting Authority may wish to propose in the tender documents that a percentage (capped and to be proposed by bidders) be denominated in a hard currency. If that percentage is not sufficient to cover debt service and equity distributions denominated in that hard currency, then the Project Co. would contract hedging products (foreign exchange swaps) for the remaining portion.
Currency convertibility and transferability	Project Co.	Risk of investors' inability to legally convert local currency into hard currency (cross-border investments only) and/or transfer converted currency	Depending on country context, lenders and equity investors of Project Co. may wish to contract a Political Risk Insurance with MIGA, that will cover them against this risk provided that the restrictions are introduced after the PRI contract is signed.
Inflation	Shared	Risk of inflation of costs and revenues of Project Co. different than anticipated in bids.	During Construction period, at each milestone, the inflation anticipated will be compared to the observed inflation. If observed inflation is lower than anticipated, then this is a gain for the Contracting Authority (e.g. reducing the milestone payments).

			Otherwise the difference must be paid by the Contracting Authority (e.g. increasing the milestone payments). During operation period, some portion of the Availability Payments will be adjusted to account for inflation (e.g. those portions dedicated to cover O&M costs). The portion of Availability Payments dedicated to cover debt service and distribution is however not indexed (inflation anticipated by lenders and investors is already considered in the cost of capital). These adjustments to account for inflation are based on a statistical index (e.g. CPI or any relevant index) or a formula using a basket of indices.
Risks related to both phases			
Change in law	Shared	Risk that a change in policies/regulations affects the project's outcome and impacts Project Co.'s costs	If the change in law is general, Project Co. may be exposed to the financial consequences up to a cap defined in the contract and then compensated by the Contracting Authority. If the change in law is discriminatory, then the contract should anticipate full compensation. It is paramount that the various government agencies than can propose laws and regulations are fully aware of the risk allocation in PPP contracts. The PPP unit should take on this role.
Change in scope	Contracting Authority	Risk that a change in scope of works or services affects the project's outcome and impacts Project Co.'s costs	The change of scope could be initiated either by the Contracting Authority or the Project Co. In any case, the Contracting Authority decides whether the change needs to be undertaken and compensate Project Co. fairly. A transparent mechanism needs to be included in the contract to govern such changes, e.g.: - Creation of a Modification Reserve Account at contract inception by the Project Co. The amount deposited in this Account is capped as specified by the contract. The

			outstanding amounts at the end of the contract are cashed out by the Contracting Authority - Provision of impact studies that includes an outline of technical solution, the cost of the change and its detailed impact on Availability Payments, modification of project agreement if need be; - The Contracting Authority should then have the option to undertake the change itself or ask the Project Co. to undertake it; - Whatever the option, the amounts available in the Modification Reserve Account are first used to fund the change. If these amounts are not sufficient, the Contracting Authority should then have the option to fund the change either by making milestone payments or asking the Project Co. to raise additional finance to fund the change (which may lead to an increase of Availability Payments) - The Availability Payments are adjusted to account for the impact on costs of the change only (either an increase or a decrease)
Force Majeure events	Shared	Risk that events external to the Parties, unpredictable and irresistible delay or prohibit performance	The project agreement will include a list of events that constitute Force Majeure. These events may be subcategorized as Acts of God or Political Force Majeure. The contracting Authority and the Project Co. will be contractually committed to avoid and mitigate the consequences of such events. The project agreement will require the Project Co. to insure some of these risks in which case, the first losses will be borne by Project Co. During the duration of Force Majeure events Project Co. is relieved from availability and performance obligations. The Contracting Authority should continue to pay a portion of the Availability Payments (the portion related to investment and the

			portion related to O&M costs in the limit of the services that have been provided). If the Force Majeure event lasts over a duration set in the project agreement, both parties should be able to ask for early termination.
Compensation and relief events	Shared	Risk that some specific and exceptional events delay or prohibit performance	The Project Agreement will include a clear, precise and exhaustive list of events that may lead to compensation or relief. These events are project and country specific. The project agreement will include how these events are governed: - Process to identify occurrence of event - Conditions to determine right of access to relief or compensation - Obligations related to information and communications between parties Compensation events could be fully or partially compensated. If fully compensated it is done on a “no-better-no-worse basis” Relief events could lead to a relief from full or partial performance and contractual obligations.
Early termination	Shared	Risk of the contract being terminated before its term and the financial consequences of such termination	The Project Agreement will usually include several cases of early termination and associated formulas (cf. typical cases below). The formulas should be clear and help lenders and investors identify the amounts they are entitled to receive. The project agreement will also govern the associated processes (timing of notification, right to rectify, calculation of compensation, timing of payment, etc.) <u>Early Termination for Convenience (General Interest) and Contracting Authority default</u>:

			During construction period 100% outstanding debt + 100%outstanding equity instruments + loss of profit – Deduction/Liquidated Damages – Insurance proceeds + sub-contracts breakage costs (capped) +/- loss/gains due to hedging instruments breakage Loss of profit is calculated as the equity instruments injected (excluding equity bridge loan) and remunerated at the base-case equity IRR on a yearly basis *Operation period* 100% outstanding debt + loss of profit – Deduction/Liquidated Damages – Insurance proceeds + sub-contracts breakage costs (capped) +/- loss/gains due to hedging instruments breakage Loss of profit is the amount to pay to the Project Co., considering all the equity cash-flows since inception (equity injection, drawdown on shareholder's subordinated debt, distribution, shareholder's debt repayment), so that the base-case equity IRR is reached at termination date. <u>Early Termination for prolonged Force Majeure</u>: 100% outstanding debt + 100%outstanding equity instruments – Deduction/Liquidated Damages – Insurance proceeds + sub-contracts breakage costs (capped) +/- loss/gains due to hedging instruments breakage <u>Early termination for Project Co. Default</u>: (between 95% and 100%) outstanding debt – Deductions/Liquidated damages – Insurance Proceeds +/- loss/gains due to hedging instruments breakage Since Road PPPs are quite new concepts in most Sub-Saharan African countries, it is preferable to include an IBRD/IDA Direct

			Payment Guarantee in the tender documents to mitigate the risk of fund shortages to pay the compensation in case of early termination.
Uninsurable risks	Shared	Risk that insurance for a particular risk becomes unavailable	If an uninsured risk occurs, Project Co. will bear the consequences. However if the uninsured risk is fundamental to the project, the project agreement should propose an exit route for Project Co. (e.g. early termination for prolonged force majeure) if the project cannot be reinstated on an economic basis.

V. Proposed typical Payment mechanism for Road Restoration PPPs

Since the Road Restoration PPPs would focus on brownfield projects, it is expected that the Project Company would start operating the road at contract inception on a degraded mode (lower operation costs and lower performance objectives) until operation period begins. Availability Payments during construction period and operation periods need thus to be distinguished.

During Construction Period, Project Company would receive Milestone Payments and Availability Payments that would be made quarterly (or on a semestrial basis) and would consist in the sum of (see Figure 24):

- Operation Payment. This would cover the operation expenses of the road excluding electricity necessary to road operation. The Operation Payment would be indexed using a statistical index or a basket of indices reflecting these costs;
- Electricity Payment. This would cover the electricity expenses necessary to operate the road. Contrary to the other Payments, the Electricity Payment would be made *ad valorem* (based on electricity bills paid by Project Co.) after deduction in case of consumption of electricity exceeds the consumption cap set in the contract;
- General Operation Payment. This would cover Project Co. expenses, taxes, insurances during construction period. The General Operation Payment would be indexed using a statistical index or a basket of indices reflecting these costs.

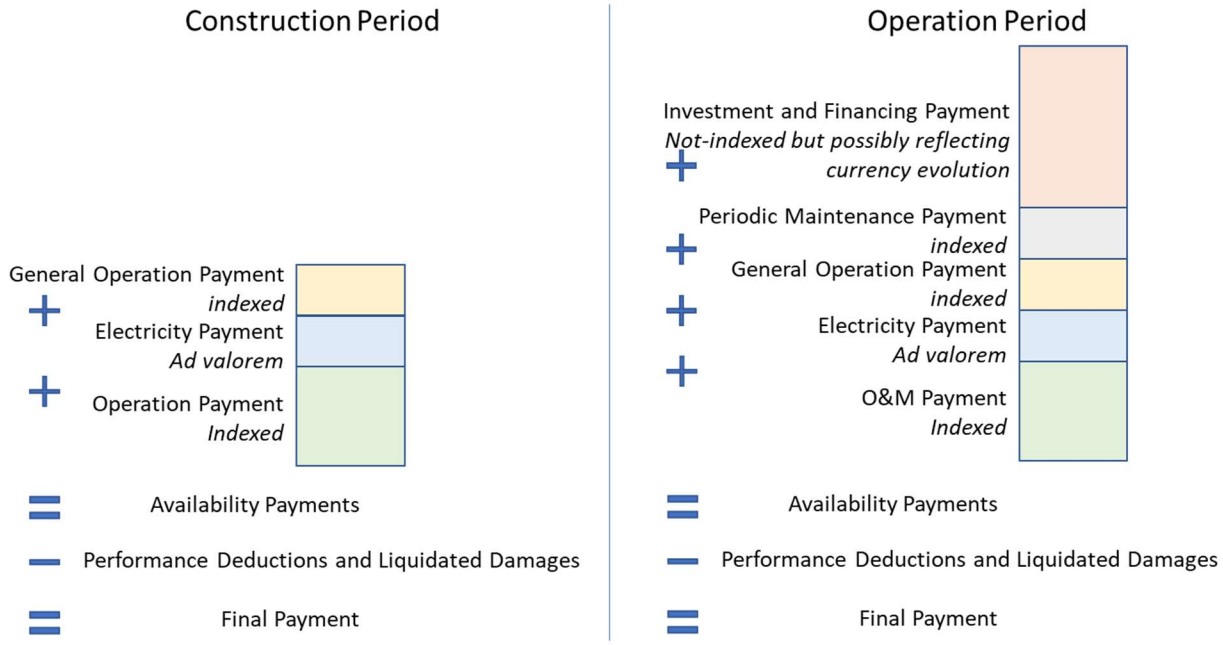
During Operation Period, the full Availability Payments would be made quarterly (or on a semestrial basis) and would consist in the sum of (see Figure 24):

- Investment and Financing Payment. This would cover debt service (principal and interest), and distribution to shareholders (dividends, equity repayment, subordinated shareholder's loan service). The Investment and Financing Payment would not be indexed, but could (at least partially) be adjusted to reflect local currency vs. hard currency evolution as a mitigation of the Foreign Exchange Risk (see section IV);
- O&M Payment. This would cover the operation and maintenance expenses of the roads excluding electricity necessary to road operation. The O&M Payment would be indexed using a statistical index or a basket of indices reflecting these costs;
- Electricity Payment. This would cover the electricity expenses necessary to operate the road. Contrary to the other Payments, the Electricity Payment would be made *ad valorem* (based on electricity bills paid by Project Co.) after deduction in case of consumption of electricity are above the target set in the contract;
- Periodic Maintenance and Renewal Payment. This would cover life-cycle costs of the road. The Periodic Maintenance and Renewal Payment would be indexed using a statistical index or a basket of indices reflecting these costs. The tender documents could specifically require the bidders to equalize the sum of Investment and Financing Payment and Major Maintenance and Renewal Payment over operation period;
- General Operation Payment. This would cover Project Co. expenses, taxes, insurances. The General Operation Payment would be indexed using a statistical index or a basket of indices reflecting these costs.

The contract would then detail the billing process that would include:

- The timing of billing submission
- The detail of all calculations (Indexation, Deductions, Liquidated Damages)
- The final sum to be paid, i.e. Availability Payments minus Deductions and Liquidated Damages;
- The timing for the Contracting Authority to review and challenge the bill
- The timing for the Road Fund to pay the bill

Figure 24: example of Payment Mechanism for Road Restoration PPPs.



The Project Agreement would also detail how the first and last Availability Payments are calculated (usually on a *pro rata* basis).

The value of each Payment would be indicated in the project agreement in real terms and would be evaluated as part of bid assessment during tender phase.

VI. Proposed mechanisms on key “acceptability” clauses:

The Project Agreement will typically reflect the risk allocation matrix and its proposed mitigation mechanisms, as well as the payment mechanism that will constitute the bulk of “bankability” clauses.

Other key clauses that are related to Public Sector rights and may increase general support for the PPP projects (so called “acceptability” clauses), are not included in the risk allocation matrix, but detailed below:

- **Refinancing gain**. During the life of a PPP contract it is not uncommon for Project Co.’s debt to be refinanced once or twice, which may lead to significant gains (e.g. decrease of base interest rate, decrease of margin because certain risks are passed for example after substantial completion, etc.). Moreover, since the cost of debt has a direct impact on Availability Payments, it is good practice to include a clause requiring the Project Company to search each year for a refinancing gain. Project Co. would submit each year a report to the Contracting Authority with its analysis of market conditions and would highlight any refinancing opportunity. Based on this report, the Contracting Authority would ask the Project Co. to refinance its debt. The refinancing gain would then be shared between both parties. The Contracting Authority’s share would then be paid either through a decrease in Availability Payments or through a lump-sum paid after refinancing is completed;
- **Social and economic inclusion**. To ensure buy-in from general public and governmental authorities, Road Restoration PPPs should maximize the benefits to local communities and local economy. The project agreement could include clauses setting targets e.g. for local sub-contracting of works (either during construction or operation period), employment of vulnerable populations (disabled persons, gender criteria, indigenous population members). The Project Company would submit each year a report demonstrating where it stands compared to the target set. A failure to comply would then lead to Liquidated Damages;
- **Contracting authority audit/control over Project Company**. The Project Agreement should include clauses giving audit/control rights to the Contracting Authority, such as:
    - Contract Management meeting at least once a year between Project Company and the Contracting Authority;
    - Provision of Yearly Contract Management Reports including *inter alia*: report from lender technical advisors during construction period, audited financial statements, a feedback on works, O&M, major maintenance and renewal activities, the results of Key Performance Indicators (see below for elements on the performance regime), the list of contracts (including name of contractors) passed by Project Company, the Refinancing Gain report, The Social and Economic Inclusion Report, a feedback on the implementation of the Environmental Management Plan;
    - Provision to the Contracting authority of all documents submitted to shareholders particularly during General Assemblies;
    - The rights to conduct inspections at any time, the right to access any document and facility to conduct these inspections.
- **Contracting Authority control over shareholding changes**. Control over shareholding changes needs to be balanced. Initial shareholders may want to exit at some point, particularly in long-term contracts. On the other hand, the Contracting Authority needs to

feel comfortable that the shareholders have not only a financial interest but a technical one, too, to make the project successful. The principles governing the shareholding changes could be as follow:

  - During construction period, no change of shareholders except exchange of shares between initial shareholders;
  - Minimal floor for industrial shareholders (e.g. EPC and O&M contractor) during the whole duration of the contract;
  - No exiting of EPC contractor during the works warranty period;
  - Most shareholding changes should be submitted to the approval of the Contracting Authority. The submission should demonstrate that the change will not negatively affect the technical or financial capacities of the Project Company;
  - Some shareholding changes could be exempted from Contracting Authority approval, e.g. transfer of shares to a pre-approved company

- **Performance regime**[191]. Successful performance management systems are based on useful performance measures. These measures are made according to Key Performance Indicators specified in the contract. To enhance accountability and the efficiency of the performance system, it is more important to focus on the quality of measures than their quantity. The performance measures and Key Performance Indicators would ideally reflect the broader goals of the contracting authority (e.g. increasing safety). An overabundance of measures can be counter-productive for both the Contracting Authority and the Project Company. The definition of a performance system is too broad an issue to be covered in this study. However, such a system would for example include:
  - A digital system, developed by Project Company and accessible at any time by the Contracting Authority (and the Independent Engineer that assists the Contracting Authority in the contract management, if any). This system would trace all maintenance operations undertaken on the road as well as all the adverse events affecting the road and its equipment. The system would compute all the deductions in case targets set for Key Performance Indicators are not met;
  - Monthly reports, drafted by the Project Company and submitted to the Contracting Authority (and its Independent Engineer if any). These reports would include for example: the adverse events that led to operate the road in degraded mode and the mitigating measures taken by Project Company; the list of failures to meet Key Performance Indicators targets;
  - Key Performance Indicators, associated targets, cure periods and deduction formulas in case of failure to meet the target. These indicators could for example include: partial or total unavailability of the road; International Roughness Index; energy and other utility consumption, absence or non-readability of traffic signs, etc.
- **Contracting Authority step-in rights**. It is usual for project agreement to include clauses that govern how the Contracting Authority, beyond Performance Deductions and Liquidity Damages, can remedy situations where the Project Company significantly underperforms. Such clauses always contain a cure period during which the Project Company can remedy the situation. Of course, these clauses need to be carefully articulated with the direct

[191] Garvin M., Molenaar K., Navarro D., Proctor G. Key Performance Indicators in Public-Private Partnerships – a state of the art practice report. March 2011.

agreement and the other lenders step-in clauses. Contracting Authority step-in rights may involve:

- the Contracting Authority temporarily stepping-in the project (e.g. undertaking O&M activities) in place of the Project Company. During this period the Availability Payments are paid net from the costs incurred by the Contracting Authority;
- the Contracting Authority substituting the failing Project Company by another one.

Annex 10 Proposed WBG support to help RFs gain or regain 2nd Generation status

Upgrade or return downgraded RFs to 2nd Generation status. Those RFs that never reached the 2nd generation status or those which did but slipped back to 1st generation status (Group 1 and Group 2 Road Funds) should be assisted by the African Road Maintenance Funds Association (ARMFA) and possibly SSATP in convincing their government to take the steps necessary to make them qualify as 2nd Generation RF.

Launch a communications campaign aimed at policy decision makers. This was successfully done in the past with the assistance of the SSATP. However, decision makers change, government priorities vary, and the SSATP has discontinued its policy assistance to the SSA RFs in recognition of the successful development of ARMFA. Upon ARMFA request, SSATP is currently considering a resumption of its assistance.

Improve the legal and institutional framework. The efficient operation of RFs depends to some extent on the legal and institutional frameworks under which they operate - but also on how these frameworks are applied. Overall, environments and practices vary tremendously depending on countries and it is difficult, if possible, at all, to set an absolute prescriptive model that would fit all situations. A few guiding principles can nevertheless be reminded as explained below.

Strictly define the mandate and internal governance. The mandate of RFs should be legally and strictly defined, avoiding functions that are not related to road maintenance and construction and could result in institutional confusion. Vaguely defined functions and functions relying on political arbitrariness should be avoided for the same reason. Similarly, the operational autonomy of Road Funds should be guaranteed by law and proper arrangements be set for their day-to-day operation, including a supervisory body (such as a board), management, organizational chart (technical, financial, accounting, legal functions, etc.), audits and controls. Two important issues are also: (i) the relationship to ministries (sectoral, finance, etc.) - which should be defined as clearly as possible, together with reporting and communication mechanisms to avoid confusion and political interference; and (ii) HR issues, as Road Funds should be staffed with technically qualified personnel and not flooded with unnecessary staff (or political appointees, an issue common in SOEs).

Clearly define the notions of revenue collection and disbursements, funds management and borrowing. Both revenues and rules pertaining to the collection of said revenues should be clearly defined (including, the rules applicable to and institutions in charge of collection and deposit into RFs' accounts. The ability of RFs to manage (and invest) funds under their authority should also be defined, as should their ability to borrow funds and possible interaction with rules governing public debt. Similarly, rules pertaining to disbursements should be defined.

Enforce institutional cooperation. This is also key to allow for a smooth and efficient operation of Road Funds. An issue of particular importance here is coordination with the entities in charge of works planning, procurement and supervision, i.e., primarily Road Agencies (and possibly, to some extent, the line Ministry and the central procurement agency, if any). As discussed above,

information gathered for this study shows that coordination between Road Funds and Road Agencies can be an issue - and sometimes results in delayed payments to contractors (or insufficient funding available in RFs' accounts). Respective mandates should, therefore, be clearly defined from a legal point of view - and proper institutional arrangements be set, which can involve both management/HR and technical dimensions (clear chart, regular consultations, joint meetings, simultaneous availability of data and information through electronic platforms, including to verify the availability of funds, order payments, etc.).

Ensure consistency across legal and institutional arrangements. The above issues may be regulated in a variety of texts. As an example, the sharing out of responsibilities between central and decentralized authorities as regards road assets can be set in specific texts on decentralization. Setting the mandate of RFs may, therefore, imply a consistency check with the latter. The same applies to the issues of tax collection, public funds management and disbursements, borrowing and public debt - or to institutional coordination.

Remove institutional boundaries and match mandate and resources. In a number of countries, especially the Francophone ones, governments have passed a series of decrees that have altered the spirit and intent of the law establishing the RF and set tighter limits to their funding mechanism. The impact of these decrees should be carefully assessed, and the conclusions used to feed a high-level discussion with the policy makers with the aim of either raising the revenues or reducing the mandate and mitigating the consequences. Besides, reasonable adjustment mechanisms should be set up to keep resources in pace with cost increases.

Substitute RUC to direct Treasury subsidies. In countries where the government keeps a lid on the transfer of RUC and compensates it with budget allocations the government should be encouraged to reverse this policy.

Provide technical assistance to help implement Road Asset Management and propose efficient use of funds in a life cycle approach.

Consider restructuring the toll management enterprises recently created in some countries to prevent deviation from the RMI concept and denying RFs the most promising source of revenue.

Strengthen RFs' regulation and improve oversight; eliminate self-assessment, pseudo transparency and spineless financial audits. Ask and assist ARMFA to develop a unique yardstick to measure and compare RFs' performance, produce and publish a clear annual report to help government regulators detect worrying drifts and work out a course correction.

Adopt long-term OPRC-type contracts as a public procurement tool.

Improve operational efficiency and optimal use of resources. Even if resources are limited, they can be used more efficiently if (i) the RF mandate is adjusted in proportion, (ii) the number of actors is limited and they operate within a unique and consistent long-term work plan, (iii) cost overruns are contained, and (iv) financial and physical program execution rate are increased.

Carry out annual independent road condition survey as an unbiased measure of RF and RA performance and of the state of the road network.