

Document of
The World Bank
FOR OFFICIAL USE ONLY

Report No: ICR00004347

IMPLEMENTATION COMPLETION AND RESULTS REPORT

IDA - 45790

ON A

CREDIT

IN THE AMOUNT OF SDR 71.2 MILLION

(US\$105 MILLION EQUIVALENT)

TO THE

REPUBLIC OF SENEGAL

FOR THE

DAKAR DIAMNIADIO TOLL HIGHWAY (P087304)

July 30, 2018

Transport & Digital Development Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective July 19, 2018)

Currency Unit = CFA Franc

0.71 SDR = US\$1

US\$ 1 = CFA 566

FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

AFD	<i>Agence Française de Développement</i> (French Development Agency)
AfDB	African Development Bank
AGETIP	<i>Agence d'Exécution des Travaux d'Intérêt Public</i> (Public Interest Works Implementing Agency)
AIBD	Blaise Diagne International Airport
APIX	<i>Agence Nationale Chargée du Développement de l'Investissement et des Grands Travaux</i> (Investment Promotion and Large Projects Agency)
CAS	Country Assistance Strategy
CD	Country Director
CPS	Country Partnership Strategy
DDTH	Dakar Diamniadio Toll Highway
FA	Financing Agreement
GDA	Greater Dakar Area
GDP	Gross Domestic Product
GoS	Government of Senegal
ICR	Implementation Completion and Results Report
IFC	International Finance Corporation
IRR	Internal Rate of Return
M&E	Monitoring and Evaluation
MFD	Maximizing Finance for Development
NGO	Nongovernmental Organization
PAD	Project Appraisal Document
PAFCM	Mbao Forest Management Plan
PAP	Project-affected Person
PIS	<i>Pikine Irrégulier Sud</i> (Irregular South Pikine)
PPF	Project Preparation Fund
PPIAF	Public Private Infrastructure Advisory Facility
PPP	Public-Private Partnership
PSE	<i>Plan Senegal Emergent</i>

RAP	Resettlement Action Plan
RN	<i>Route Nationale</i> (National Road)
ROW	Right-of-way
RS	Resettlement Site
TP	Tivaouane Peulh
WADB	West African Development Bank

Regional Vice President: Hafez M. H. Ghanem

Country Director: Louise J. Cord

Senior Global Practice Director: Jose Luis Irigoyen

Practice Manager: Nicolas Peltier-Thiberge

Task Team Leader(s): Eric R. Lancelot

ICR Main Contributor: Ndeye Anna Ba

TABLE OF CONTENTS

DATA SHEET	ERROR! BOOKMARK NOT DEFINED.
I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES.....	6
A. CONTEXT AT APPRAISAL	6
B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)	12
II. OUTCOME	13
A. RELEVANCE OF PDOs	13
B. ACHIEVEMENT OF PDOs (EFFICACY)	14
C. EFFICIENCY	19
D. JUSTIFICATION OF OVERALL OUTCOME RATING	21
E. OTHER OUTCOMES AND IMPACTS (IF ANY).....	21
III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME.....	23
A. KEY FACTORS DURING PREPARATION	23
B. KEY FACTORS DURING IMPLEMENTATION	24
IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME ..	25
A. QUALITY OF MONITORING AND EVALUATION (M&E)	25
B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE	27
C. BANK PERFORMANCE	31
D. RISK TO DEVELOPMENT OUTCOME	32
V. LESSONS AND RECOMMENDATIONS	33
ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS.....	36
ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION	46
ANNEX 3. PROJECT COST BY COMPONENT	49
ANNEX 4. EFFICIENCY ANALYSIS.....	50
ANNEX 5. BORROWER, CO-FINANCIERS AND OTHER PARTNERS/STAKEHOLDERS COMMENTS	55
ANNEX 6. SUCCESSFUL PUBLIC-PRIVATE PARTNERSHIP TO BUILD THE DAKAR- DIAMNIADIO TOLL ROAD.....	56
ANNEX 7. DETAILS ON RAPS AND PAPS FOR THE DDTH PROJECT	59
ANNEX 8. SUPPORTING DOCUMENTS	60

**DATA SHEET****BASIC INFORMATION****Product Information**

Project ID	Project Name
P087304	Dakar Diamniadio Toll Highway
Country	Financing Instrument
Senegal	Investment Project Financing
Original EA Category	Revised EA Category
Full Assessment (A)	Full Assessment (A)

Organizations

Borrower	Implementing Agency
Ministry of Finance	APIX

Project Development Objective (PDO)

Original PDO

The Objective of the project is to : (i) improve mobility between Dakar and Diamniadio; and (ii) provide communities affected by the construction of the highway access to basic social and economic services.



FINANCING

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
World Bank Financing			
IDA-45790	105,000,000	99,572,767	97,437,817
Total	105,000,000	99,572,767	97,437,817
Non-World Bank Financing			
Borrower	186,640,000	155,400,000	235,820,000
African Development Bank	49,000,000	49,000,000	47,460,000
FRANCE: French Agency for Development	80,000,000	76,900,000	76,900,000
Foreign Private Commercial Sources (unidentified)	110,760,000	110,760,000	110,760,000
Total	426,400,000	392,060,000	470,940,000
Total Project Cost	426,400,000	491,632,767	568,377,817

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
02-Jun-2009	13-Oct-2010	01-Nov-2013	31-Jul-2015	31-Jan-2018

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
13-Oct-2010	0	Change in Legal Covenants
29-Dec-2010	6.62	Change in Legal Covenants
15-May-2013	55.64	Change in Legal Covenants
31-Oct-2013	61.80	Change in Loan Closing Date(s) Reallocation between Disbursement Categories
22-Dec-2016	88.79	Change in Loan Closing Date(s) Reallocation between Disbursement Categories
31-Jan-2018	97.44	Cancellation of Financing Reallocation between Disbursement Categories



KEY RATINGS

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Moderately Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	30-Nov-2009	Satisfactory	Satisfactory	1.28
02	08-Jun-2010	Satisfactory	Moderately Satisfactory	1.33
03	01-Feb-2011	Moderately Satisfactory	Moderately Satisfactory	6.62
04	29-Oct-2011	Moderately Satisfactory	Satisfactory	40.72
05	13-May-2012	Moderately Satisfactory	Satisfactory	46.94
06	03-Dec-2012	Moderately Satisfactory	Moderately Satisfactory	51.43
07	20-Jun-2013	Satisfactory	Satisfactory	57.29
08	28-Dec-2013	Satisfactory	Moderately Unsatisfactory	62.21
09	05-May-2014	Satisfactory	Moderately Satisfactory	66.65
10	30-Dec-2014	Satisfactory	Moderately Satisfactory	72.15
11	12-Jun-2015	Moderately Satisfactory	Moderately Satisfactory	75.07
12	14-Dec-2015	Moderately Satisfactory	Moderately Unsatisfactory	79.27
13	30-Jun-2016	Moderately Satisfactory	Moderately Satisfactory	84.77
14	23-Jan-2017	Moderately Satisfactory	Moderately Satisfactory	89.66
15	20-Oct-2017	Moderately Satisfactory	Moderately Unsatisfactory	94.93
16	08-Mar-2018	Satisfactory	Moderately Unsatisfactory	97.44



SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Education	7
Other Education	7
Social Protection	36
Social Protection	36
Transportation	50
Public Administration - Transportation	14
Rural and Inter-Urban Roads	36
Industry, Trade and Services	7
Other Industry, Trade and Services	7

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Private Sector Development	33
Jobs	23
Job Creation	23
Public Private Partnerships	10
Social Development and Protection	14
Social Inclusion	13
Other Excluded Groups	13
Fragility, Conflict and Violence	1
Forced Displacement	1



Urban and Rural Development	64
Urban Development	41
Urban Infrastructure and Service Delivery	41
Rural Development	23
Rural Infrastructure and service delivery	23

ADM STAFF

Role	At Approval	At ICR
Regional Vice President:	Obiageli Katryn Ezekwesili	Hafez M. H. Ghanem
Country Director:	Habib M. Fetini	Louise J. Cord
Senior Global Practice Director:	Jose Luis Irigoyen	Jose Luis Irigoyen
Practice Manager:	C. Sanjivi Rajasingham	Nicolas Peltier-Thiberge
Task Team Leader(s):	Moctar Thiam, Raymond Bourdeaux	Eric R. Lancelot
ICR Contributing Author:		Ndeye Anna Ba



I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. **At project appraisal in 2009, the population of Senegal was estimated at 12.4 million.** Over the past 10 years, gross domestic product (GDP) growth averaged 4 percent while the population growth hovered around 2.5 percent. Unemployment rate was at 38 percent. Senegal was in the group of poor countries with a per capita GDP of US\$710. The country had been witnessing a rapid decline of poverty between 2001 and 2005 from 55.2 percent to 48.3 percent, but such progress had then slowed down due to poor governance and other shocks including poor rains and high fuel price.
2. **The Greater Dakar Area (GDA), the driver of economic growth in Senegal, was struggling in the face of rapid urbanization.** The GDA covered less than 0.3 percent of the territory but hosted about 25 percent of the population. It had been growing at a rate of 150,000 to 200,000 additional people per year over the past three decades. Consequently, basic social and economic infrastructure, initially built to accommodate about 300,000 people, was seriously overstretched.
3. **This rapid urbanization had not been properly planned and had resulted, over the years, in the spontaneous creation of several slums in the outskirts of the city.** *Pikine Irrégulier Sud*, (PIS), the largest informal settlement in the GDA was home to 250,000 habitants and was built in a flood-prone area and lacked proper infrastructure and services. With changes in rain patterns, PIS had started to be exposed to severe flooding during rainy seasons creating health issues such as cholera and other waterborne illnesses. Further, the lack of roads within PIS was an additional hurdle as it severely hampered movement of populations, safety, and emergency response (accessibility for firefighters and ambulances).
4. **By the mid-1990s, owing to the rapid urbanization, competitiveness and growth of the GDA were levelled off by the high economic costs of massive traffic congestion.** More than 80 percent of industrial and economic activities and the quasi-totality of administrative and business services were concentrated in the GDA. In 1998, congestion in the GDA was estimated to cost the country a staggering US\$200 million or 4.6 percent of its GDP. Further, it was estimated that 16,850 hours per day were lost in traffic on many of the most critical road sections in Dakar and that the commercial speed of public transport vehicles had been reduced to 10–20 km per hour.¹ The high loss of productivity for local and regional businesses due to heavy congestion and the impact on the free flow of regional trade were threatening Senegal's ability to serve as a regional economic hub.
5. **Entering and exiting Dakar was only possible through National Road 1 (*Route Nationale 1*, RN1), which was the backbone of the GDA's transport system.** At the time of appraisal, it was taking on average two hours during off-peak and up to four hours during rush hour to enter or exit Dakar using the 30 km long road that links the city center to Diamniadio through Pikine, the largest suburb of Dakar. Consequently, the viability of major new investments in the Port of Dakar, the proposed economic zone

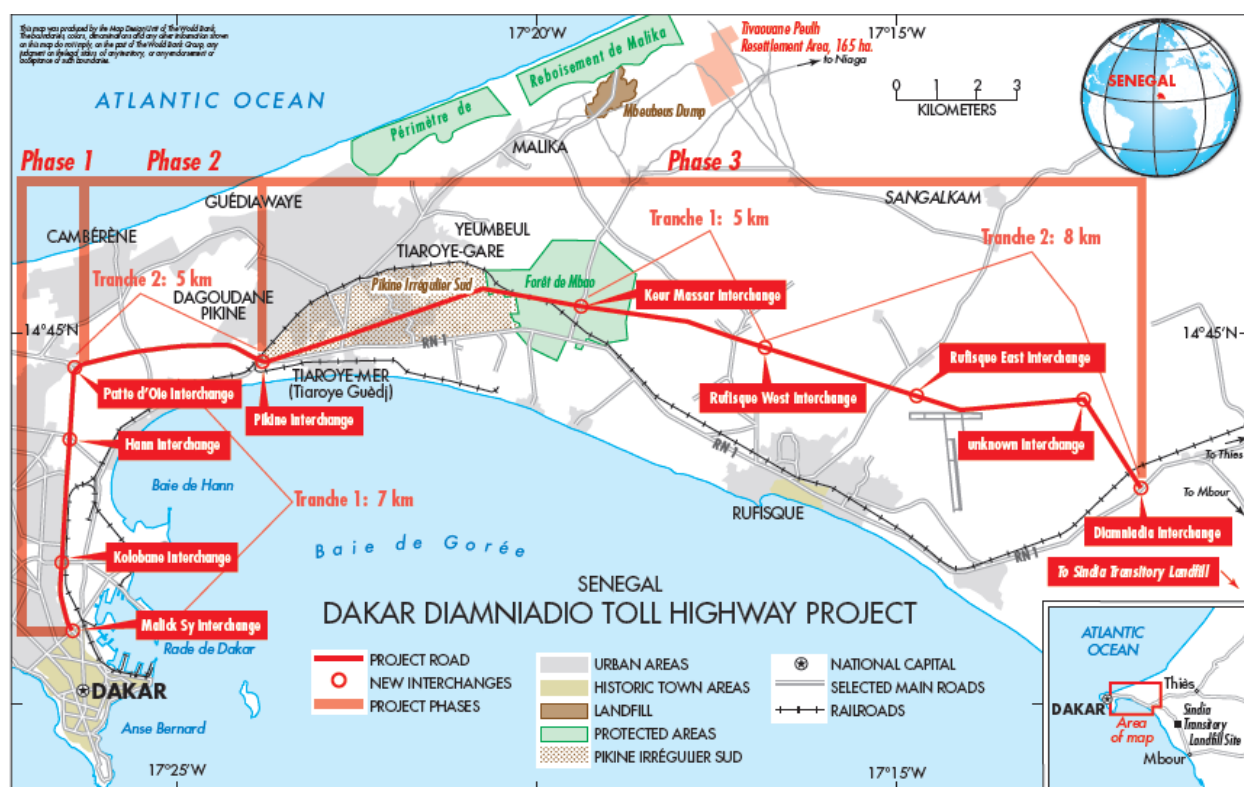
¹ Implementation Completion and Results Report (ICR) of the Urban Mobility Improvement Program, Report No. ICR0000955.



near Diamniadio, the new Blaise Diagne International Airport (AIBD), and the highly popular tourist destinations near Mbour were all severely hampered by the absence of a reliable and efficient connection in and out of Dakar.

6. Given the increasingly severe situation in the GDA, the Government of Senegal (GoS) decided in the early 2000s to develop an alternate route to RN1 to ease congestion and improve mobility in the Dakar region.² Further to a multicriteria analysis based on technical, social, economic, and urban mobility factors, it was determined that the optimal alignment of the new motorway would connect Dakar (Malick Sy) to the new city of Diamniadio and would traverse the densely populated PIS area (see paragraph 3 and Figure 1) and the Mbaou forest reserve, which was the last protected forest area in the GDA. The toll highway construction project was split into three Phases (see Figure 1).

Figure 1. Map of the Highway



Source: DDTH PAD

7. In 2004, the GoS decided to finance the construction of the first two Phases (Malick Sy-Patte d'Oie, and Patte d'Oie-Pikine, 12 km combined) and requested assistance of the World Bank Group for the construction of the third Phase (Pikine-Diamniadio, 20 km) under a Public-Private Partnership (PPP) scheme. By early 2000, the GoS had started to establish the legislative framework relating to the PPP, putting in place a conducive legal and regulatory environment for private sector participation.³ In view of the size and costs of the motorway and the timetable required to implement a PPP, the GoS decided to

² The Dakar Region includes Dakar, Diamniadio, and Rufisque.

³ See annex 6 for more details.



fully finance the development and construction of the first two Phases, which were eventually completed in 2010. Through the Private Investment Promotion Project (P051609) managed by the Senegalese Private Investment Promotion Agency (*Agence Nationale Chargée du Développement de l'Investissement et des Grands Travaux*, APIX), the World Bank financed the mobilization of transaction advisory services to advise the Government for the selection of a private concessionaire for the construction of the third Phase and the operation of a tolling system for the second and third Phases (“Dakar Diamniadio Toll Highway”, DDTH). Financial and technical prefeasibility studies on traffic, toll sensitivity, and acceptability were financed through a Project Preparation Fund (PPF) provided by the World Bank and were also carried out on behalf of the Government by well-known consulting firms (Axelcium, SETEC, and Tecsalt).

8. **By project appraisal in 2009, the PPP procurement process for the construction and operation of Phase 3 of the DDTH was successfully completed.** Prequalification was launched in April 2007, and the selection of the private operator was carried out through an international call for tenders resulting in three qualified bidders. Two of them submitted technical bids, and ultimately, the 30-year concession contract in the amount of approximately US\$125 million⁴ was awarded to Eiffage in December 2008 and the contract was signed on July 2, 2009. Eiffage, which has experience working in Senegal, formed SENAC S.A. as a special-purpose vehicle to serve as the concessionaire. For the Government, the key criterion was the amount each company was willing to invest in the construction Phase, given its financial model and the set toll rates. As a result, financial aspects received a heavier weighting (60 percent) in the consideration than did the modified technical aspects (40 percent).

9. **The construction of the motorway entailed significant social and environmental externalities that were outside the scope of the concession.** The GoS had prepared the resettlement action plans for Phases 1 and 2 of the motorway in accordance with the World Bank policies and implemented them with the World Bank support. As the alignment of the DDTH (Phase 3) crossed densely populated areas in PIS, the Government was required to clear the right-of-way (ROW) prior to the start of works. Additionally, the DDTH crossed the Mbao forest and its impact on the forest had to be mitigated. Overall, the construction of motorway required the acquisition by the GoS of several hectares of ROW, the massive relocation of nearly 30,000 affected people and the displacement of hundreds of small businesses and other social infrastructure. To respond to the high resettlement needs, the GoS had acquired 165 ha of land in Tivaouane Peulh (TP) outside of Dakar to build a Resettlement Site (RS) where populations affected by the construction of Phase 3 of the DDTH and the restructuring of PIS could relocate.

10. **The RS was about 2 km from the Mbeubeuss open dumpsite, which had been collecting trash from the GDA for decades.** Because of its proximity to TP, the project planned to support the GoS in mitigating one of the largest source of pollution in Dakar by closing the Mbeubeuss dumpsite before PAPs could resettle in TP and operationalize the new landfill to Sindia⁵ to receive the collected trash.

11. **In that context, the World Bank’s contribution to the toll highway project took the form of a credit dedicated to the mitigation of the negative externalities of this major infrastructure and the restoration and improvement of the living conditions of the road’s dwellers.** In doing so, the project was

⁴ Amount in 2009 based on exchange rates for currencies used (euros and CFA francs).

⁵ “Sindia” is the capital of the rural community of Sindia and the district of Sindia. It is attached to the department of M'bour, in the region of Thiès and is a crossroads town located at the intersection of the RN1 which connects Dakar to M'bour and the road that connects Thiès to Popenguine.



expected to serve as a model of large-scale resettlement, slum upgrading, urban restructuring, and environmental protection.

12. **The project was aligned with the GoS's strategy and the World Bank's Country Assistance Strategy (CAS).**⁶ The project was to contribute to the following pillars in the 2006–2010 Poverty Reduction Strategy Paper⁷ adopted by the country in 2006: (a) wealth creation and pro-poor growth, (b) improving access to basic social services, (c) protecting vulnerable groups against shocks, and (d) greater transparency combined with participatory processes. Moreover, the project was to contribute to the following three pillars in the World Bank's CAS for Senegal for FY07–10: (a) fostering economic growth through support to private sector development; (b) improving human development through better delivery of social services, notably to the most vulnerable groups; and (c) enhancing rural and urban synergies. Both strategies highlighted the importance of the transport sector for the country.

Theory of Change (Results Chain)

13. **The IDA-financed project was designed as an enabler for the construction of the highway (Phases 2-3), which was financed by the GoS (US\$71.8 million), the African Development Bank (AfDB) (US\$49 million), the French Development Agency (*Agence Française de Développement*, AFD) (US\$33 million), and the concessionaire (US\$110.7 million).**⁸ IDA resources were allocated to co-finance the social and environmental measures required to restore and improve the living conditions of the communities affected by the toll highway. More specifically:

- The construction of a RS with basic infrastructure and services to relocate the people displaced by the DDTH;
- The closing of the Mbeubeuss open dumpsite located 2 km from the RS conditional on the opening of the Sindia Landfill;
- The restructuring of PIS to improve living conditions of the populations (see paragraph 3);
- The implementation of the Mbao Forest Management Plan (PAFCM) to mitigate the impacts of the DDTH on the Mbao forest, the last forest reserve in the GDA.

14. **Figure 2 shows the theory of change with longer-term outcomes the project was expected to contribute beyond its closing date.** The project activities were designed under the following assumptions: (a) under Component A, not financed by the World Bank, the private sector shareholders would be interested to invest in the toll road concession and mobilize the required financing and road users would be able and willing to pay the toll fees; (b) under Components B and C, financially supported by the World Bank, affected people needing to resettle as the result of the construction of the infrastructure (Phase 3) as well as the restructuring of PIS (component C) would resettle in the identified RS in TP; the Sindia landfill would be operational; and (c) the French Development Agency (AFD) financing for the restructuring of PIS (Component C) will be available.

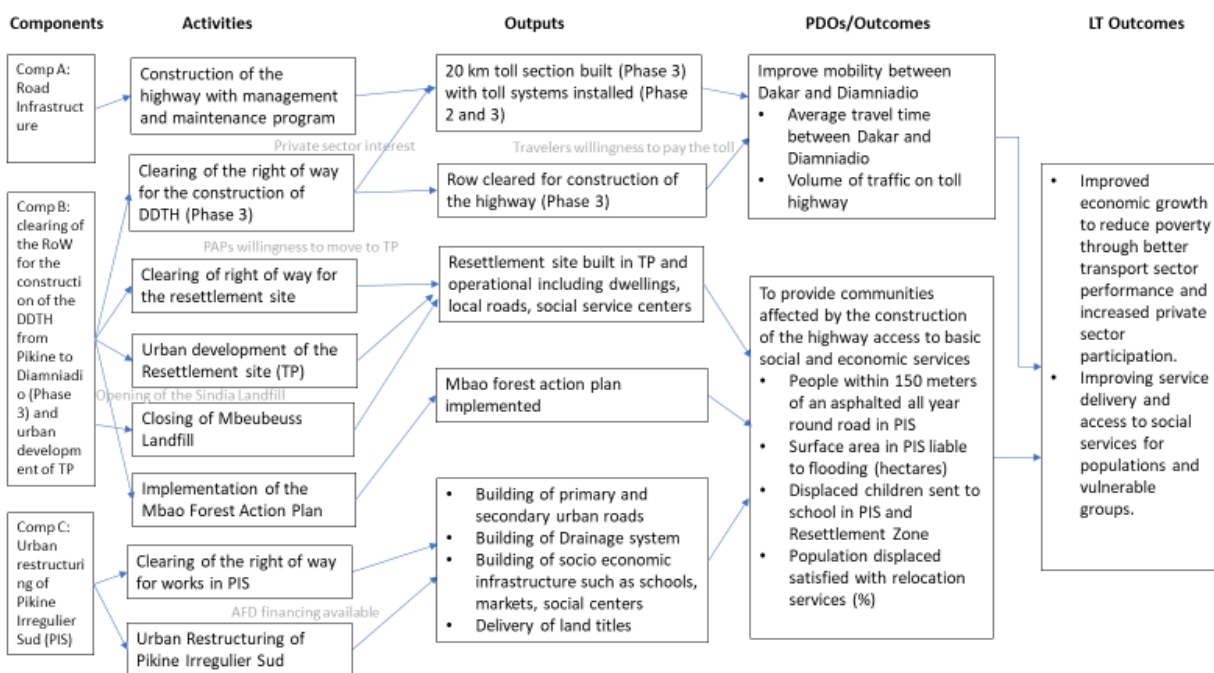
⁶ Senegal - Country Assistance Strategy, Report No. 36608-SN.

⁷ Senegal - Poverty Reduction Strategy Paper, Report No. 07/316.

⁸ See annex 6 for more details on the concession.



Figure 2. Theory of Change



Project Development Objectives (PDOs)

15. The development objective of the project as stated in the Financing Agreement (FA) and the Project Appraisal Document (PAD) is to (i) improve mobility between Dakar and Diamniadio; and (ii) provide communities affected by the construction of the highway access to basic social and economic services.

Key Expected Outcomes and Outcome Indicators

16. The PDO remained the same throughout the life of the project and comprises two sub-objectives measured through six outcome indicators.

Objective 1: To improve mobility between Dakar and Diamniadio

- Average travel time between Dakar and Diamniadio (minutes)
- Volume of traffic on toll highway (number)

Objective 2: To provide communities affected by the construction of the highway access to basic social and economic services

- People within 150 meters of an asphalted all year round road in PIS (number)
- Surface area in PIS liable to flooding (hectares)



- Displaced children sent to school in PIS and Resettlement Zone (%)
- Population displaced satisfied with relocation services (%)

Components

17. **The project consisted of four components, described in Table 1.** Component A was financed by the GoS, the African Development Bank (AfDB), and the private sector. The World Bank focused on supporting the GoS in the implementation of the resettlement plans for clearing the ROW and provision of social services for the populations affected by the construction of the highway under Components B and C. The management of the project was also financed by the World Bank. The total cost of the project was estimated in the PAD at US\$492 million⁹ and cost US\$570.71 million at completion; however, this amount includes the costs of additional works requested by the GoS during construction (see Table 1).¹⁰

Table 1. Project Components and Description

Components	Description	Financiers	Amount of Loan/Financing at Appraisal (US\$, millions)	Actual Amount (US\$, millions)
		Total amount	491.9	570.71^a
Component A: Road Infrastructure (Phase 3)	Construction of the 20-km highway from Pikine interchange to Diamniadio (Phase 3: Sections 3 and 4) that would cross PIS and the Mbao forest (Section 3 = Pikine-Keur Massar; Section 4 = Keur Massar-Diamniadio) and the provision of the toll systems for Phases 2 and 3	Total amount	264.5	351.35
		Concessionaire	110.7	110.7
		AfDB	49	47.46
		AFD	33	32.79
		GoS	71.8	71.8
	Amendment for accelerated commissioning of the Rufisque bypass	GoS	0	10
	Price indexation	GoS	0	66
	Amendment for additional works: Keur Massar interchange, construction of storage trenches along the Rufisque route to prevent flooding, additional walkways, compensation for lost revenue for the concessionaire following the decision to open the toll road free of charge due to flooding on the RN1 between Patte d'Oie and Camberene	GoS	0	12.6
Component B: Right of Way clearing, Urban development of	Development of the new RS in TP including construction of urban infrastructure, public facilities, and housing to allow people affected by the	Total amount	158.3	147.08
		GoS	74.6	57.61

⁹ The total original amount in the PAD is different from the original amount in the ICR datasheet due to the exchange rate for financing in euros and CFA francs between appraisal and completion.

¹⁰ This ICR is not assessing the concession as it is an ongoing contract. International Finance Corporation (IFC) will be preparing a detailed report in due time.



Components	Description	Financiers	Amount of Loan/Financing at Appraisal (US\$, millions)	Actual Amount (US\$, millions)
Tivaouane Peulh (TP) Resettlement and Implementation of the Mbao Forest Management Plan	construction of the highway to resettle to a new neighborhood, TP. Clearing the ROW and compensation of PAPs, closing of the Mbeubeuss waste disposal site that is near the RS of TP, and implementation of the PAFCM for the Mbao forest crossed by the highway	IDA	58.5	61.06
		AFD	25.2	28.41
Component C: Urban Restructuring of Pikine Irregulier Sud (PIS)	Urban restructuring of PIS, which was split in two by the highway, including construction of urban roads, drainage networks, and public facilities and delivery of land titles to occupants	Total amount	55	54.71
		IDA	27.3	21.2
		AFD	18.7	15.7
		GoS	9	17.81
Component D: Program Implementation	Coordination and supervision of project activities performed by APIX	Total amount	14.1	15.82
		IDA	14.1	15.82

Note: a. Difference between this amount and the total amount in annex 3 is because of the rate of exchange between U.S. dollar, euro, and CFA franc.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

18. **The PDO, associated outcomes, indicators, and components were not revised throughout the life of the project.** The project was restructured six times. Table 2 provides the timeline and rationale for all six project restructurings.

Table 2. Project Restructurings

Restructurings/Date	Reasons
Approved by the CD on October 13, 2010	To amend the FA to extend the deadline for the opening of a fully operational replacement open dumpsite that was to replace the Mbeubeuss open dumpsite from May 30, 2010, to March 31, 2011, because the populations of Sindia, where the new landfill would be located, were strongly against it and the deadline could not be met (Component B). This restructuring also amended two effectiveness conditions related to postponing the execution of the concession agreement between the borrower and the concessionaire (Component A) to a later date.
Approved by the CD on December 29, 2010	To introduce further amendments to the FA of the project to address changes in the Resettlement Action Plan (RAP) Addendum-3 to include a cash option, rental allowances, and valuation of compensation rates because many PAPs expressed their preference for cash payments rather than receiving project-built houses (Component B). Additionally, works needed in the RS of TP to make it viable were still ongoing and PAPs had to rent accommodation while waiting for the site to be functional. The restructuring was also needed to update the timeline for RAP implementation, taking into account the new addendum, in particular for the clearing of the ROW of the Pikine-Keur Massar section of the DDTH.



Restructurings/Date	Reasons
Approved by the CD on May 15, 2013	To allow the relocation of PAPs in the RS before the closure of the Mbeubeuss open dumpsite site as previously planned (Component B). Amendments were introduced in the FA as follows: (a) the clause that prohibits the commencement of sub-projects that would cause the effective resettlement of PAPs before the Mbeubeuss open dumpsite closing down was dropped because of studies confirming that the proximity of the Mbeubeuss open dumpsite did not affect the RS and would not affect the health of the populations; (b) the dated covenants related to the opening of the Sindia landfill and to the closure of Mbeubeuss open dumpsite were postponed to December 15, 2013, as both actions would require more time in light of the strong opposition of the populations in Sindia; and (c) the dated covenants related to the availability of a functional RS in TP were postponed from June 30, 2012, to May 15, 2013, as works needed to make the site viable took longer to complete than expected.
Approved by the CD on October 31, 2013	To reallocate credit proceeds among the categories of eligible expenditures and move funds from Component B to Component C to accommodate additional works in PIS and to extend the project's closing date from July 31, 2015, to January 31, 2017, to allow implementation of remaining activities. Under Component B, the closing of the Mbeubeuss open dumpsite was still delayed in light of the uncertainty around the opening of the new landfill in Sindia for which negotiations with the local populations stopped. Bidding documents for remedial works in Mbeubeuss needed revision to consider the change in thickness and level of permeability of the top layer. Under Component C, local roads construction was delayed because of the slow clearing of the ROW worsened by the lack of counterpart funding and the difficulties in completing PAPs' files. The works could therefore not be completed by the closing date of July 31, 2015, hence the extension of closing date to January 31, 2017.
Approved by RVP on December 22, 2016	To extend the project's closing date by 12 months from January 31, 2017, to January 31, 2018, to finalize pending activities. Under Component B, the extension was needed to finalize ongoing works such as the construction of the church in TP and the completion of the pending activities under the PAFCM. The Mbeubeuss open dumpsite was still not closed despite the efforts of the GoS, and so, funds were reallocated to develop a new strategy to better manage solid waste in Dakar. This extension of closing date would also allow continuous support and payment to PAPs identified in the different RAPs. This restructuring also involved reallocation of funds between disbursement categories to move funds from Component C to Component D to take into account the operating costs increase as a result of the closing date extension and from Component C to Component B to finalize the works in TP and finance the new waste management strategy as mentioned earlier.
Approved by the CD on January 31, 2018	With the project closing on January 31, 2018, the uncommitted funds in the amount of US\$5 million equivalent would not be disbursed and the GoS requested their cancellation.

Note: CD = Country Director; RVP = Regional Vice President.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating



19. **The current PDOs remain highly relevant.** The current Country Partnership Strategy (CPS) FY13–FY17 (Report No: 73478-SN) focuses, among others, on accelerating inclusive growth and generating employment through private sector participation on provision of infrastructure investments in roads and urban transport. The objective of improving mobility between Dakar and Diamniadio is directly linked to one of the CPS outcomes, namely ‘Improved mobility in targeted urban and inter-urban areas’, and remains a top priority for the country as outlined in the GoS’s *Plan Senegal Emergent* (PSE) adopted in 2014. Within the framework of the PSE strategy, the Government is committed to improving the well-being of the population, creating jobs for the youth through opportunities for learning and development, and fighting inequalities. The issues of flooding, insalubrity, and lack of basic services in peri-urban areas such as Pikine are still priorities for the Government as highlighted in the Pillar 2 of the PSE (Access to social services), Pillar 1 of the CPS (Improving service delivery), and the country’s National Social and Economic Development Strategy approved in October 2012. The Systematic Country Diagnostic, that is currently under finalization, argues that the country has one of the fastest growing economies in Sub-Saharan Africa but that this growth will need to be strengthened and more inclusive, evening out the distribution of human capital, increasing access to basic services for the poor, and improving connectivity. The PSE’s priorities remain consistent with those of the CPS as highlighted in the 2015 Performance and Learning Review (Report No: 93146-SN), and the project highly contributes to this vision notably for the development of the economic pole of Diamniadio.

20. **Rating.** As outlined previously, the PDOs are still very relevant and aligned with the World Bank and borrower’s current strategies and the rating for relevance of PDO is High.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

PDO 1: To improve mobility between Dakar and Diamniadio

21. **Mobility between Dakar and Diamniadio was improved as the average travel time on the highway (from Malick Sy to Diamniadio) was reduced from 90 minutes in 2009 to 25 minutes in 2018, exceeding the project’s target of 30 minutes.** Furthermore, the volume of traffic on the toll highway (from Patte d’Oie to Diamniadio reached 60,000 vehicles per day by January 2018 and 73,000 vehicles per day by end of May 2018. Already in 2015, the volume of traffic had reached 45,000 against a baseline of 25,000 and target of 37,500 vehicles per day.¹¹ Additionally, the number of roundtrips between Dakar and Rufisque¹² on weekdays in public mini-buses doubled from two to four after the construction of the toll highway. The project built the 20 km highway from Pikine-Diamniadio (Phase 3) (launched during the last quarter of 2010 and officially inaugurated on August 1, 2013) as well as the toll systems for Phases 2 and 3 on time and within budget, while the Government financed the construction of Phases 1 and 2 from Malick Sy to Patte d’Oie (7 km) and from Patte d’Oie to Pikine (5 km) by 2010 (see paragraph 7).

¹¹ The target was set for 2015 before the extension of the project and was not updated taking into account the 2.5 years extension.

¹² Rufisque is a suburb of Dakar (13 kms from Dakar centre) and the fourth-most-populous city in Senegal where a large number of commuters to the city center reside (see figure 1)



Figure 3. Aerial View of Toll Highway



22. As PDO1 broadly addresses the mobility between Dakar and Diamniadio, it's worthy to note that the GoS financing the rehabilitation of the existing RN1 (between Patte d'Oie and Pikine) to provide an enhanced alternative route to users was an unintended positive outcome. The travel time between the center of Dakar and its suburbs (Pikine) has been reduced from 30 minutes in 2009 to currently 11 minutes (using the project-financed toll road) and 17 minutes (using the rehabilitated RN1).

PDO 2: To provide communities affected by the construction of the highway access to basic social and economic services

23. The project provided communities affected by the construction of the highway (Phase 3) access to basic social and economic services. The new socioeconomic facilities increased access to economic opportunities (markets and women centers) as well as access to education (schools and training centers). The drainage systems put in place and the roads built in PIS helped drastically reduce the floods and provided easy access and improved mobility for the people.

24. **First, the project has significantly improved storm water drainage in PIS.** To respond to the recurrent flooding experienced by the population of PIS, the project successfully constructed six of the eight¹³ storm water management ponds and 4.7 km of drainage network against the 3.6 km originally targeted. As a result, the surface area in PIS liable to flooding significantly dropped from 210 ha in 2009 to 142 ha at the end of the project against a target of 119 ha (see paragraph 64). The newly built drainage infrastructure functioned well during the 2017 rainy season, thus relieving the population of PIS, and additional works to be completed under the PIS II project financed by AFD will increase the surface of PIS not exposed to flooding.

25. **Second, about 199,226 PIS dwellers have access to a year-round asphalted road compared to 109,000 in 2009.** The target of 250,000 people was not fully achieved as the project only financed the construction of 4.2 km of roads compared to an initial target of 28 km due to the slow clearing of the right of way in PIS that affected the construction of the local roads. However, the newly constructed drainage systems (see paragraph 23) made approximately 0.5 km of previously flooded roads accessible all year round. Additional works in PIS outside of this project also contributed to an additional 2 km of year-round asphalted roads.

¹³ The two remaining ponds are not critical for the rainy season.



26. **Third, affected communities benefitted from several new socioeconomic facilities built in TP and PIS, all fully equipped and functional.** Four women centers, one cultural center, one sports center, one market, and one bus station were constructed in PIS. They were all functional and fully utilized by project closing, thus enabling diverse training opportunities for women and youth, as well as recreational activities, which were lacking in PIS.

27. **In TP, two health centers, one market, and two mosques were constructed as well.** All these facilities are functional with equipment and supplies in place. Utilization of the constructed socioeconomic facilities, which is currently low, is expected to increase significantly once all dwellings are constructed by PAPs (see paragraph 29). It is also expected that nearby developments currently under construction will benefit from the existing facilities of the RS. Overall at project completion and based on the surveys performed by the implementing agency, 100% of the population displaced were satisfied with the relocation services against of target of 90% thanks to the wide range of benefits offered to PAPs as part of the resettlement package (see table 4).

28. Additionally, the concerned municipalities in PIS have taken measures to ensure the sustainability of these investments including maintenance, water and electricity connections at all times, and security and safety of sites.

29. **Fourth, access to schools has significantly improved in the project area.** The project has built a total of three childcare centers in PIS, five elementary schools (three in PIS and two in TP), two high schools (one in PIS and one in TP), and two vocational training centers (one in PIS and one in TP). Six additional new classrooms, toilets, and administrative offices were built and equipped in the primary school, and the secondary school acquired new toilets and equipped administrative offices. All new and rehabilitated facilities are being fully utilized. As a result, the percentage of students walking more than 1 km to go to school has dropped by 38 percent for primary level and 20 percent for secondary level. 85 percent of displaced children were sent to school in PIS and TP compared to a target of 80 percent. Further, according to a recent survey,¹⁴ parents of 71 percent of primary school students and 65 percent of secondary school students were satisfied with education services provided under the project.

¹⁴ Survey performed by EXA Consulting for the impact evaluation study for the DDTH project.



Figure 4. New Elementary School Built in PIS



Source: DDTH project

30. **Finally, the development of TP has set a new standard for new urban plans in the suburbs of Dakar with high-quality infrastructure.** The new RS features 2,000 plots with basic facilities such as electricity, roads, drainage systems, and a wastewater system, including a wastewater treatment plant as well as several socioeconomic facilities (see paragraphs 25 and 26). Unlike the situation in PIS in 2009, the new RS of TP features all basic services such as piped drinking water and electricity. However, the project did not build houses in TP as originally planned because PAPs opted to build their own dwellings (see paragraph 66). Consequently, resettlement in TP became optional, and 1,662 out of 2,000 available lots have been allocated¹⁵ to PAPs. To date, 602 houses are under construction by PAPs and 215 houses are occupied. The remaining 338 plots are reserved for the PAPs of the PIS II project financed by AFD for which the implementation of the RAP has yet to begin.¹⁶

31. **The occupancy rate of TP is expected to significantly increase as the GoS is currently extending transport services and infrastructure to connect to TP, including a major expressway (Voie de Dégagement Nord).** There are also concerns over the maintenance and management of these infrastructures, and as many of the plots are vacant, safety concerns (banditry) from the populations who are currently living in TP are legitimate. It should also be noted that to date, the delivery of formal ownership rights (land titles) to PAPs in TP is still not carried out after so many years.

¹⁵ Lots were either sold to PAPs or given for free.

¹⁶ The PIS II project financed by AFD will complete scale-up activities in PIS.



Figure 5. Pictures of TP before and after Project

TP under construction



TP after project



Source: DDTH project

32. To respond to a strong request from populations living in PIS, the project intended to provide support to the 'Fondation Droit à la Ville', a foundation that has been working with the populations in the quest of securing land titles as appropriate. The process of land titling in PIS is complex,¹⁷ and the project realized early enough that the nongovernmental organization (NGO) 'Fondation Droit à la Ville' was not the proper channel for such endeavor. The project therefore financed the services of a consultant to explore practical solutions for land regularization as part of the restructuring of PIS and share the results with the Department of Urban Planning to integrate this activity into their program. This exercise contributed in raising awareness of these land titles issues in PIS, and the project-financed studies would benefit the Department of Urban Planning.

33. The project planned to close the Mbeubeuss open dumpsite before the relocation of populations in TP, but this undertaking was overly ambitious and not strictly necessary as demonstrated by the environmental studies performed during implementation. The environmental studies indicated that the presence of the Mbeubeuss dumpsite in the vicinity of the RS of TP did not pose a direct public health risk to its future residents. For instance, the level of soil pollution¹⁸ in the RS was well below dangerous levels and it was observed that the wind dynamics kept the smoke and smell from the dumpsite flowing in the opposite direction of the RS. For these reasons, closure of the dumpsite did not remain a condition for allowing project-affected persons (PAPs) to resettle in TP. Despite these findings, Mbeubeuss still poses a health risk for the whole city hence the desire of the Government to close it. First, the project struggled to find a sustainable approach to address the situation of the waste-pickers active in the Mbeubeuss dumpsite, some of whom were born and raised there. Second, the fact that the dumpsite was the final destination of most of GDA's solid waste made it impossible to fully close it. Finally, although a new landfill site was already constructed in Sindia,¹⁹ local populations strongly opposed its

¹⁷ It is a two-step process that requires extensive land surveys combined with household surveys and an owner census: (a) the state will become the official owner of all lands where current owners have no official land title and (b) the state will give back each plot to the current owner.

¹⁸ Level of dioxins, furans, and polychlorinated biphenyls.

¹⁹ Sindia is a rural community outside the GDA in the region of Thiès.



commissioning despite the numerous attempts to convince them of the benefits of the facility (study tours to Italy to visit sanitary landfills, production of fertilizers, job creation, and so on).

34. **The earmarked budget was reallocated to carry out additional works in TP and PIS and finance studies on a new solid waste management scheme in the Dakar region.** The results of these studies recommending various technical, social, and financial options were exploited for the preparation of a new solid waste management project financed by the World Bank and other donors.²⁰ The successful closure and remediation of the Mbeubeuss dumpsite was a highly desirable aim given its potential widespread public health benefits for the population of the GDA, particularly the populations in Keur Massar. However, it was not linked to the project's core objectives. The project sought to use the construction of the new toll highway as a leverage to resolve a lingering waste management and environmental issue affecting the GDA.

Justification of Overall Efficacy Rating

35. **Based on the assessment of the project's achievements against the specific project objectives described previously, the overall efficacy is rated Substantial.** First, the project allowed the construction of an infrastructure that substantially reduced costs and delays of traveling between Dakar and Diamniadio. Second, the project, through its activities in PIS and TP, provided access to basic social and economic services to an estimated 280,000²¹ dwellers.

36. Despite the positive outcomes of the project, at project closing, there was a backlog of 1,047 PAPs whose compensation had not yet been fully completed, in part due to the complexity of some cases and in part due to insufficient counterpart resources made available on time. The resettled populations in TP are also awaiting their land titles. (see paragraph 78).

37. **Despite the shortcomings, the project substantially met its objectives,** reducing the travel time in and out of Dakar, successfully restructuring PIS, and developing a new neighborhood in TP with well-paved roads, drainage systems, and equipped and operational socioeconomic infrastructures.

C. EFFICIENCY

Assessment of Efficiency and Rating

38. **An ex post economic analysis was conducted on the project reproducing the original analysis (see annex 4 for more details).** The economic rate of return at appraisal was 11.3 percent, and the economic profitability at 7 percent was to be met after six years of operation.

39. The economic analysis at the completion of the project was done using the same HDM-4 model as the one used at the preparation for the ex-ante economic evaluation on all road sections likely to be

²⁰ US\$45 million is provisionally allocated to the closure of Mbeubeuss by the proposed Senegal Municipal Solid Waste Management Project (P161477) to be presented to the Board in December 2018.

²¹ Estimated population in PIS in 2018.



affected by the new motorway and two different project construction sections (Patte d'Oie-Pikine, Phase 2, and Pikine-Diamniadio, Phase 3).

40. HDM was run for the different construction sections individually (Patte d'Oie-Pikine and Pikine-Diamniadio) and for the project as a whole, for an analysis period of 30 years, with two scenarios for each section:

- The base case scenario, called 'Base Alternative', with no constructions but routine and periodic maintenance of the national roads;
- The 'with project case' scenario, where the actual works carried out with their real costs and construction dates were triggered

41. **The main economic results in present values over the whole analysis period of 30 years are presented in Table 3.** The analysis compared, year by year, costs and benefits of the options 'with project' and the base scenario without investment. With the rapid increase of motorization, the initial traffic on the new sections exceeds the original expectations, leading to the very high economic return of 35 percent when compared to the initial analysis (11 percent). The economic results on the section from Pikine to Diamniadio (Phase 3) are lower than the surrounding sections and slightly lower than expected (10.5 percent compared to 12 percent in the PAD). This results from a lower traffic diversion from the congested national roads to the toll road.

Table 3. Results of the economic analysis performed at project completion

Section	Patte d'Oie-Pikine	Pikine-Diamniadio	Patte d'Oie-Diamniadio
Road User Benefits (CFAF, millions)	390,886	144,299	521,041
Increase of Road Agency Costs (CFAF, millions)	55,932	138,578	145,447
Net Benefits (CFAF, millions)	322,147	5,721	322,147
Rate of Return (%)	35.9	10.5	34.5

42. **The project's length of implementation affected its efficiency.** The project was in particular extended twice, leading to additional supervision costs. Despite the extension, all planned activities could not be completed and at project closing, there are still 1,047 PAPs awaiting compensations. The cost for construction of the highway borne by the Government was higher than initially envisioned as (a) under the concession contract, the public sector was bound to cover the costs related to price indexation (this led to a cost overrun of US\$66 million) and (b) a couple of addenda to the contract were signed upon request for the Government to accelerate some works so as to open earlier sections of the toll road and additional works on interchanges, new pedestrian bridges, and so on.²²

43. **Based on the above discussion, the efficiency rating is Modest.**

²² See table 1 for more details.



D. JUSTIFICATION OF OVERALL OUTCOME RATING

44. **The overall outcome is rated Moderately Satisfactory.** As described previously, the project remains highly relevant throughout and after its closing. It achieved substantial efficacy, and the efficiency is also rated Substantial. However, there are remaining PAPs to be compensated at project closing, and a few complementary activities were not completed.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

45. **While this was not a requirement under World Bank policy at appraisal and the project's Result Framework did not specifically monitor gender indicators, the project was gender informed and included several activities that specifically targeted women.** First, the preparation of RAPs made the effort to understand the main concerns of women regarding the resettlement process. Those concerns were, among others, the possible loss of revenue and the disruption of social networks. Further, the RAP process recognized the necessity to itemize the compensation of households to account for the small revenue-generating activities and businesses mostly owned and operated by women (small vegetable stands, fish selling, and so on) and compensate the latter directly. Second, the project designed and implemented a strategy to extend additional financial and in-kind assistance to vulnerable households, most of which were led by women (mostly widows). Finally, to address the above-mentioned concerns, the project implemented several activities that specifically targeted women for helping them restore their social networks and improve their revenues. These activities included the construction and equipment of four women's centers, which provide a space for women to receive job training; engage in social networking; and take part in financial activities such as catering, sewing, sale of fruits and vegetables, and fishery products. Further, the two markets built in the project area (PIS and TP) provided an outlet for women to partake in economic activities to generate revenues for themselves and their families. The project also created several opportunities for youth and vulnerable groups (including women) with the creation of jobs during the implementation and operational Phases.

Institutional Strengthening

46. **The project undeniably contributed to the development of capacity in PPPs within the Government.** As the first large infrastructure PPP in the country, APIX as well as other agencies involved in the project benefitted from trainings, study tours, and knowledge exchange in Europe and South America where PPPs had been successfully implemented. A core team with PPP expertise was put together within APIX and was provided with the necessary tools and training to ensure a successful execution.

47. **The project laid the foundation for best practice social safeguards in Senegal.** The project positively influenced the approach on compensations of PAPs in the country, considering formal and informal rights, compensating for losses in revenues, centralization of resettlement activities in one office onsite, and support from NGOs to identify PAPs and maintain dialogue. It allowed the development and testing of different consultation and participation mechanisms for beneficiaries and PAPs that are being replicated on several projects involving resettlement or projects with an impact to communities in



general. Further, a pool of social and environmental safeguards specialists within APIX benefitted from in-depth capacity building on safeguards policies and compensation policies for PAPs, which helped improve the quality of dialogue between the Government through APIX and the populations.

48. Activities under Component D also contributed to the institutional strengthening through the hiring of additional staff who benefitted from trainings and who either stayed within the implementing agency or moved to other governmental agencies.

Mobilizing Private Sector Financing

49. **The project exemplifies how private sector participation can contribute to reduce the infrastructure gap of a country without overburdening public finance while improving the quality of management of the infrastructure both at the construction and operation stages.** It is widely considered a flagship project in the region as the first greenfield toll PPP in West Africa. The Government's commitment in setting up a PPP including instituting the required reforms (legal environment and creation of APIX) was effective in attracting private investment in large infrastructure projects despite the context of post financial crisis in 2009. The private sector invested US\$120 million for the construction of the highway (approximately 40 percent of the costs of construction), and the country provided an up-front investment subsidy to fund part of the construction costs when the feasibility studies confirmed that the private sponsor would not be able to recover its costs and maintain the road over the life of the concession if the concessionaire were to fully finance the toll road. That decision was crucial in attracting potential private sponsors. The involvement of the World Bank Group (including IFC and Multilateral Investment Guarantee Agency), which was regarded as an honest broker, was a key enabler of the project and valuable in building trust among other stakeholders and financiers such as the AFD and AfDB to facilitate this US\$555 million project.²³

50. **In light of the successful concession to design, build, and operate the toll road from Dakar to Diamniadio, the Government awarded another 25-year concession to SENAC for the construction of the toll road extension to the new airport, AIBD, 17 km from Diamniadio.** The success of these two transactions guided the interest of the private sector actors who are considering investing in Senegal.²⁴

Poverty Reduction and Shared Prosperity

51. **The project contributed to reducing disparities between Dakar and its suburbs, which are now more accessible and possess additional health and education infrastructures.** With the higher level and quality of social infrastructures plus road connection, people who could not afford housing in Dakar have now the possibilities to move just outside of Dakar bringing new revenues to the area. The project financed an evaluation analysis²⁵ to take a deeper look at the impact of the project in the country. The analysis estimated that the project expenditure contributed to boosting national GDP growth by 3.3 percent, 4.7 percent, and 3.5 percent for 2009, 2010, and 2011, respectively. The cumulative effect over 2009–2013 amounted to 16.6 percent. Additionally, the highway construction brought positive effects to

²³ See annex 6 for more details on the PPP arrangements.

²⁴ Other infrastructures have been conceded since then including a container terminal in 2008, a RoRo terminal, and a bulk terminal in 2014.

²⁵ See annex 7 to access to the impact evaluation analysis document prepared by APIX in 2016.



the city and had created approximately 700 temporary jobs during the construction Phase and 250 permanent jobs during the operations Phase.²⁶

52. **According to the evaluation of project's impacts conducted in 2018, the induced effects of project expenditure contributed to an increase in local firms' income of 0.69 percent over 2014–2015.** Further, a survey²⁷ performed in 2015 found that 87.1 percent of businesses mostly in transportation, construction, manufacturing, and trade (compared to 80 percent in 2012) believe that the new highway improved the delivery of their inputs. This improvement is mostly due to the reduction of travel time on RN1. The survey also indicated that 59.7 percent of businesses became more competitive as mobility increased thus providing access to new markets.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

53. **Project preparation took almost five years starting in 2004 and was overall funded by the Government, the World Bank through a US\$1.5 million PPF, and an initial Public Private Infrastructure Advisory Facility (PPIAF) grant of US\$250,000.** Financial and technical prefeasibility studies on traffic, toll sensitivity, and acceptability were financed through the PPF and were carried out by well-known consulting firms (Axelcium, SETEC, and Tecsalt). The preparation for the bidding process started in 2006 through a World Bank financed project, the Private Investment Promotion Project (P051609), which was approved in 2003 with the objective of creating conditions to increase private investment, and by December 2008, the contract was awarded to the concessionaire.²⁸ During preparation, APIX underwent a reorganization financed through the PPIAF grant to prepare for the project. Project preparation required 202 World Bank staff weeks and US\$1.15 million in expenses, which attests to the level of due diligence from concerned parties (extensive feasibility studies, commitment, identification of alternative solutions, comprehensive communication and consultations, and so on).

54. Contributing to one of the largest resettlement activities in West Africa, APIX was the first agency in Senegal to manage such a high number of PAPs in a complex environment and, despite the learning curve and setbacks, was overall able to carry out the process.

55. **It was the first greenfield toll road project in Africa other than South Africa and was an excellent example of cross collaboration between institutions of the World Bank Group and also with other development partners.** The objectives of the project were clear and highly relevant, and the design structure was logical among the three components. Understandably, the project aspired to solve the many issues raised as a cascade effect of the toll road construction, but then the design was overly complex. As the first PPP of its kind involving resettlements at levels unseen in the region, the project was already complex enough and may have been overly ambitious in trying to address a wide urban restructuring beyond the restructuring of PIS such as exemplified by the case of the Mbeubeuss closing, not an absolute necessity as demonstrated by the studies at appraisal for the PDO.

²⁶ See completion report of the AfDB project (Component 1) in annex 8.

²⁷ Results of survey included in the impact evaluation report.

²⁸ See annex 6 for more details.



56. **A program or series of projects could have been optimal.** Although this option was considered at preparation, the reason it was not selected was to mitigate the risk of the different actors losing interest in the other components once construction of the highway was completed and functional.

57. **The project was a high-risk, high-reward undertaking.** A comprehensive risks matrix was formulated during preparation considering the complexity of the project. In particular, the risk of deficiency in counterpart funding, which was one of the main issues during implementation, was identified but with weak long-term mitigation measures. The Government already had in fact accumulated arrears in payment of counterpart funding for the compensations of the PAPs on other World Bank-financed projects and on the Government-funded segment of the highway (Malick Sy to Pikine - Phase 1) but strong measures were not in place to mitigate this risk.

B. KEY FACTORS DURING IMPLEMENTATION

58. **As mentioned previously, the project was complex, but it benefitted from a strong implementing agency (APIX) and contract management structure (Public Interest Works Implementing Agency [*Agence d'Exécution des Travaux d'Intérêt Public*, AGETIP]) equipped with the required expertise and experience needed to fulfill the mission as well as commitment from the Government and financiers.** The project had a large number of stakeholders and relied on many governmental agencies and local government. Coordination between them was essential for the continuity of works and achievement of results. APIX was responsible for the overall coordination, financial reporting, and procurement for the project, and throughout implementation, communication was constant with the World Bank team and other financiers.

59. **The opening of a local APIX office called 'the Office of the Highway in Pikine' was a major innovation for the project.** The 'Office', located near the affected people, facilitated on-the-spot and same-day processing of files (submission of paperwork, verification, receipt of payment, and allocation of land in TP as needed) and enabled constant communication with the people. This arrangement was effective, but the 'Office' was closed in 2016,²⁹ compelling PAPs to file their requests at the Department of Taxes and Domains where PAPs from other projects were also being handled. This created a backlog of files as the treatment required 5–10 days for processing.

60. **The project was restructured twice before its effectiveness to amend the FA to address delays in the Government's opening a fully operational replacement landfill in Sindia and closing the Mbeubeuss dumpsite.** The FA was amended through three restructurings and the loan closing date was extended cumulatively by 30 months from its original closing date (July 31, 2015). Overall, the project was restructured six times since its approval in 2009. These changes were necessary but did not affect the original theory of change as the PDO objectives remained relevant and unchanged. The Government requested a third extension of the project closing date from January 31, 2018, to September 30, 2018, to complete the remaining works.³⁰ The request was declined considering the slow progress in implementing project activities and agreed actions plans, evidencing the unlikelihood of concluding the remaining activities even with this new extension. The last three months of project implementation were focused on securing and cleaning up works sites and concluding compensations for PAPs. The compensation of

²⁹ The office was located in a building in the military camp in Pikine and the military requested its release.

³⁰ These works include complementary works that were added during implementation.



the outstanding PAPs remains a challenge at the time of the drafting of the ICR, and the World Bank team will continue to closely monitor the situation.³¹ World Bank budget was provided to the team to continue this exercise beyond the closing date of the project and until appropriate resolution mechanisms are in place.

61. **The project planned to build houses for PAPs resettling in TP.** Although intensive communication campaigns were held during preparation and 80 percent of the PAPs at that time were in favor of the project building the houses in TP, the trend was reversed and ultimately the concerned PAPs expressed their preference for building their own houses in TP or relocating elsewhere. The change was due to the delay in developing the RS because of the delay in selecting the construction firm and signing the contract, thus forcing PAPs to find alternative accommodations since they had to vacate their current homes, and for some, these arrangements became permanent. Additionally, PAPs were concerned that the RS of TP would be similar to the one built by a government-funded project after the excessively severe 2005 floods.³² The project had to request a waiver³³ to convert these funds earmarked for the construction of the houses to cash to be used for PAP compensations.

62. **APIX was adequately staffed throughout implementation, but attention toward remaining activities seemed to have gradually declined.** Particularly, the pace of treating of the PAPs' files as well as actual compensation slowed down, and due diligence in complying with the safeguards requirements as well as management of the different contractors weakened resulting in delays. Supervision and monitoring of health, safety, and environment on site was inadequate at times, including insufficient safety signals at sites and lack of personal protective equipment for workers.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

63. **To track progress against the PDOs, six PDO indicators were selected, and all components were associated with at least two intermediate indicators.** Two indicators, specifically, the 'Average travel time between Dakar and Diamniadio (minutes)' and the 'Volume of traffic on toll highway (number)' were adequate to measure PDO 1 - To improve mobility between Dakar and Diamniadio. Although only Phase 3 was built under the project, these two indicators measured the impact of Phases 1, 2 and 3 in relation to the average travel time and Phases 2 and 3 in relation to the volume of traffic on the toll highway. This made sense since the objective was to improve mobility in and out of Dakar. Additionally, the project tolling system in Phase 2 was included in the concession, and the World Bank support on social and environmental safeguards comprised all three Phases. Similarly, the intermediate indicator 'number of kilometers of roads built' measured the progress toward PDO 1.

³¹ World Bank budget was approved after project closing to continue the monitoring of the social safeguards issues.

³² The GoS built an RS in Jaxaay, 25 km from Dakar for the displaced populations affected by the floods in 2005. The houses were of lower standard, and the site did not offer social and economic services such as health centers, markets, and a drainage system.

³³ The waiver was approved by the World Bank in October 2010.



64. **PDO 2 - To provide communities affected by the construction of the highway access to basic social and economic services) was measured through four indicators:** (a) People within 150 meters of an asphalted all-year-round road in PIS (number); (b) Surface area in PIS liable to flooding (hectares); (c) Displaced children sent to school in PIS and Resettlement Zone (%); and (d) Population displaced satisfied with relocation services (%), most of which were also adequate (see paragraph 63). The intermediate indicator ‘Unresolved complaints after one year of lodging complaint (Percentage)’ was relevant in measuring the progress toward PDO 2 as it did assess the satisfaction of the communities affected by the project and the reactivity of the project to resolve issues as they arise. Although the project did not build the houses in TP as originally planned, the intermediate indicator ‘number of housing units constructed’ was still relevant in measuring the attractiveness of the new site and willingness of PAPs to relocate there. The remaining two intermediate indicators— ‘the number of new socioeconomic services constructed’ and the ‘length of drainage canals constructed’—were adequate in measuring progress toward PDO 2.

65. **All the selected indicators were measurable, achievable, and timebound with baseline data available.** Overall, the monitoring and evaluation (M&E) was appropriately designed to measure the achievement of the project’s objectives and provided clear guidance on what to collect, how and when to collect it, and the responsible party. The PDO indicators were clear outcome indicators, and the data collection instruments were appropriate and helped monitor and measure progress toward achievement of the PDOs. Nevertheless, the M&E framework presented few shortcomings. At appraisal, the baseline for the indicator ‘Surface area in PIS liable to flooding (hectares)’ was 90 ha and the target was set at 15 ha. In 2009, a study conducted by APIX concluded that the surface in PIS liable to flooding was 210 ha (30 percent of the total surface of PIS - 700 ha) instead of 90 ha, and the objective of the project was to decrease that area to 119 ha. Unfortunately, the indicator was not updated during implementation. The M&E framework could have also been complemented by sub-indicators directly linked to the project activities. For example, a sub-PDO Indicator for ‘Average travel time’ and the ‘Volume of traffic’ measuring time and traffic on Phase 3 of the toll road. The World Bank project could hardly be considered in isolation from the rest of the Dakar–Diamniadio motorway infrastructure, turning de facto those transport-related indicators particularly relevant.

66. **Finally, the M&E framework could also have been more comprehensive, measuring specific project outputs such as the closing of Mbeubeuss, the distribution of land titles in PIS for current residents, and the implementation of the PAFCM.** One important aspect of the RS that was not measured relates to the distribution of land titles and/or land rights for PAPs who chose to move to TP.

M&E Implementation

67. **Data collection was not an issue throughout the project, and baseline data were already available.** The indicators were regularly tracked by the concessionaire (for indicators linked to the toll road) and by APIX, which had a dedicated M&E specialist working full time on the project. The Project Implementation Unit diligently and regularly reported on the indicators and worked closely with the other responsible agencies to ensure timely and accurate reporting. As mentioned in paragraphs 64 and 65, there were indicators that should have been modified to reflect the underlined changes during project implementation.



M&E Utilization

68. **The project's M&E findings were regularly shared with stakeholders through progress reports and the World Bank's aide memoires after each mission.** The indicators linked to the mobility between Dakar and Diamniadio (see paragraph 63) will continue to be monitored by the concessionaire and the Government. The indicator values were greatly useful in evidencing that the project objectives were achieved. The indicators linked to the resettlement of populations in TP including easy access to social services and satisfaction of PAPs would inform projects in education, health and the PIS II project whose PAPs will be resettled in TP.

Justification of Overall Rating of Quality of M&E

69. **The quality of M&E is rated Substantial based on the clarity and usefulness of the indicators selected as well as the methodology and framework put in place for consistent data collection and utilization.** Overall, the selected indicators and intermediate indicators provided useful insight for monitoring the results of the project and measure achievement of the PDOs. In addition to monitoring the selected indicators as agreed during preparation, the project financed a detailed impact evaluation including additional indicators. The results of this analysis helped measure the achievement of the objectives of the project.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

Environmental Safeguards

70. **The Environmental Assessment category was rated 'A' at appraisal.** The following safeguards policies were triggered: Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Physical Cultural Resources (OP/BP 4.11), Involuntary Resettlement (OP/BP 4.12), and Forests (OP/BP 4.36). Further, the World Bank safeguards policies applied to the Government-funded sections of the highway (Phases 1 and 2) as well as the PPP-funded section (Phase 3). All safeguards documents were reviewed by the World Bank and disclosed according to the guidelines. Safeguard audits of Phases 1 and 2 were performed, and the GoS was required, as an effectiveness condition for the World Bank project, to compensate or secure in an escrow account the funds needed for the remaining PAPs of Phases 1 and 2.

71. **The project successfully mitigated the impact of the toll highway on the Mbao forest.** The forest is considered the 'green lung' of Dakar and is home to a variety of economic activities such as gardening, livestock farming, and medicinal plants, to name a few, contributing to the growth of the area. The toll road crossed the Mbao forest, and about 35 ha of forest was affected and 8,000 trees were cut down. To mitigate this impact, the project financed the implementation of the PAFCM. The following activities were successfully completed: (a) compensatory reforestation and enrichment of about 116 ha (two trees planted for each tree cut down); (b) development of an arboretum complex; (c) studies for the construction of a national herbarium; and (d) construction of a produce storage facility, a processing unit for vegetables, fruits, and cereals, a honey farm, and toilets and sanitary blocks for gardeners active within the forest. Overall, the PAFCM presents an opportunity to efficiently manage the forest and provide to the city and surrounding suburbs a green space for leisure, which is practically nonexistent in Dakar.



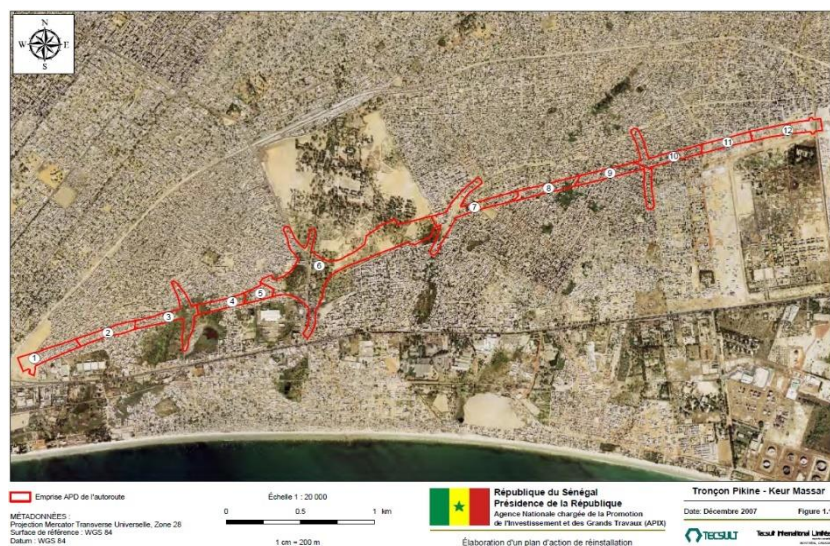
72. **All environmental and social management plans of works were satisfactorily implemented.** The RS of TP was developed, and drainage and sanitation works have been carried out to preserve the roadway and protect residents against flooding. Additionally, nuisances were minimized during construction with the construction of a sound barrier protection wall. The impacts on the Mbao forest reserve were contained in consultation with water and forestry services.

73. **While Mbeubeuss dumpsite was not closed during the project, the studies relating to the preparation of a closure plan and the opening of the Sindia landfill were carried out and validated by the Government and the World Bank.** With the development of new urban hubs in Diamniadio–Mbour area, it is imperative for the GoS to devise alternative solutions (see paragraph 32).

Social Safeguards

74. **The project's overall complexity was translated into the different safeguards instruments.** Overall, two Resettlement Policy Frameworks, nine Resettlement Action Plans (RAPs), and six RAP addenda were prepared for the clearing of the ROW for the toll road (all Phases) as well the restructuring of PIS and the development of the TP RS including the closing of the Mbeubeuss dumpsite.

Figure 6. ROW of the Toll Highway



Source: APIX

75. **The commitment of the authorities as well as the involvement of NGOs greatly facilitated the RAP process.** Specifically, the clearing of the ROW for the toll road (Phase 3) was on the critical path and could have jeopardized the ability of the concessionaire to build the highway on time if it had been delayed. Any such delay would have negatively affected the concessionaire financing and ultimately the cashing of toll revenues. A major achievement for the project was to clear on time the ROW for the toll road despite the magnitude of the task at hand. PAPs were presented with options to receive full financial compensations or a combination of financial compensations and resettlement in TP. Additional benefits were offered to PAPs according to Table 4, which could be considered as good practice as they provide benefits beyond the standard level of support to PAPs.



Table 4. Benefits provided to PAPs for the DDTH project

Principal	Additional	Optional
Compensation of Physical structures at full replacement cost	Moving expenses	Free counselling services
		Plot in the TP at full price
		Compensation for lost rental income
	Rental expenses	Architectural assistance
		Legal assistance
Compensation of land at market price	Free or half-priced plot in the RS (vulnerable PAPs)	Free realtor services
		Financial assistance (vulnerable PAPs)
		Discounted construction material
	Tax exemption on the transaction of the plot in the RS	Social Fund
		Recycling of materials from compensated structures

76. **The preparation and implementation of RAPs were based on a sound communication strategy.** APIX developed an overall communication strategy for the project that included a strong social communication component. The strategy was implemented through meetings (public hearings, community meetings, and home visits); press releases and posters; television and radio broadcasts, especially on community radio stations; the publication of leaflets and brochures (guide for the displaced, guide to resettlement, and leaflet presenting the project); and local activities (youth groups and sports tournaments). The approach attracted and informed the populations especially the ones that were directly affected by the project.

77. **APIX adopted a participatory strategy with the affected communities.** To better support the PAPs, a local APIX office called the 'Office' was opened in Pikine where most of the PAPs were located. The 'Office' housed all the stakeholders involved in the involuntary relocation and resettlement process and acted as a one-stop shop for PAPs to seek information, submit their paperwork, and receive their compensations. The project also opened smaller local offices in specific neighborhoods and established consultation groups involving local authorities and PAPs with different committees such as Local Monitoring Committees, PIS Information Committees, Social Mediation Committees, and so on. A partnership with local community organizations, sports and cultural associations, and women's groups was also established. Several public meetings and hearings were held to inform and consult with PAPs throughout the process, from RAP development to implementation. These local offices have also made it possible to receive PAPs on a permanent basis and to record their concerns or complaints. This widespread communication approach was key to ensuring that the clearing of the ROW was successful, especially for the construction of the highway.

78. **To date, 10,584 PAPs, of which 137³⁴ are awaiting additional checks, have been compensated out of 11,494 identified PAPs (92 percent).** The process will continue beyond project closing according to the conditions of the signed FA.³⁵ Initially, 12,022 PAPs were identified, and 528 have been removed from the list as they were no longer considered eligible for compensations according to the RAP (318 are PAPs

³⁴ These PAPs received principal payments for their houses or businesses and are awaiting complementary checks for lost rental income or payment of additional rental charges.

³⁵ See details of the number of PAPs in annex 7.



who could not be located after more than six years of active search by various means of communication and 210 are PAPs who are located in areas where works will no longer be performed). Ultimately, 11,494 PAPs (including families and businesses) were to be compensated representing approximately 30,000 individuals. At project closing, 1,047 PAPs (8.8 percent), of which 137 have received partial payments, are awaiting payments for a total estimated amount of US\$11.3 million as follows:

- (a) 397³⁶ eligible PAPs still remained to be compensated for a total estimated amount of US\$5.7 million, pending release of compensation funds from the Government.
- (b) 513³⁷ PAPs were considered complicated cases involving heredity and ownership issues as well as cases with incomplete files and, in some cases, lost files, for which compensation funds to the tune of US\$5.6 million are required.

79. **The process of payment of the compensations is ongoing, and the GoS has committed to concluding this process on time.** The World Bank will continue close supervision of the management of the remaining cases.

80. **Project's safeguard management has significantly contributed to improving the Senegalese national practices for resettlement, and remains overall a reference for future large projects with significant social impact, being one of the largest and most complex case of resettlements in Africa.** At closing, the percentage of unresolved complaints from PAPs after one year has reached the target of 0 percent. This means that all complaints were managed within the year. According to the different surveys performed throughout the life of the project, the percentage of the population satisfied with the relocations services also reached 100 percent, above the initial target of 90 percent.

81. **However, because of the pending compensations, safeguards performance is rated Moderately Unsatisfactory.** Despite the above-mentioned positive environmental and social safeguards outcomes, the pace of compensations of PAPs slowed down considerably during the last years of implementation due to the lack of public funding. As a result, there are 1,047 PAPs still remaining to be compensated by project closing. Further, the Mbeubeuss dumpsite is still open and continues to cause significant adverse impacts in the GDA, and the resettled PAPs in TP are still awaiting their land titles.

Financial Management

82. **The project's financial management was moderately satisfactory.** APIX was identified as the best agency to handle the fiduciary responsibilities for this PPP project especially after the agency was able to build its financial management capacity under the Private Investment Promotion Project (P051609). The accounting system and financial and accounting manual remained adequate throughout the project. However, some delays were noted in the submission of interim financial reports as well as approval of annual budgets. The disbursement rate reached 95 percent at the end of the grace period. A World Bank financial management specialist based in Dakar supported the project through implementation. Audit reports were provided on time, and all audits were unqualified. At project closing, the physical inventory of assets and final audit were successfully performed.

³⁶ Of which 21 are awaiting complementary payments.

³⁷ Of which 116 are awaiting complementary checks once their additional files are complete.



Procurement

83. **The project's procurement performance was moderately satisfactory.** Procurement was carried out using the World Bank's standard bidding documents by AGETIP for technical aspects of the project (Components B and C) and by APIX for project management (Component D). Both agencies have an effective in-house structure and experience in managing contracts. In both structures, key staff responsible for procurement received training in the World Bank's procurement procedures. At the end of the project, there were no red flags in procurement. However, the monitoring and updating of the Procurement Plan was not performed regularly, and the management of the contracts, including the activities of Components B and C carried out by AGETIP, had many requests for addendum and important modifications.

C. BANK PERFORMANCE

Quality at Entry

84. **The World Bank worked closely with the GoS based on the defined country strategy to identify and prepare the project with the best financing instrument at that time.** The project benefitted from numerous detailed technical, financial, and economic feasibility studies that allowed an optimal design of the project, and many different options were reviewed and analyzed before selecting this final design. As mentioned in paragraph 55, the project's design was too complex, including activities that were out of scope.

85. **The project involved many stakeholders and pioneered the maximizing finance for development (MFD) approach for private sector financing in infrastructure projects in the country.** It leveraged resources from various governmental agencies, private sector actors, and international finance institutions, and the World Bank played an important role coordinating between all parties and providing assistance during the course of preparation.

86. **The necessary studies and documents focusing on the social and environmental aspects of the project as well as fiduciary assessments were initiated early during the project preparation, which took many years and attests to the depth of the groundwork accomplished in preparing the project.** The PAD prepared by the World Bank included the arrangements (implementation, M&E, and fiduciary) needed to ensure that the outcomes of the project are attained as planned. The project also planned for a detailed impact evaluation exercise, which was innovative at that time. All through the preparation, the World Bank maintained a multidisciplinary team which worked closely with the other partners. The project experienced delays in becoming effective as the FA required two restructurings,³⁸ indicating a few oversights during preparation.

Quality of Supervision

87. **The project was of unprecedented nature with high risks, complex design, and a large number of affected people.** The World Bank supervision team was however present with enough resources and a

³⁸ Refer to 'key factors during implementation' section and table 4.



task team leader based in Dakar to ensure proactivity and constant communication with the Government, other donors, and the concessionaire. The World Bank remained fully engaged during the project implementation, and considering the complex social aspects of the project, the World Bank appointed a safeguards specialist in the Dakar office to help mitigate the risks and support the client as needed. The project also benefitted from higher-level management support (site visits by the Country Director, Transport Director, and Manager and regular communication with high-level government representatives), which helped keep the momentum and facilitated progress.

88. **The World Bank team provided constant support during implementation through supervision missions, site visits, and communications (e-mails, official communication, and video and audio conferences).** With the 2.5 years extension, the World Bank supervision over the last years of the project was substantially strengthened with weekly meetings, especially regarding the social safeguards aspects and several site visits per year. The supervision missions were carried out with a multidisciplinary team to ensure that all aspects of the project were reviewed and problems addressed promptly.

89. **During missions, the World Bank team ensured that the various partners in the project such as AFD, the contractors, the supervision engineer, the different ministries involved, and local governments as well as the implementing agency actively participated.** The World Bank team ensured that all fiduciary arrangements were respected according to the FA. In light of the complex social aspects of the project, the World Bank adopted a particularly hands-on supervision of social safeguards. The supervision of the World Bank always resulted in constructive recommendations for improving the effectiveness of the project actions with clear action plans prepared and used as reference point for next steps.

Justification of Overall Rating of Bank Performance

90. **The World Bank performance is overall rated Moderately Satisfactory.**

D. RISK TO DEVELOPMENT OUTCOME

91. **The DDTH project achieved considerable results and contributed to substantially improve urban mobility in Dakar.** However, there are risks that some of the outcomes achieved would not be sustained over time:

- In PIS, some of the drainage systems could not be concluded by project closing, including two retention basins as well as two sections of the primary collector. While the two basins are not critical for the usual rainy season, they are needed for exceptional rainy seasons and may require specific pumping to flow the excess of water. Similarly, the stream of water that should be channeled through the primary collector not fully completed will require a channeling toward an existing exhaust and pumping solutions. In the short term, it is important that specific measures are put in place and maintained by the Government (for example, water pumping) to prevent future flooding. Ideally, the Government should finalize these downstream collectors and basins as soon as possible, a project for which the GoS indicated its commitment to undertake with other funding.
- The socioeconomic infrastructures built under the project in PIS and TP such as schools, day cares, women's centers, market, and health centers indubitably contribute to improve the



living conditions of the dwellers. Looking ahead, maintaining those infrastructures in good conditions will rely on the commitment and capacity of the municipalities to ensure their operation and mitigate the risk of misuse, closing, or depreciating over time. Several mayors met during field visits in the last year of the project implementation demonstrated such commitment to handle those infrastructures transferred to them.

- The counterpart funding expected to finance the compensation of PAPs was lacking during the project implementation, which affected the pace of execution of the RAPs. The GoS remains formally responsible for the conclusion of these compensations in accordance with the World Bank procedures until their full conclusion even after project closing. The risk that uncompensated PAPs remain despite the commitment of the Government to finalize all payments is not negligible and will require a continued follow-up by the World Bank with the Government. Such follow-up is already planned in FY19, including through the preparation of a comprehensive social audit of the project, and should the situation not be settled soon, it could affect other World Bank-financed projects in the country.
- The rate of occupancy in TP was still low at project closing, entailing a risk of degradation of the infrastructure due to underuse, notably for the treatment plant, the community market and socioeconomic center's lack of maintenance, and security issues. Although 1,662 out of 2,000 available parcels were allocated in the RS of TP, official land titles or Right of Land Occupancy had still not been issued to the PAPs at closing. This poses a risk to the populations who agreed to resettle in TP, especially as they do not have legal ownership of the land where they built their houses putting them at risk in the long term with the ongoing land speculation in TP. Such situation will continue to be followed up by the World Bank even after closing, and if not settled soon, it could also affect other World Bank financed projects in the country.
- The project implementation scheme involved an agency whose mandate is the promotion of foreign investments in the country (APIX). As such, its involvement in the project was perfectly legitimate during project implementation and, as mentioned previously, the agency demonstrated excellent capacity to implement the project, particularly during the construction Phase. Looking ahead and as the Government ambitions to further expand the toll road network, a reflection might be useful on the best way to regulate that kind of complex contracts in the long term, including through the structuring of a dedicated regulatory body granted with adequate levels of competences, capacities, and independence.

V. LESSONS AND RECOMMENDATIONS

92. The following are the lessons from this project and recommendations:

- **Project rationale.** The intervention of the World Bank in this project, dedicated to the mitigation of the impacts of this major infrastructure on dwellers, combined with IFC support in the form of a loan to the private sector, was instrumental to enable the mobilization and coordination of both international funding institutions (AfDB and AFD) and the private sector



in the financing and operation of the toll road. It is a vivid demonstration of both the leverage and coordination capacity of the World Bank as well as the relevance of the MFD, an approach adopted more recently by the World Bank. Conversely though, the absence of participation of the World Bank in the financing of the infrastructure reduced the World Bank's leverage on the Government to accelerate the works planned under the World Bank-financed activities in the upgrading of PIS, particularly once the main infrastructure opened and the focus of the Government was directed to other flagship projects. For similar future projects, the World Bank's participation in the financing of the PPP arrangement for more leverage could be considered.

- **Project scope.** Clearly defining the boundaries of a project may sometimes be a delicate task, and teams should always keep a clear view of the project's objectives at preparation. While temptation may be fueled to add more activities from different review meetings at preparation, refrain from complicating projects. In the present case, while the project was already intrinsically complex, several activities have been incorporated in its scope that were not an absolute necessity to achieve its objective, such as the Mbeubeuss landfill decommissioning.
- **Implementation of projects with large groups of affected people.** A set of actions to handle the resettlement processes were piloted during the project that appeared very relevant and should be considered best practices, including the opening of a local office in the affected areas serving as a 'one-stop shop' near the affected people in Pikine for the processing of compensations and collection of complaints; the hiring of NGOs and independent safeguards specialists to help dialogue with the people, mitigating the risks of misunderstanding and speeding-up the processes; and the design and implementation of an extensive communication strategy. Unfortunately, the observed reduction in the pace of implementation of the resettlement processes stemmed in part from the reduced focus of the various agencies involved in the processes.
- **Payment of compensation.** As detailed in this ICR, the key target of the activities financed by the World Bank under the project specifically was to mitigate the impacts of the infrastructure on the dwellers, both in the construction and operation stages. However, the payment of the compensations of the PAPs remained the responsibility of the Government according to the project design, with the exception of the affected people that were to be resettled in TP who finally decided to opt for cash compensations.³⁹ Upon conclusion of the infrastructure, the pace of implementation of the resettlement processes slowed down substantially, affecting the overall project implementation.
 - While it is theoretically possible, payment of the compensations to PAPs by a World Bank-financed project remains an exception. Looking ahead, easing the possibility to pay compensations to PAPs from the credit or the loan of World Bank-financed projects

³⁹ For those PAPs, an addendum to the FA was signed in 2011 to specifically authorize cash compensations financed from the proceeds of the credit.



through a revision of the procedures could allow more speedy and efficient execution of projects.

- In the specific cases of projects that trigger revenues (for example, concessions), an alternative could be designing innovative financing schemes where the compensation would be sourced from the payment of the tolls, for example, directing the value added tax and/or other taxes collected to the payment of compensations.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: To improve mobility between Dakar and Diamniadio

Objective/Outcome: Provide communities affected by the construction of the highway access to basic social and economic services

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Average travel time between Dakar and Diamniadio	Minutes	90.00 06-May-2009	30.00 31-Jul-2015		25.00 31-Jan-2018

Comments (achievements against targets): Target exceeded at 115%. This indicator measured the travel time on the highway including Phases 1, 2 and 3

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Volume of traffic on toll	Number	25000.00	37500.00		60000.00



highway		06-May-2009	31-Jul-2015		31-Jan-2018
Comments (achievements against targets): Target exceeded at 133%. In July 2015, the volume had already reached 45,000 and by May 2018, the volume of traffic reached 73,000. This indicator measured the volume of traffic on Phases 2 and 3 which have toll systems financed by the project.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
People within 150 meters of an asphalted all year round road in PIS	Number	109000.00 06-May-2009	250000.00 31-Jul-2015		199226.00 31-Jan-2018
Comments (achievements against targets): Partially achieved (80%). The target of 250,000 people was not fully achieved as the project only financed the construction of 4.2 kms of roads compared to an initial target of 28 km due to the slow clearing of the right of way in PIS that affected the construction of the local roads.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Surface area in PIS liable to flooding (hectares)	Text	210 06-May-2009	119 31-Jul-2015		142 31-Jan-2018
Comments (achievements against targets): Indicator partially achieved. After project, 142 ha remain liable to flooding against a target of 119. The RF includes the corrected baseline and target established during implementation. At appraisal, the baseline for the indicator 'Surface area in PIS liable to flooding (hectares)' was 90 ha and the target was set at 15 ha. However, in 2009, a study conducted by APIX concluded that the surface in PIS liable to flooding was 210 ha (30 percent of the total surface of PIS - 700 ha) instead of 90 ha, and the objective of the project was to decrease that area to 119 ha.					



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Displaced children sent to school in PIS and Resettlement Zone	Percentage	58.00 06-May-2009	80.00 31-Jul-2015		85.00 31-Jan-2018
Comments (achievements against targets): Target exceeded at 106%					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Population displaced satisfied with relocation services (%)	Percentage	0.00 06-May-2009	90.00 31-Jul-2015		100.00 31-Jan-2018
Comments (achievements against targets): Target fully achieved. Overall at project completion and based on the surveys performed by the implementing agency, 100% of the population displaced were satisfied with the relocation services against of target of 90% thanks to the wide range of benefits offered to PAPs as part of the resettlement package.					

A.2 Intermediate Results Indicators

Component: Component A: Road Infrastructure (motorway sections 3 and 4)

Component: Component B: Right of Way Clearing, Urban Development of the Tivaouane Peulh Resettlement Site and Implementation of the Mbao Forest Management Plan



Component: Component C: Urban Restructuring of Pikine-Irregulier Sud (PIS)

Component: Program management

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Roads constructed, non-rural	Kilometers	7.00 06-May-2009	32.00 31-Jul-2015		32.00 31-Jan-2018

Comments (achievements against targets): Fully achieved. Phase 1: Malick Sy – Patte d’Oie : 7 km financed by GoS; Phase 2: Patte d’Oie – Pikine: 5 km financed by GoS but toll system included under this project; Phase 3: Pikine – Diamniadio: 20 km built under this project with toll systems. The baseline already included the first section of the highway from Malick Sy to Patte d’Oie.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Roundtrips between Dakar and Rufisque on weekdays per public transpot mini-bus (Number)	Number	2.00 06-May-2009	4.00 31-Jul-2015		4.00 31-Jan-2018

Comments (achievements against targets): Fully achieved. The first buses to operate earlier morning can even go up to 5 round trips/day. Rufisque is a suburb of Dakar (13 kms from Dakar centre) with a large number of commuters using public transport services to reach the city centre for work, school or economic activities. The number of round trips between Dakar and Rufisque is a very good indicator to measure the improvement of urban mobility in Dakar.



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Housing units constructed	Number	0.00	2000.00		215.00
		06-May-2009	31-Jul-2015		31-Jan-2018

Comments (achievements against targets): Target not achieved. Originally this indicator was supposed to compute the number of houses built by the project in TP. During project implementation, it was agreed that the beneficiaries would build their own houses and thus this indicator should have been revised accordingly. Not all 2000 lots were allocated as originally planned. Out of 1662 lots allocated, 215 houses are constructed and occupied and 602 are under construction by PAPs.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Length of drainage canals constructed (meters)	Number	0.00	3624.00		4780.00
		06-May-2009	31-Jul-2015		31-Jan-2018

Comments (achievements against targets): Target exceeded at 131%. The length of drainage canal increased thanks to complementary drainage works completed.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
New socioeconomic services constructed	Number	203.00	214.00		219.00
		06-May-2009	31-Jul-2015		31-Jan-2018



Commercial spaces	Number	197.00 06-May-2009	198.00 31-Jul-2015		198.00 31-Jan-2018
Markets	Number	6.00 06-May-2009	8.00 31-Jul-2015		8.00 31-Jan-2018
Comments (achievements against targets): Target exceeded at 102%. An additional 16 facilities was constructed compared to the 11 originally planned in PIS.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Unresolved PAPs after one year of lodging complaint (Percentage)	Percentage	0.00 06-May-2009	7.00 31-Jul-2015		0.00 31-Jan-2018
Comments (achievements against targets): Fully Achieved. All complaints received were resolved within a year.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Keur Massar - Diamniadio	Kilometers	0.00 06-May-2009	13.00 31-Jul-2015		13.00 31-Jan-2018
Comments (achievements against targets): Fully achieved. This is a breakdown of the roads constructed, non rural indicator and represents section 4 of					



Phase 3.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Patte d'Oie -Pikine	Kilometers	0.00	5.00		5.00
		06-May-2009	31-Jul-2015		30-Nov-2016

Comments (achievements against targets): Fully achieved. This is a breakdown of the roads constructed, non rural indicator and represents Phase 2.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
PIS Restructuring	Kilometers	0.00	28.00		4.20
		06-May-2009	31-Jul-2015		31-Jan-2018

Comments (achievements against targets): Target not achieved. This indicator should be "Kilometers of roads constructed in PIS" instead of "PIS restructuring" and is supposed to measure the length of local roads in PIS as part of the urban restructuring. The construction of the roads in PIS could not be completed as planned because the right of way in some sections was not cleared. The lack of funds for compensations affected the completion of these works.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Malick Sy- Patte d'Oie	Kilometers	0.00	7.00		7.00
		06-May-2009	31-Jul-2015		31-Jan-2018



Comments (achievements against targets): Fully achieved. This is a breakdown of the roads constructed, non rural indicator and represents phase 1.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Pikine - Keur Massar	Kilometers	0.00	7.00		7.00
		06-May-2009	15-Jul-2015		31-Jan-2017

Comments (achievements against targets): Fully achieved. This is a breakdown of the roads constructed, non rural indicator and represents section 3 of Phase 3.



B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1	
Outcome Indicators	<ol style="list-style-type: none"> 1. Average travel time between Dakar and Diamniadio (minutes) 2. Volume of traffic on toll highway
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. Malick Sy-Patte d'Oie (Phase 1) 2. Patte d'Oie-Pikine (Phase 2) 3. Pikine-Keur Massar (First section of Phase 3) 4. Keur Massar-Diamniadio (second section of Phase 3) 5. Roundtrips between Dakar and Rufisque on weekdays per public transport mini-bus (Number)
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	Component A: 20 kms of toll highway constructed with tolling systems in place for Phases 2 and 3.
Objective/Outcome 2	
Outcome Indicators	<ol style="list-style-type: none"> 1. People within 150 meters of an asphalted all year round road in PIS 2. Surface area in PIS liable to flooding (hectares) 3. Displaced children sent to school in PIS and Resettlement Zone 4. Population displaced satisfied with relocation services (%)
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. PIS Restructuring 2. Unresolved PAPs after one year of lodging complaint (Percentage) 3. New socioeconomic services constructed 4. Length of drainage canals constructed (meters) 5. Housing units constructed
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	Component B: 2,000 viable lots, 1 market, 2 mosques, 2 health centers, 2 elementary schools, 1 high school, 1 vocational training center, drainage system



installed, local access roads built, wastewater treatment plant installed

Component C: 4.2 km of local roads constructed

5.4 km drainage system and 16 ha of retention basin built

16 new socio-economic facilities built (3 nurseries, 3 primary schools, 1 secondary school, 1 market, 4 women centers, 1 cultural center, 1 vocational training center, 1 sport center, 1 bus station)

**ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION****A. TASK TEAM MEMBERS**

Name	Role
Preparation	
Alain Labeau	Program Coordinator
Moctar Thiam	Sector Leader, TTL
Jacqueline Veloz Lockward	Program Assistant
Ntombie Siwale	Sr. Program Assistant
Gordon Appleby	Consultant
Ibou Diouf	Sr. Transport Specialist
Francois Lavouc	Intern
Felly Kaboyo	Operations Analyst
Arnaud Desmarchelier	Consultant
Nathalie Munzberg	Senior Counsel
Amine Benis	Intern
Christian Diou	Sr. Municipal Engineer
Yvette Djachechi	Sr. Social Development Specialist
Wolfgang Chadab	Senior Disbursement Specialist
Soulemame Fofana	Operations Officer
Sidy Diop	Sr. Procurement Specialist
Seynabou Thiaw Seye	Program Assistant
Saidou Diop	Financial Management Specialist
Ronnie Hammad	Sr. Operations Officer
Robert Robelus	Consultant
Raymond Bourdeaux	Sr. Infrastructure Specialist, co-TTL
Supervision/ICR	
Eric R. Lancelot	Task Team Leader
Mountaga Ndiaye, Mamata Tiendrebeogo	Procurement Specialist(s)



Fatou Fall Samba	Financial Management Specialist
Fabio Galli	Team Member
Yacouba Konate	Team Member
Antoine V. Lema	Team Member
Anta Tall Diallo	Team Member
Fatou Fall	Social Safeguards Specialist
Medou Lo	Environmental Safeguards Specialist
Tojoarofenitra Ramanankirahina	Team Member
Ndeye Anna Ba	Team Member
Eric R. Lancelot	Task Team Leader

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY05	12.012	92,413.11
FY06	38.945	206,724.01
FY07	34.421	223,791.36
FY08	31.807	225,555.17
FY09	85.166	407,171.61
FY10	0	0.00
Total	202.35	1,155,655.26
Supervision/ICR		
FY10	79.288	302,910.31
FY11	105.875	391,042.43
FY12	33.637	288,566.50
FY13	26.276	167,532.26
FY14	13.318	93,900.73



FY15	17.258	91,014.59
FY16	21.274	120,126.64
FY17	25.062	134,709.20
FY18	32.295	200,717.68
Total	354.28	1,790,520.34



ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval
Road Infrastructure (motorway sections 3 and 4)	264.5	351.35 ⁴⁰	132.8
Right of Way Clearing, Urban Development of the Tivaouane Peulh Resettlement Site and Implementation of the Mbao Forest Management Plan	158.3	147.08	92.9
Urban Restructuring of Pikine-Irregulier Sud	55	54.71	99.4
Program Implementation	14.1	15.82	112.2
Total	491.9	568.96	115.6

⁴⁰ See paragraph 42 for explanation of increased costs



ANNEX 4. EFFICIENCY ANALYSIS

General Context and Objectives of the Analysis

1. To address the mobility challenge in the GDA, the GoS launched in mid-2000 the construction of a 32 km urban motorway, the Dakar toll road. The first section covering 12 km from Malick Sy to Pikine was financed by the GoS, and the second section of 20 km between Pikine and Diamniadio was built under a PPP scheme.
2. In the initial economic assessment, using the HDM-4 model, performed at the time of the technical study, the project yielded a very high economic return. The total construction costs required to construct the motorway section of 32 km were estimated at CFAF 96.7 billion in 2005, spread over three years. The economic benefits outnumbered the economic costs by CFAF 157.7 billion.
3. The objective of the present analysis is to compare the economic results of the feasibility study with the actual project as implemented by the GoS, using the actual implemented works and costs, as well as the traffic as monitored since the opening of the sections.

Available Data and Methodology

4. For the preparation of the initial study, the feasibility created a network model, including all road sections likely to be affected by the new motorway, and two different project construction sections (Patte d'Oie-Pikine and Pikine-Diamniadio). The same network with the same technical data and initial conditions was used in the present analysis.
5. Regarding traffic volumes, data were available from the counts and the transport model in 2005 and from the toll stations on the motorway and traffic counts on the national roads in 2017. Breakdown into vehicle categories was not available for the national roads and had to be extrapolated. Based on this data, an average traffic growth volume could be calculated for each section. A slight problem had to be overcome regarding the difference in terms of vehicle categories considered in the feasibility study and currently available from the toll.
6. Data on maintenance works unit costs were retrieved from the feasibility study and increased by 20 percent to reflect the actual costs, as recommended by APIX. Operational costs for the motorway (toll collection and operation) were provided by the concessionaire for 2017.
7. Data on the construction costs and implementation period were provided by APIX, showing the first section (Patte d'Oie-Pikine) was opened in 2009, the second from Pikine to Thiaroye in 2012, and the remaining section to Diamniadio in 2013.
8. The modeling was done based on the initial HDM model used during the feasibility study using the initial sections description of 2005, both for the motorway sections to be constructed as for the surrounding national and regional roads in the area likely to be affected by the project. Traffic and vehicle operating costs were also derived from the 2005 study (see tables 4.4–4.8). The traffic growth was adjusted to correspond to the average growth over 2005–2017 on all road sections included in the road network analyzed.



9. HDM was run for the different construction Phases individually (Patte d'Oie-Pikine and Pikine-Diamniadio), and for the project as a whole, for an analysis period of 30 years, with two scenarios for each section:

- The base-case scenario, called 'Base Alternative', with no constructions but routine and periodic maintenance of the national roads;
- The 'with project case' scenario, where the actual works carried out with their actual costs and construction dates were triggered

Results

10. The results of the analysis are summarized in tables 4.1 to 4.3. The analysis compared, year by year, costs and benefits of the options 'with-project' and the base scenario without investment. Tables 4.1 to 4.3 present the main economic results in present values over the whole analysis period of 30 years.

Table 4.1. Economic Analysis Summary for Section 1: Patte d'Oie-Pikine

Road user benefits (CFAF, million)	390,886
Increase of road agency costs (CFAF, millions)	55,932
Net benefits (CFAF, millions)	322,147
Rate of return (%)	35.9

Table 4.2. Economic Analysis Summary for Section 2–3: Pikine-Thiaroye-Diamniadio

Road user benefits (CFAF, millions)	144,299
Increase of road agency costs (CFAF, millions)	138,578
Net benefits (CFAF, millions)	5,721
Rate of return (%)	10.5

Note: Due to the allocation of traffic diversions, the whole length from Pikine to Diamniadio has to be analyzed together.

Table 4.3. Economic Analysis Summary for the Overall Project, Patte d'Oie-Diamniadio

Road user benefits (CFAF, millions)	521,041
Increase of road agency costs (CFAF, millions)	145,447
Net benefits (CFAF, millions)	322,147
Rate of return (%)	34.5

11. The rapid increase in traffic over the whole analysis period results in a very congested RN network, where the use of the motorway represents an important gain for the users (mainly in terms of reduction of travel time), compensating the high investment costs. With this rapid increase of traffic, the initial traffic on the new sections exceeds the original expectations, leading to the very high economic return of 35 percent when compared to the initial analysis (11 percent). The economic results on the middle section from Pikine to Diamniadio are lower than the surrounding sections and slightly lower than expected (10.5 percent compared to 12 percent in the PAD). This results from a lower traffic diversion from the national roads, which remain fully congested despite the motorway.



12. The simulations, based as much as possible on the real data, show the good technical and economic results of the project as a whole. It has to be mentioned that the cost of the first section Patte d'Oie-Pikine has increased significantly above the initial estimate, while that for the section from Pikine to Diamniadio increased only moderately. In addition, the implementation period was longer than initially planned, which however does not affect the economic evaluation, because traffic volumes have been constantly rising during this period.

Main Input Data into the HDM Model

Table 4.4. Network Characteristics

Section on the Existing Network	Cross-section	Length (km)	Width (m)	Traffic AADT 2005
R#2:1. RN1 - Patte d'Oie-Pikine	<i>Quatre voies</i>	4.82	12	89,108
R#2:2. RN1 - Pikine-Thiaroye	<i>Quatre voies</i>	1.89	12	57,630
R#2:3. RN1 - Thiaroye-Rufisque est	<i>Quatre voies</i>	12.32	12	42,694
R#2:4. RN1 - RN2 - Rufisque est-Diamniadio	<i>Deux voies</i>	9.42	7	15,179
R#3:1. Route de Niayes-Aero a Guediawaye	<i>Deux voies</i>	5.79	7	28,169
R#3:2. Route de Niayes-Guediawaye a Thiaroye	<i>Deux voies</i>	3.39	7	7,483
R#3:5. Route de Niayes-Keur Massar a Sangalkam	<i>Deux voies</i>	10.86	7	1,415
R#3:4. Route de Niayes-Malika a Keur Massar	<i>Deux voies</i>	3.34	7	3,890
R#3:3. Route de Niayes-Thiaroye a Malika	<i>Deux voies</i>	6.37	7	7,059
R#1. Route Rufisque	<i>Deux voies</i>	3.93	7	21,535
Sections of the new motorway	Cross-section	Length (km)	Width (m)	Traffic AADT 2009
S #1. Patte d'Oie-Pikine	<i>Six voies</i>	4.2	21	41,789
S #2. Pikine-Thiaroye	<i>Six voies</i>	2.8	21	
S #3. Thiaroye-Diamniadio	<i>Quatre voies</i>	17.6	14	

Note: AADT = Annual average daily traffic.

Table 4.5. Vehicle Fleet and Vehicle Operating Costs (in CFAF 2005)

	Car	4x4 Pickup	Bus	Medium Truck	Motorcycle ^a
Economic Unit Costs					
New vehicle cost (CFAF, thousands per vehicle)	10,000.00	15,000.00	32,700.00	35,000.00	656.00
New tire cost (CFAF, thousands per tire)	65.00	48.00	220.00	225.00	30.00
Fuel (CFAF per liter)	435.98	372.40	372.40	372.40	435.98
Oil (CFAF per liter)	1,180.00	2,010.00	2,010.00	2,010.00	1,180.00
Maintenance cost (CFAF per hour)	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Crew wages (CFAF per hour)	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Overheads (CFAF)	250,000.00	250,000.00	500,000.00	500,000.00	50,000.00
Interest rates (%)	12	12	12	12	12
Passenger Working time (CFAF per hour)	800.00	80.00	600.00	600.00	300.00



	Car	4x4 Pickup	Bus	Medium Truck	Motorcycle ^a
Cargo time (CFAF per hour)	1.00	1.00	1.00	1.00	1.00
Basic Characteristics					
Kilometers driven per year (km)	25,000	45,000	65,000	75,000	10,000
Working hours per year (h)	550	1,000	1,300	1,500	400
Average life (years)	8	8	6	6	10
Private use (%)	85	0	0	0	100
Number of passengers	2	4	40	0	1
Work-related passenger trips	85	100	75	100	75
Operating load (tons)	1.2	1.8	10.0	13.0	0.2
Load equivalent single axle factor	0.00	0.00	0.5	1.5	0.00

Note: a. In the initial analysis, motorcycles were not included, but have been added as they are one category in the tolling system. b. Although some values in the vehicle fleet seem not appropriate (very low axle loads), the values used in 2005 were retained for this analysis.

Table 4.6. Main Diverted Traffic Volumes

Year	Section	AADT		
		Patte d'Oie-Pikine	Pikine-Thiaroye	Thiaroye-Rufisque
2005	Initial traffic on RN1	49,370	30,334	36,111
2009	Remaining traffic on RN1	89,108	57,630	42,694
2009	Traffic on the motorway	41,789	n.a.	n.a.
2009	% of traffic diverted	32	—	—
2013	Remaining traffic on RN1	125,475	85,145	42,694
2013	Traffic on the motorway	52,361	16,751	11,226
2013	% of traffic diverted	29	16	21
2018	Remaining traffic on RN1	139,898	110,480	42,691
2018	Traffic on the motorway	69,412	35,389	24,269
2018	% of traffic diverted	33	24	36

Table 4.7. Works Costs according to Civil Works Contract

Section No.	Section Name	Length	Cross-section	Detail of Investment Measures	Total Investment Cost	Opening
Section 1	Patte d'Oie-Pikine	4.2 km	2 x 3 lanes	<ul style="list-style-type: none"> • 3 interchanges • 3 pedestrian overpasses • 3 bridges • 1 deviation 	CFAF 51.5 billion	August 2009



Section No.	Section Name	Length	Cross-section	Detail of Investment Measures	Total Investment Cost	Opening
Section 2	Rufisque Ouest-Diamniadio (Rufisque bypass)	8.5 km	2 x 2 lanes	<ul style="list-style-type: none"> • 4 interchanges • 3 pedestrian overpasses • 3 deviations • 10 culverts 	CFAF 148.4 billion	January 2012
Section 3	Pikine-Keur Massar-Rufisque Ouest	11.8 km	2 x 3 lanes to 2 x 2 lanes			August 2013

Table 4.8. Average Financial Costs for Works and Services (in CFAF)

Code	Work Activity	Financial Cost (CFAF)	Unit
RM	Routine maintenance	2,700,000	km per year
TO	Toll operation	300,000,000	year
RS	Overlay 50 mm AC	5,400	m ²
HM	Heavy maintenance 100 m AC	12,000	m ²
NDP	Patching	21,000	m ²
EBR	Edge break repair	21,000	m ²
CS	Crack sealing	1,400	m ²
DR	Drainage	145,000	km

Note: AC = Asphalt concrete.



ANNEX 5. BORROWER, CO-FINANCIERS AND OTHER PARTNERS/STAKEHOLDERS COMMENTS

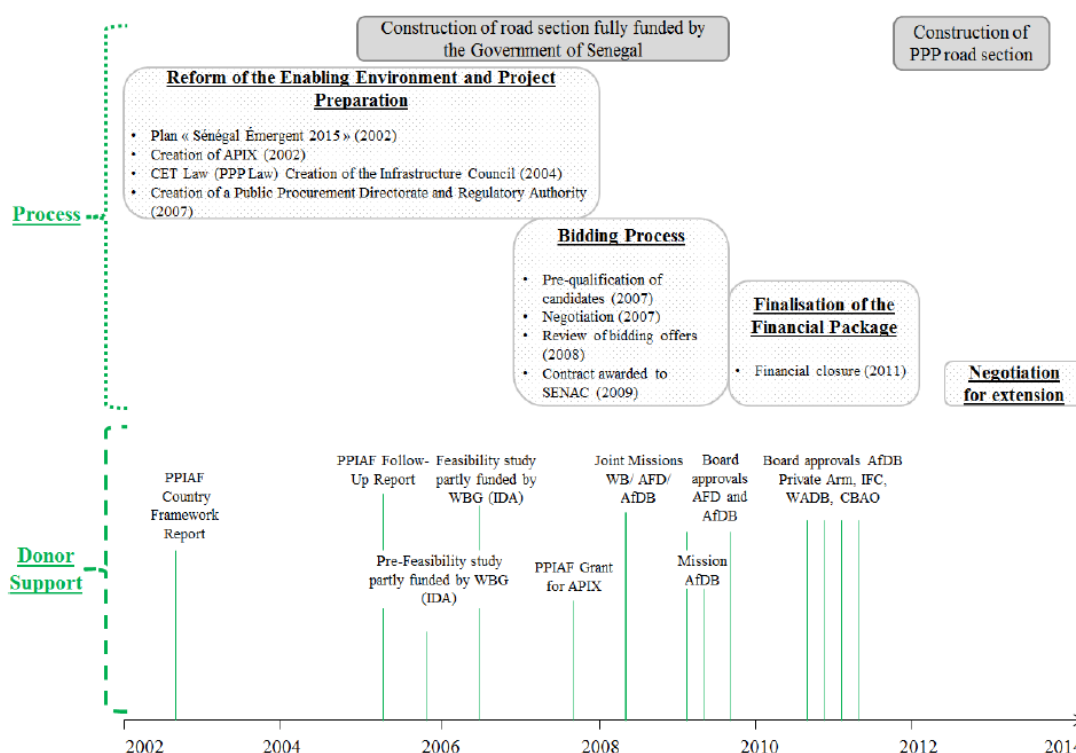


ANNEX 6. SUCCESSFUL PUBLIC-PRIVATE PARTNERSHIP TO BUILD THE DAKAR- DIAMNIADIO TOLL ROAD

1. The ambition of the GoS to build the Dakar-Diamniadio highway through a PPP required commitment at the highest level along with a process that started with a defined strategy, legal reforms to attract private investors, and detailed prefeasibility studies as shown in figure 6.1. The Government established the legislative framework relating to the PPP as follows:

- Law No. 2004-13 of March 1, 2004, establishing the legal framework for PPP projects
- Law No. 2004-14 of March 1, 2004, establishing the Presidential Council for Investment
- Law No. 2009-21 of May 4, 2009, indicating the process of implementation of the Dakar-Diamniadio toll motorway concession
- Decree No. 2007-169 of February 13, 2007, specifying the content of the contracts for the construction of the Dakar-Diamniadio motorway in PPP
- Decree No. 2010-489 of April 13, 2010, establishing a simplified procedure for the implementation of PPP projects of less than US\$30 billion

Figure 6.1. Timeline for setting up the PPP concession





2. The Dakar-Diamniadio highway project became the first PPP in West Africa, a flagship project for Senegal and neighboring countries. Although the project comprised four components, only the construction of the highway (Component A) was executed under a PPP arrangement. To express its commitment to this project, the GoS financed the first two sections of the highway from Malik Sy in downtown Dakar to Pikine and reached out to private investors to build the 20.4 km highway from Pikine to Diamniadio. APIX was designated as the implementing agency and thus responsible for the tender process and managing the contract.

Figure 6.2. The Dakar-Diamniadio Highway Project



Source: APIX

3. Prequalification was launched in April 2007, and the selection of the private operator was carried out through an international call for tenders resulting in three qualified bidders. Two of them submitted technical bids, and ultimately, the contract in the amount of approximately US\$125 million⁴¹ was awarded to Eiffage in December 2008 and the contract was signed on July 2, 2009. Eiffage, which has experience working in Senegal, formed SENAC S.A. as a special-purpose vehicle to serve as the concessionaire.

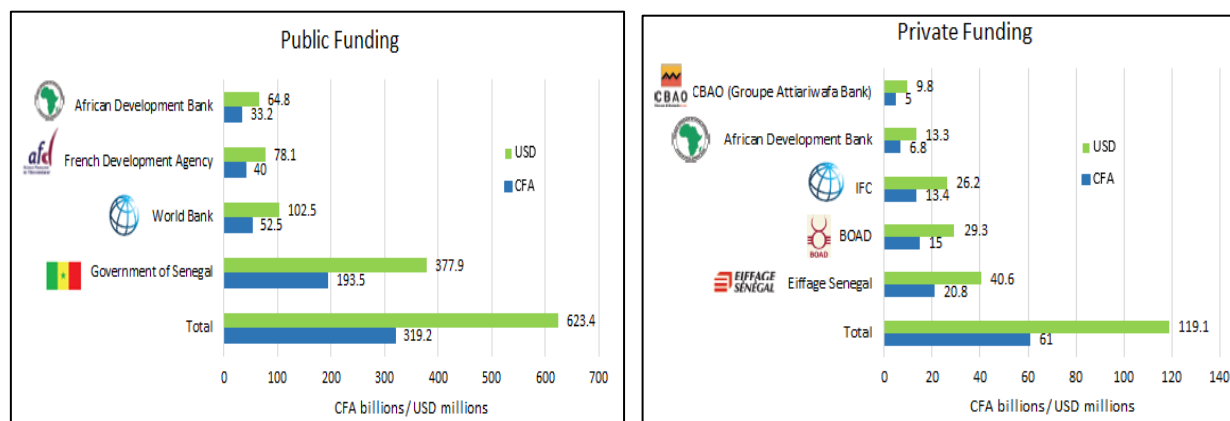
4. Under the concession contract, SENAC S.A. is authorized to collect tolls based on contractual tariffs fixed according to the sections travelled by users. These rates were considered in the financing model to generate revenue projections. In return, the concessionaire was to build, finance, operate, and maintain the Pikine-Diamniadio segment and to operate and maintain the Patte d'Oie-Pikine segment for 30 years. All necessary repairs as well as periodic maintenance and reinforcement of the pavement are the responsibility of the concessionaire who also pays taxes to the Treasury. In addition, once Eiffage has ensured its return on investment, forthcoming revenues will be shared with the Government.

5. The cost of the highway in the amount of €226 million was financed by Eiffage at 41 percent (€93 million), and the remaining 59 percent (€133 million) was financed by the Government through loans from development institutions in the amount of €75.75 million (provided by AfDB and AFD) and direct contribution from the Government in the amount of €57.25 million. Eiffage invested its own funds and was able to secure additional funding from private lenders such as the West African Development Bank (WADB) and by the private arm of the AfDB, IFC, and the West African Banking Company (CBAO Groupe Attijariwafa, one of the leading Senegalese banks. IFC acted as the lead arranger and global coordinator for the PPP portion of the Dakar toll road.

⁴¹ Amount in 2009 based on exchange rates for currencies used (euros and CFA francs).

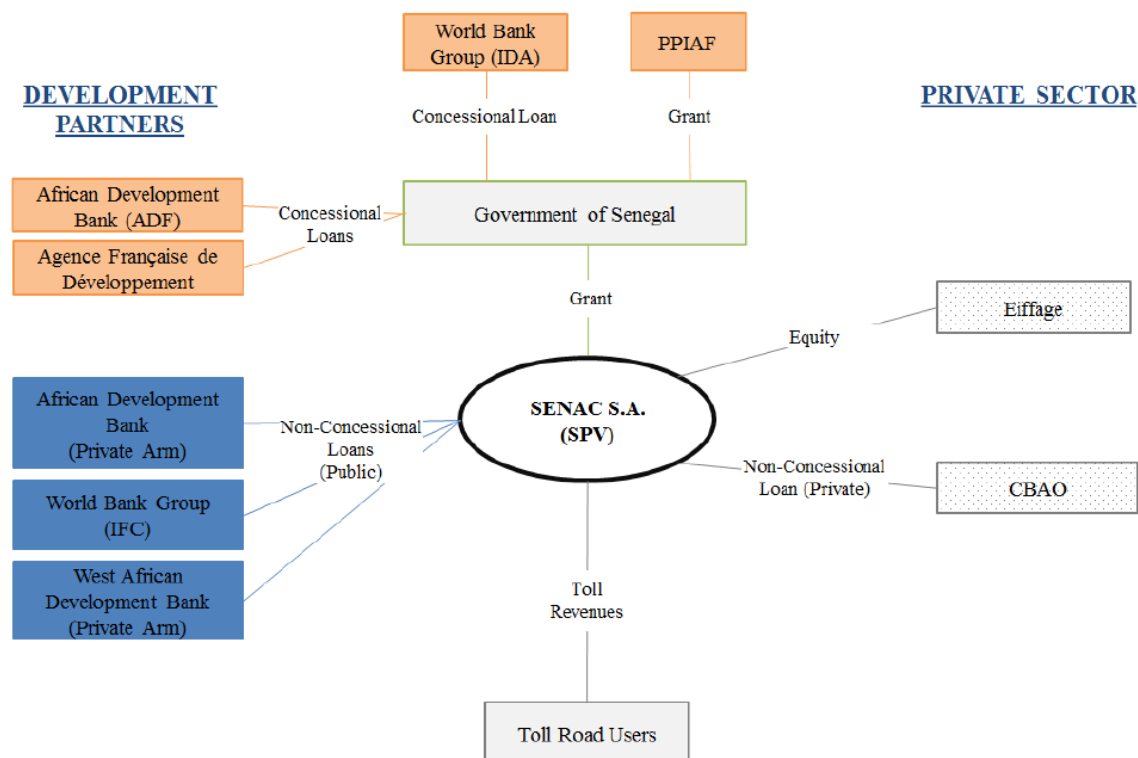


Figure 6.3. Cost of Financing the Dakar-Diamniadio Toll Road (Phase 3)



Source: APIX

Figure 6.4. Project Financing Scheme



6. The Pikine-Diamniadio toll road was effectively opened to traffic in August 2013. In light of this success and to link the capital, Dakar, to the newly built international airport (AIBD), a follow-up Phase consisting of a 17 km 2x2 lanes highway with two sets of toll plazas connecting Diamniadio to AIBD was awarded to Eiffage ensuring overall consistency in both the quality of the service level and the toll system. The extension was opened to traffic in October 2016 and eased transit between Dakar and the country's third largest city, Thiès.



ANNEX 7. DETAILS ON RAPs AND PAPs FOR THE DDTH PROJECT

RAPs	Year Prepared	Number of PAPs	Number of PAPs Paid	Remaining PAPs to Compensate^a	PAPs to Consign^b
Initial PAR Malick Sy-Patte d'Oie	2005	236	236	0	0
Addendum n°1 PAR of Malick Sy-Patte d'Oie hors TF	2010	177	144	23	10
Addendum n°2 PAR of Malick Sy-Patte d'Oie (TF)	2011	80	57	4	19
Initial PAR Patte d'Oie-Pikine	2006	343	337	1	5
Addendum n°1 PAR Patte d'Oie-Pikine	2009	292	270	0	22
PAR Pikine-Keur Massar	2010	5,424	5,419 ^c	0	5
PAR Keur Massar-Diamniadio	2010	1,039	1,039	0	0
Addendum PAR Keur Massar-Diamniadio	2017	171	6	113	52
PAR PIS	2014	2,588	2,239	176	173
PAR Mbeubeuss Landfill	2010	61	51	3	7
Addendum PAR Mbeubeuss	2017	81	0	45	36
Initial PAR TP	2010	765	712	0	53
Addendum PAR TP	2013	160	74	6	80
Land Titles of 2015 decree	2015	18	0	5	13
Land Titles in PIS		59	0	21	38
TOTAL PAPs^d		11,494	10,584 of which 137 received partial payments	397 plus 21 PAPs awaiting complementary checks	513 plus 116 PAPs awaiting complementary checks

Note: a. Files complete, PAPs in the process of getting compensated; b. Complicated cases (heredity and incomplete files); c. 137 of these PAPs received a first check and are awaiting complementary checks; d. Canceled PAPs not included.



ANNEX 8. SUPPORTING DOCUMENTS

- (1) <http://www.ansd.sn/ressources/ses/chapitres/13-transport-SESN2013.pdf>
- (2) <https://www.sec.gouv.sn/IMG/pdf/PSE.pdf>
- (3) <https://www.imf.org/external/pubs/ft/scr/2007/cr07316.pdf>
- (4) <http://documents.worldbank.org/curated/en/776191468338369513/pdf/937780NWP00PUB0aper00SSATPWP1020PPP.pdf>
- (5) AfDB Completion Report.doc
- (6) <https://books.google.com/books?id=XPmvlIZcapgC&pg=PA81&lpg=PA81&dq=dakar+diamniadio+toll+road+feasibility+studies&source=bl&ots=YDh7kIENZv&sig=OYMwQ3ZqWkQFzwLoHw0dxUQco6o&hl=en&sa=X&ved=0ahUKEwipuqT9hLDXAhUji1QKHdDbD24Q6AEINzAD#v=onepage&q=dakar%20diamniadio%20toll%20road%20feasibility%20studies&f=false>
- (7) <http://documents.worldbank.org/curated/en/527551468103763222/pdf/NonAsciiFileName0.pdf>
- (8) https://www.sec.gouv.sn/IMG/pdf/SNDES_2013-2017_-_version_finale_-_08_novembre_2012.pdf
- (9) <http://documents.worldbank.org/curated/en/180721468001191421/pdf/96936-P3Briefs-SenegalDakarTollRoadExtension-Box391454B-PULBIC-Colltitle-PPP-BRIEF.pdf>
- (10) <http://documents.worldbank.org/curated/en/180721468001191421/pdf/96936-P3Briefs-SenegalDakarTollRoadExtension-Box391454B-PULBIC-Colltitle-PPP-BRIEF.pdf>
- (11) <https://www.ssatp.org/sites/ssatp/files/publications/SSATPWP102-PPP.pdf>
- (12) [https://one.oecd.org/document/COM/DAF/INV/DCD/DAC\(2014\)4/en/pdf](https://one.oecd.org/document/COM/DAF/INV/DCD/DAC(2014)4/en/pdf)
- (13) <http://www.initiative-ppp-afrique.com/Afrique-zone-franc/Pays-de-la-zone-franc/Senegal/Cadre-juridique>
- (14) <https://hubs.worldbank.org/docs/imagebank/Pages/search.aspx#/search?k=P087304>
- (15) http://www.ipar.sn/IMG/pdf/SNDES_2013-2017_-_consolidation_version_24_oct_2012.pdf
- (16) Impact Evaluation Report
- (17) Note sur la demande d'elagage de PAPs.pdf
- (18) Senegal Development Projects