Document of
The World Bank

Report No: ICR1935

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-38360 IDA-38361)

ON A

CREDIT

IN THE AMOUNT OF SDR 114.8 MILLION
(US$165.6 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MADAGASCAR

FOR A

TRANSPORT INFRASTRUCTURE INVESTMENT PROJECT

June 20, 2013

Transport Sector
Country Department AFCS4
Africa Region

CURRENCY EQUIVALENTS
Exchange Rate Effective June 30, 2012
Currency Unit = Malagasy Ariary (MGA)
US$1.00 = MGA 2,199.98
US$1.00 = 0.66 XDR

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ACM	Madagascar Civil Aviation Agency (*Aviation Civile de Madagascar*)
ADEMA	Madagascar Airport Company (*Aéroport de Madagascar*)
APL	Adaptable Program Loan
APMF	Port, Maritime and River Agency (*Agence Portuaire, Maritime et Fluviale*)
ARM	Madagascar Road Authority (*Autorité Routière de Madagascar*)
ATT	Land Transport Agency (*Agence des Transports Terrestres*)
CAM	Maritime Training Center (*Centre d'Apprentissage Maritime)*
CAS	Country Assistance Strategy
CGGTX	Large Works Unit (*Cellule de Gestion des Grands Travaux*)
EA	Environmental Assessment
EIB	European Investment Bank
ENEM	National Maritime Training School (*Ecole Nationale d'Enseignement Maritime*)
EPZ	Export Processing Zone
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
FER	Road Maintenance Fund (*Fond d'Entretien Routier*)
GoM	Government of Madagascar
ICR	Implementation and Completion Results Report
IDA	International Development Association
IEG	Independent Evaluation Group
IMO	International Maritime Organization
IRI	International Roughness Index
ISN	Interim Strategy Note
ISPS	International Ship and Port Security
KM	Kilometer
M&E	Monitoring and Evaluation
MARPOL	International Convention for the Prevention of Pollution from Ships
MGA	Malagasy Ariary

MLA	Moramanga – Alaotra Lake rail line
MPWM	Ministry of Public Work and Meteorology
MPWT	Ministry of Public Work and Transport
MT	Ministry of Transport (*Ministère des Transports*)
NPV	Net Present value
OP/BP	Operational Policy / Bank Procedure
OPEC	Organization of the Petroleum Exporting Countries
PCG	Port under Global Concession Arrangements (*Ports à Concession Globale*)
PDO	Project Development Objective
PES	Program Executive Secretariat
PGA	Port with autonomous management
PIU	Project Implementing Unit
PK	Kilometer Point (*Point Kilomètre*)
PPP	Public Private Partnership
PRSP	Poverty Reduction Strategy Paper
RAP	Resettlement Action Plan
RN	National Road (*Route Nationale*)
RNP	Principal National Road (*Routes Nationales Principales*)
RNS	Secondary National Road (*Routes Nationales Secondaires*)
RTP	Rural Transport Project
SDR	Special Drawing Rights
SWAP	Sector Wide Approach
TA	Antananarivo – Antsirabe rail line
TCE	Antananarivo – Toamasina rail line
TIIP	Transport Infrastructure Investment Project
VAT	Value Added Tax
VOC	Vehicle Operating Cost
VPM	Vice-Prime Minister (*Vice Primature*)

Regional Vice President:	Makhtar Diop
Country Director:	Haleh Z. Bridi
Sector Manager / Director:	Supee Teravaninthorn / Jamal Saghir
Task Team Leader:	Noroarisoa Rabefaniraka
ICR Team Leader	Tojoarofenitra Ramanankirahina

REPUBLIC OF MADAGASCAR

TRANSPORT INFRASTRUCTURE INVESTMENT PROJECT

CONTENTS

A. Basic Information			
Country:	Madagascar	Project Name:	TRANSPORT INFRASTRUCTURE INVESTMENT PROJECT
Project ID:	P082806	L/C/TF Number(s):	IDA-38360,IDA-38361
ICR Date:	06/20/2013	ICR Type:	Core ICR
Lending Instrument:	APL	Borrower:	REPUBLIC OF MADAGASCAR
Original Total Commitment:	XDR 104.40M	Disbursed Amount:	XDR 113.90M
Revised Amount:	XDR 113.90M		
Environmental Category: A			
Implementing Agencies: MADARAIL Port, Maritime and River Agency of Madagascar Road Authority of Madagascar Civil Aviation Agency of Madagascar			
Cofinanciers and Other External Partners:			

B. Key Dates				
Process	**Date**	**Process**	**Original Date**	**Revised / Actual Date(s)**
Concept Review:	04/30/2003	Effectiveness:	03/10/2004	03/10/2004
Appraisal:	10/27/2003	Restructuring(s):		01/10/2006 05/22/2007 09/22/2008 06/29/2010 06/28/2011
Approval:	12/08/2003	Mid-term Review:		06/14/2006
		Closing:	06/30/2008	06/30/2012

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Development Outcome:	High
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	**Ratings**	**Borrower**	**Ratings**
Quality at Entry:	Moderately Satisfactory	Government:	Moderately Unsatisfactory
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Moderately Satisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Aviation	5	2
Central government administration	5	12
Ports, waterways and shipping	15	3
Railways		29
Roads and highways	75	54

Theme Code (as % of total Bank financing)		
Administrative and civil service reform	17	12
Infrastructure services for private sector development	17	26
Pollution management and environmental health	17	3
State-owned enterprise restructuring and privatization	16	5
Trade facilitation and market access	33	54

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Makhtar Diop	Callisto E. Madavo
Country Director:	Haleh Z. Bridi	Hafez M. H. Ghanem
Sector Manager:	Supee Teravaninthorn	C. Sanjivi Rajasingham
Project Team Leader:	Noroarisoa Rabefaniraka	Dieter E. Schelling
ICR Team Leader:	Tojoarofenitra Ramanankirahina	
ICR Primary Author:	Tojoarofenitra Ramanankirahina	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document**)**
To rehabilitate the country's major transport infrastructure in order to reduce transport cost and to facilitate trade.

Revised Project Development Objectives (as approved by original approving authority)
The PDO was not revised.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increased traffic through improved transport infrastructure (both passenger and freight). Average annual traffic increase: 10 percent after rehabilitation			
Value quantitative or Qualitative)	0% traffic increase	10% traffic increase		more than 10% traffic increase
Date achieved	07/31/2003	06/30/2008		12/31/2012
Comments (incl. % achievement)	100 percent achieved. Vehicle traffic per day increased more than 10 percent after the rehabilitation works on the RN2, RN7 and RN44. Freight traffic increased more than 10 percent after the rehabilitation works on the Northern Railway.			
Indicator 2 :	Decreased user costs: between 20 and 60 percent depending on road link			
Value quantitative or Qualitative)	0% user costs decrease	between -20% and -60% user costs decrease		between 0% and -35% user costs decrease
Date achieved	07/31/2004	06/30/2008		12/31/2012
Comments (incl. % achievement)	Partially achieved. Vehicle Operating Costs decreased by about 16 percent on the RN44 but did not significantly change on the RN2/RN7. The revival of the Northern Railway provided a cheaper transport mode 35 percent lower than the road transport.			

Indicator 3 :	Decreased user time delays on the nation's main transport infrastructure: between 30 percent and 300 percent depending on link			
Value quantitative or Qualitative)	0% user time delays decrease	between -30% and -300% user time delays decrease		more than -30% user time delays decrease
Date achieved	07/01/2003	06/30/2008		12/31/2012
Comments (incl. % achievement)	100 percent achieved. Travel time on the RN44 was reduced from 24 to 6 hours. On the Northern Railway, the length of speed restriction in effect for more than 90 days was reduced from 23 to 1.2 km. Waiting time for ferries has been reduced from 1 day to 1 hour.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	National Roads rehabilitated and maintained			
Value (quantitative or Qualitative)	0km of National Roads rehabilitated and maintained. 19% of National Roads in good and fair conditions	4,400km of National Roads rehabilitated by average annual tranches of about 750km, of which 1,274km by IDA so that by end of 2008 all National Roads are in good and fair condition	4,045km of National Roads rehabilitated by average annual tranches of about 630km, of which 613km by IDA so that by end of 2008 the majority of National Roads are in good and fair condition.	4,751km of National Roads rehabilitated. The majority of National Roads are in good and fair condition.
Date achieved	07/01/2003	06/30/2008	06/30/2009	12/31/2012
Comments (incl. % achievement)	100 percent achieved. 53 percent of National Roads are in good and fair conditions versus 19 percent in 2002.			
Indicator 2 :	Main ports rehabilitated and well operated			
Value (quantitative or Qualitative)	no concession	Main ports concessioned and smaller ports under global concession arrangements		Container Terminal of the port of Toamasina concessioned
Date achieved	07/01/2001	06/30/2008		12/31/2012
Comments (incl. % achievement)	Partially achieved. Only the Container Terminal at the Port of Toamasina which is handling about 80 percent of total container traffic in Madagascar was concessionned.			
Indicator 3 :	Main airports well operated and safety and security enhanced			

Value (quantitative or Qualitative)	Concession of 12 main airports to ADEMA	Ivato airport concessioned, seven secondary airports franchised, and tertiary airports are under management contracts		No change: concession of 12 main airports still with ADEMA
Date achieved	07/01/2001	06/30/2008		06/30/2012
Comments (incl. % achievement)	0 percent achieved. The implementation of a more efficient PPP in the airport sector was not achieved. Although the airport component was dropped after the 2006 restructuring, this indicator was not removed from the M&E framework.			
Indicator 4 :	VPM functions properly			
Value (quantitative or Qualitative)	Social plan not executed	Social plan is executed and remaining staff adequate for the functions of the VPM		Social plan executed. More than 50 percent of the staff have been redeployed.
Date achieved	07/01/2001	06/30/2008		12/31/2012
Comments (incl. % achievement)	100 percent achieved			
Indicator 5 :	Northern railway: Wagon turnaround time			
Value (quantitative or Qualitative)	7.50 days	not more than 4.5 days		6.1 days
Date achieved	07/01/2005	06/30/2009		12/31/2012
Comments (incl. % achievement)	47 percent achieved. The lowest value that was achieved was 5.8 days in 2010.			
Indicator 6 :	Northern railway: Personnel productivity			
Value (quantitative or Qualitative)	93,400 metric ton	not less than 175,000 metric ton		172,307 metric ton
Date achieved	07/01/2005	06/30/2009		12/31/2012
Comments (incl. % achievement)	97 percent achieved.			
Indicator 7 :	Northern railway: Liquidity ratio			
Value (quantitative or Qualitative)	1.3	not less than 1.1		1.1
Date achieved	07/01/2005	06/30/2009		12/31/2012
Comments	100 percent achieved			

(incl. % achievement)				
Indicator 8 :	Northern railway: Debt coverage ration			
Value (quantitative or Qualitative)	1.2	not less than 1.2		1.2
Date achieved	07/01/2005	06/30/2009		12/31/2012
Comments (incl. % achievement)	100 percent achieved			

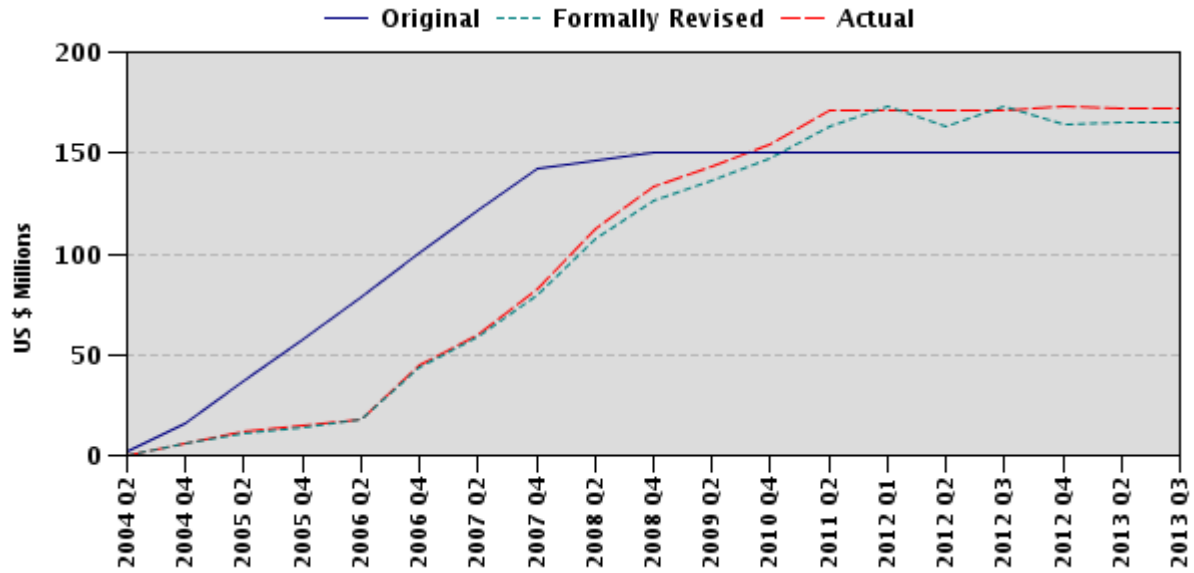
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	05/26/2004	Satisfactory	Satisfactory	5.75
2	07/21/2004	Satisfactory	Satisfactory	5.75
3	12/27/2004	Satisfactory	Satisfactory	11.75
4	02/11/2005	Satisfactory	Satisfactory	11.95
5	05/06/2005	Moderately Satisfactory	Moderately Unsatisfactory	12.92
6	07/25/2005	Moderately Satisfactory	Moderately Unsatisfactory	15.04
7	11/17/2005	Moderately Satisfactory	Moderately Satisfactory	17.67
8	03/18/2006	Satisfactory	Satisfactory	36.56
9	10/12/2006	Satisfactory	Moderately Satisfactory	50.84
10	04/09/2007	Satisfactory	Satisfactory	75.23
11	10/12/2007	Satisfactory	Satisfactory	99.76
12	01/15/2008	Satisfactory	Satisfactory	113.63
13	07/13/2008	Moderately Satisfactory	Satisfactory	133.71
14	11/25/2008	Moderately Satisfactory	Satisfactory	137.11
15	05/09/2009	Moderately Satisfactory	Moderately Satisfactory	151.95
16	11/30/2009	Moderately Satisfactory	Moderately Satisfactory	151.95
17	06/24/2010	Moderately Satisfactory	Moderately Satisfactory	151.82
18	09/04/2010	Moderately Satisfactory	Moderately Satisfactory	170.70
19	03/28/2011	Moderately Satisfactory	Moderately Satisfactory	171.08
20	09/24/2011	Satisfactory	Moderately Satisfactory	171.46
21	11/27/2011	Satisfactory	Moderately Satisfactory	171.46
22	06/19/2012	Satisfactory	Satisfactory	171.65
23	07/11/2012	Satisfactory	Satisfactory	172.85

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
01/10/2006	N	MS	MS	18.40	Introduction of the railway component and extension of the closing date to June 30, 2009
05/22/2007		S	S	79.82	Additional financing to the railway component
09/22/2008		MS	S	133.97	Closing date extension to February 28, 2010
06/29/2010		MS	MS	154.57	Closing date extension to June 30, 2011 and reallocation
06/28/2011		MS	MS	171.08	Closing date extension to June 30, 2012

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1. Inappropriate sector policies have led to a serious deterioration of Madagascar's transport infrastructure. It is estimated that the country lost on average about 1,000 kilometers (km) of roads per year during the period 1980-1999. In April 2000, the Government of Madagascar (GoM) adopted a comprehensive transport sector policy and strategy, which aims at: (i) focusing the Ministry's role on strategic planning, sector oversight and coordination; (ii) creating jointly public-private controlled and user-financed agencies for sub-sector management and regulatory functions; (iii) divesting operational activities to the private sector, through privatization and concession arrangements; (iv) developing the local private sector for works design and execution; and (v) rehabilitating transport infrastructure to appropriate levels.

2. An Adaptable Program Loan (APL) series was prepared to assist the GoM to implement its transport sector policy and strategy. The objectives of the APL were to reduce transport costs and to improve accessibility especially in rural areas. The Transport Infrastructure Investment Project (TIIP, Credit 3836-MG) is the third of three parallel phases of the APL. The first phase, the Transport Sector Reform and Rehabilitation Project (TSRRP), in the amount of Special Drawing Rights (SDR) 48.4 million (about US$66.0 million), was approved on June 1, 2000, and closed on July 31, 2005. Its objectives were to: (i) strengthen transport sector policy and management; (ii) strengthen road management; (iii) support the implementation of an environmental and social mitigation strategy; and (iv) restore transport infrastructure facilities. The Rural Transport Project (RTP) was the second phase of the APL which was approved on November 14, 2002, in the amount of SDR 60.7 million (about US$80 million), became effective on March 13, 2003 and closed on December 31, 2012. Its initial objectives were to: (i) sustainably improve the access of rural communities to markets, schools, health centers and other economic and social infrastructure; (ii) enhance the mobility of the rural population, in order to improve their quality of life; and (iii) promote economic development. In July 2007, the RTP was restructured and its objective was revised to the following: “increased use of rural roads by residents of beneficiary rural communes”.

3. The TIIP was in line with the Poverty Reduction Strategy Paper (PRSP) of November 2002 and the Bank’s Country Assistance Strategy (CAS) of October 2003. The strategy, based on the principle of public private partnership, had three main axes: (i) restoring a rule of law and a well governed society; (ii) promoting economic growth with a large social base; and (iii) promoting systems for establishing human security and enlarging social protection. The second axis sought to foster macroeconomic stability and pro-poor growth, revitalizing the private sector, and promoting the development of growth sectors. The main focus was on improving the transport network.

1.2 Original Project Development Objectives (PDO) and Key Indicators (*as approved*)

4. The objective of the TIIP was to rehabilitate the country’s major transport infrastructure in order to reduce transport cost and to facilitate trade.

5. The PDO indicators are: (i) Increased traffic through improved transport infrastructure (both passengers and freight): average annual traffic increase of 10 percent after rehabilitation; (ii) decreased user cost: between 20 and 60 percent depending on road link; and (iii) decreased time delays on the nation's main transport infrastructure: between 30 percent and 300 percent depending on link.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

6. The PDO and the PDO indicators were not revised during the course of the project. However, during the early 2006 restructuring which added the railway component, the intermediate outcome indicator concerning the road rehabilitation was adjusted to reflect the reduction in the length of works. In addition, four new intermediate outcome indicators were added to monitor the railway component. The other three remaining intermediate outcome indicators on port, airport, and institutional support were kept unchanged.

1.4 Main Beneficiaries

7. By rehabilitating the transport infrastructure, the TIIP benefited all transport users directly and the entire population indirectly. For the road sub-sector, the primary beneficiaries were the primary users of the roads: travelling public, car owners, transport companies and industries. For the railway sub-sector, the primary beneficiaries were the oil companies, factories, mining industries, etc., the Northern Railway concessionaire, and the consumers of goods transported by rail. For the port and airport sub-sectors, the primary beneficiaries were the primary users of the improved infrastructure such as the private sector, the transport companies, the passengers, the freights owners.

8. There were also other beneficiaries: (i) the agricultural sector which benefited from the improved accessibility to the agricultural production areas due to the road rehabilitation works; (ii) the construction industry due to the induced creation of jobs caused by the road rehabilitation works; (iii) the Ministries and the parastatal entities dealing with the transport sector through the institutional support component; and (iv) the trade industry, as trade was facilitated by easier circulation of persons and goods.

1.5 Original Components (*as approved*)

9. The original components at the time of the approval are as follows:

10. *Component A: National Road Upgrading, Rehabilitation and Maintenance (US$110.75 million)*

- 249 km of periodic maintenance on the National Road (*Route Nationale)* RN2 which link the capital Antananarivo with the main port of Toamasina;
- 112 km of upgrading to paved standard on the RN44 from Marovoay to Vohidiala (RN44 South). This road connects the Alaotra lake region, the main rice growing area of Madagascar, to the RN2;

- 69 km of rehabilitation of the gravel road from Ambatondrazaka to Vohitraivo (RN44 North);
- 295 km of periodic maintenance on various sections of the RN7 between Antananarivo and Fianarantsoa. This road can be considered "the spine" of the road network of Madagascar;
- 186 km of rehabilitation and periodic maintenance on the bituminous RN32 from Antsohihy to Mandritsara, a departmental capital and a major agricultural production zone;
- 159 km of rehabilitation and paving on the RN5a from Ambilobe to Vohemar. This road is the missing surface link to access to the North East coastal region of Madagascar;
- The rehabilitation of about 30 ferries. Because of the lack of bridges, these ferries located mainly along the East Coast are the only existing means for cars and trucks to cross some large rivers. They constitute an integral part of the roads assets.

11. The estimated cost of these interventions including contingencies was about US$141 million. The financing gap of US$30 million was supposed to be financed either by an IDA supplemental/follow-on credit, or by other development partners.

12. *Component B: Ports Upgrading, Rehabilitation and Maintenance* (*US$22.85 million)*
- Provision of technical advisory services and training, and establishment of a management information system, for the benefit of Port, Maritime and River Agency *(Agence Portuaire, Maritime et Fluviale* – APMF), and acquisition of equipment for the benefit of APMF, National Maritime Training School*(Ecole Nationale d'Enseignement Maritime* - ENEM*)* and Maritime Training Center *(Centre d'Apprentissage Maritime* - CAM*)*;
- Rehabilitation of existing operational areas at the port of Mahajanga as well as the construction of a limited extension;
- Limited rehabilitation of existing infrastructure serving ferry traffic between Grande Terre/Manompana and Sainte Marie;
- The rehabilitation of 4 main lighthouses;
- Provision of coastal navigation aids, supplies and technical advisory services to assist in ensuring compliance with the International Maritime Organization-International Convention for the Prevention of Pollution from Ships (IMO-MARPOL). Madagascar joined the convention in May 2003; and
- Carrying out of littoral protection works in Toamasina, and acquisition of equipment to deal with oil spill contingencies.

13. *Component C: Airports Modernization and Institutional Reinforcement (US$7.77 million)*
- Safety, security, and operational enhancements on the Malagasy airport network through the provision of respective up-to-date equipment to comply with the International Civil Aviation Organization standards; and
- The financing of technical assistance to the Vice Prime Minister's office (VPM) for the establishment of public-private partnership arrangements on secondary airports.

14. *Component D: Support to the VPM (US$8.62 million)*

- Support for the social plan for the redeployment of staff;
- Provision of technical support including technical assistance, training and equipment; and
- Feasibility studies, preliminary and detailed designs, and preparation of bidding documents to meet future needs in the sector.

1.6 Revised Components

15. The project components were formally revised twice at Board level. The first restructuring was made on January 10, 2006 and became effective on February 16, 2006 in order to change the project's institutional arrangements and to add the Northern Railway component in the amount of US$31.7 million. The scope of activities in the other components (roads, ports, and airports) had to be adjusted downwards to remain within the overall project envelope of SDR 104.4 million. A second revision to the project scope was made during the approval of an additional financing to the Northern Railway component in the amount of SDR 10.4 million (about US$15.6 million) in April 2007.

16. The table below summarizes the revision.

Table 1: Revised Components

Original Component	Revised Component	Comment
Component A. National Road Maintenance, Rehabilitation and Upgrading		
249 km of periodic maintenance on the RN2	310 km of periodic maintenance on the RN2	Scope of activities adjusted during the January 10, 2006 restructuring to reflect shift in priorities
112 km of upgrading to paved standard on the RN44 South	No Change	
69 km of rehabilitation of the gravel road on RN44 North	No Change	
295 km of periodic maintenance on various sections of the RN7	200 km of periodic maintenance on RN7	Changed at first restructuring of January 10, 2006
186 km of rehabilitation and periodic maintenance on the bituminous RN32	DROPPED	January 10, 2006
159 km of rehabilitation and paving on the RN5a	DROPPED	January 10, 2006
The rehabilitation of about 30 ferries	No Change	
Component B: Ports Upgrading, Rehabilitation and Maintenance		
Provision of technical advisory services and training, and establishment of a management	Provision of technical advisory services and training, and establishment of a management information system for APMF, and	Acquisition of equipment for ENEM and CAM dropped as a result of January 10, 2006 restructuring

information system for APMF, and acquisition of equipment for *APMF*, *ENEM* and *CAM*	acquisition of equipment for APMF	
Rehabilitation of existing operational areas at the port of Mahajanga as well as the construction of a limited extension	No Change	
Limited rehabilitation of existing infrastructure serving ferry traffic between Grande Terre/Manompana and Sainte Marie	DROPPED	January 10, 2006
Rehabilitation of four main lighthouses and coastal navigation aids, as well as services and supplies to help make Madagascar compliant with the IMO-MARPOL	No Change	
Carrying out of littoral protection works in Toamasina, and acquisition of equipment to deal with oil spill contingencies	DROPPED	January 10, 2006
Component C: Airports modernization and institutional reinforcement		
Provision of technical advisory services to promote PPP for the management and operation of secondary airports	DROPPED	January 10, 2006
Acquisition of equipment to enhance safety, security and management of the airport network	DROPPED	Activities in Nosy-Be airport had been realized at the time of restructuring of January 10, 2006
Component D: Support to the VPM (VPM disbanded and MPWT created on March 17, 2005)		
Support for the social plan for the redeployment of staff	No Change	
Provision of technical support including technical assistance, training and equipment	No Change	
Feasibility studies, preliminary and detailed designs, and preparation of bidding documents to meet future needs in the sector	No Change	

N/A	Support to studies, equipment and initial operating cost for the Land Transport Agency and Road Authority	New - Added at the time of January 10, 2006 restructuring
N/A	Assistance to the Technical Railway Unit and the Oversight Committee to strengthen their capacity to monitor the Concession Agreement through the provision of TA & equipment	New - Added at the time of January 10, 2006 restructuring
Component E: Northern Railway		
N/A	145 km of railway replacement between KM 226 and KM 371 of the Tana Cote Est (TCE) line	New - Added at the time of January 10, 2006 restructuring
N/A	226 km of railway reinforcement between KM 0 and KM 226 of the TCE line	New - Added at the time of January 10, 2006 restructuring
N/A	Rehabilitation on several bridges between Toamasina and Andevoranto	New - Added at the time of January 10, 2006 restructuring
N/A	Equipment and tools for workshops	New - Added at the time of January 10, 2006 restructuring
N/A	Equipment to improve communication capacity	New - Added at the time of January 10, 2006 restructuring
N/A	Operating Cost	New - Added at the time of January 10, 2006 restructuring
N/A	Rehabilitation and renewal of about 35 kilometers of track on the TCE section	New - Added at the time of Additional Financing - 2007
N/A	Installation of metallic sleepers on about 129 kilometers of track on the TA (Antananarivo – Antsirabe) and MLA (Moramanga – Lac Alaotra) sections	New - Added at the time of Additional Financing - 2007
N/A	Rehabilitation of metallic bridges	New - Added at the time of Additional Financing - 2007
N/A	Rehabilitation of the Andasibe station	New - Added at the time of Additional Financing - 2007

1.7 Other significant changes

17. **Implementation arrangements.** At approval, the governmental entity in charge of the Project was the Vice Prime Ministry, Office of Economic Programs, Ministry of Transport, Public Works and Regional Planning (VPM). On March 17, 2005, the VPM was disbanded and the Ministry of Public Works and Transport (MPWT) was created and became the governmental entity in charge of the Project. In January 2007, the MPWT was split into two ministries: (i) the

Ministry of Public Works and Meteorology (MPWM, in charge of the roads); and (ii) the Ministry of Transport (MT, in charge of railways, ports and airports).

18. Procurement, financial management, social and environmental safeguards implementations of the Project were the responsibility of the Program Executive Secretariat (PES) at approval. The PES worked in collaboration with the entities responsible for the execution of the various sub-components of the project. Due to decline in its performance, the PES was closed on June 13, 2005. A joint-venture comprising international and local auditing firms was recruited to ensure the fiduciary functions (financial management and procurement). Technical and coordination responsibilities for project implementation were assigned to the newly created autonomous agencies working under the aegis of the ministries in charge of transport. This change was introduced in the first project restructuring of January 2006 and reflected in the corresponding Credit Agreement. As for the new railway component which was introduced at that time, the Northern railway concessionaire, Madarail, was in charge of both the fiduciary and technical responsibility. Since Madarail is a private company managing public funds, a project agreement was signed between IDA and Madarail.

19. **Financing parameters.** A new country financing parameters allowing for 100 percent financing of all project expenditure including taxes and recurrent expenditures was adopted for the project as a result of the January 10, 2006 restructuring. At approval, the percentage of expenditures to be financed by the Project varied from 75 to 100 percent, taxes included, depending on the categories.

20. **Freeze on disbursements.** Due to the political crisis starting in early 2009, Madagascar was put under the OP/BP7.30 “dealing with de facto government”. As a consequence, project disbursements under the TIIP were totally frozen for about 14 months (from March 2009 to May 2010). No payment was made even for completed activities.

21. **Closing date.** At appraisal, the TIIP was expected to close on June 30, 2008. However, the TIIP closing date was extended four times. The first extension was requested and approved during the restructuring of 2006 to extend the closing date until June 30, 2009. The second extension was requested and approved to extend the closing date until February 28, 2010. The third extension was decided internally by the Bank during the application of OP 7.30 to the Madagascar portfolio and in application of the exception memo signed by the Managing Director on May 6, 2010, to extend the closing date until June 30, 2011. The fourth and last extension was requested and approved to extend the closing date until June 30, 2012.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

22. **Government strategy supported by the project was appropriate**. To revive the declining transport sector, and make it a key driver of economic growth, GoM and the development partners, agreed that interventions in the transport sector had to focus on two areas: (i) physical infrastructure, and (ii) institutional policy reform. This approach was adequate given that the conditions of the transport infrastructure in general were poor and the direct involvement

of GoM in all activities related to the transport sector was proven to be unproductive and unsustainable. However, the Government intervention strategy was not focused on some specific transport area but concerned all transport subsectors and all transport infrastructure in the country. While this may be justified by the huge needs, priority choices could have been made more clearly to avoid spending efforts and money on activities that would have less impact.

23. **Project design was coherent with the context at appraisal**. The TIIP was prepared within a coherent and holistic APL series which supported the aforementioned Government intervention strategy. The components and the institutional arrangements of the TIIP was designed to follow-up on the first APL which had started rehabilitating transport infrastructure and had laid the foundations for the institutional policy reforms (reform of the Road Maintenance Fund, concession agreements for the Northern Railway and the container terminal at the Port of Toamasina, creation of the autonomous regulatory agencies for civil aviation and for the port, maritime and river subsector, management contract for the national airline, restructuring of the ministries in charge of transport, etc.).

24. **Project design focused more on transport infrastructure rehabilitation.** Unlike the first APL which focused both on institutional reform and transport infrastructure rehabilitation, the TIIP put more emphasize on the latter. In addition, some key transport infrastructures were destroyed during the political crisis following the 2002 presidential election and needed emergency rehabilitation which was taken up in the TIIP. The emphasis taken by TIIP on infrastructure development rather than institutional development was coherent with the overall programmatic approach of the Madagascar transport sector APL series.

25. **The PDO was relatively straightforward but ambitious.** The PDO defined two levels of objectives of which the first one was to rehabilitate the most important transport infrastructure in Madagascar. The rehabilitation of the major transport infrastructure was expected to reduce transport cost and travel time due to the improvement of the infrastructure conditions. Consequently, the second level of objectives in the PDO which was the reduction of transport costs and the facilitation of trade would be attained. The expected completion of the sector reform implemented by the Government would have ensured the sustainability of the objectives and the adequate operations of the transport services in the road, railway, port and airport subsectors.

26. **Not all risks were adequately identified.** The following two main risks were discussed in the PAD: (i) insufficient implementation capacity of the implementing agencies, ministries, and the private sector; (ii) insufficient progress in implementing the transport sector reforms agenda. These risks did materialize during implementation. However, the following risks could have been also identified and partly mitigated: (i) cost increase provided that accurate cost estimates were not available at appraisal as the detailed engineering studies of the complex rehabilitation works were not ready; (ii) lack of counterpart funding provided the budget constraints faced by the Government; and (iii) political risk affecting institutional and sustainability outcomes of TIIP and transport sector APL series.

27. **The quality at entry was not totally adequate.** Normally, the design and technical studies of the activities implemented under a middle or end stage APL should have been done during the previous stage APL but it was not the case for the TIIP since most of the road works

studies were not completed at approval. Thus, the project was not at a good level of implementation readiness. The change in the sequencing of the APLs could explain this. Initially, while the first APL focused on institutional reforms, the second one was planned to focus on aviation and railways, the third one on rural transport, and the fourth and last one on roads and ports. But with the emerging needs for transport infrastructure rehabilitation after the 2002 crisis and change of government, the initially second and forth APL were merged to form the TIIP–APL3 and the initially third APL became the RTP–APL2. The institutional reform was on a momentum even after the 2002 crisis so decision was made to start preparing both the RTP–APL2 and the TIIP–APL3 in order to accelerate the pace of transport infrastructure improvement. The rural focused RTP–APL2 and the infrastructure investment focused TIIP–APL3 were implemented almost in parallel.

2.2 Implementation

(a) Factors outside the control of government or implementing agencies

28. **Poor performance of contractors.** The contractor doing the works on the RN44South, RN44 North, and RN2 performed poorly and the contracts were terminated later on. The amount of the terminated contracts was about 36 percent of the total TIIP amount. One of the reasons which could explain the poor performance was the lack of previous experience in the country. Another reason could have been that the contractor that was procured did not have the requisite capacity and wherewithal to execute the works.

29. **Cyclonic activity.** In 2007, the East part of Madagascar was severely hit by cyclones which provoked substantial damages on the RN2 and the Northern Railway. Consequently, the quantity of works to be fulfilled increased. However, it is known that this part of the country is often hit by cyclones. Therefore, the design and the maintenance of transport infrastructure in that area should always take this situation into account.

30. **Currency fluctuations and inflation.** During the peak of works in late 2007/early 2008, 1 euro was around 0.95 SDR while it was about 0.83 SDR during contracts signature in 2006. Since most road contracts of the TIIP were paid in euros, this exchange rate fluctuation caused additional costs to the road component. Moreover, the steady increase of oil prices from 2003 to 2008 affected the general price of rehabilitation works. The OPEC basket price was about US$28.10 in 2003 whereas it was about US$94.45 in 2008.[1]

31. **Protracted political crisis starting from 2009.** Violent civil unrest started in late 2008, and a mutiny ousted the President of Madagascar in March 2009. A transitional government has been in place since then and the country is still currently in political turmoil. This situation caused the application of the Bank OP7.30 *dealing with de facto government* which is not lifted yet. The protracted political crisis affected the TIIP and the transport sector in the following manner:

[1] Source: http://www.opec.org/opec_web/en/data_graphs/40.htm

- Further to the application of the OP7.30, disbursement was frozen in March 2009 for about 14 months. All payments were suspended regardless of the status of the activities (completed, partially achieved or on-going). The amount of outstanding invoices for the RN2 and RN7 was about US$16 million. As a result: (i) contractors claimed default interests of about US$1 million; (ii) ongoing activities such as the works on the RN2, the International Ship and Port Facility Security (ISPS) works and equipment, and the works on the railway component were suspended for about 12 months due to lack of funding and arrears. Since there was no clear guidance from the Bank on the possible time of disbursements' resumption, implementing agencies had difficulties to make decision whether to demobilize the contractors or not.
- For about one year, high level discussion with the Borrower was not authorized and no supervision mission was undertaken.
- For safety reason, field visit was restricted.
- Project closing date had to be extended for a total duration of 28 months to complete the remaining activities which constituted only about 20 percent of the project amount.
- No tangible progress has been made since then on the reform process.
- Fuel levy allocated to the Road Maintenance Fund (*Fond d'Entretien Routier, FER)* substantially decreased and so undermined the sustainability of the road network. Of about MGA 100 billion (about US$50 million) in 2009, it was only about MGA16.7 billion (about US$8.35 million) in 2012.
- No new transport operation was financed by external donors. For example, the EU suspended its grant for Madagascar in the amount of Euros 300 million, of which Euros 180 million was allocated to the transport sector. However, the other development partners continued to pay for completed or on-going activities of their transport projects under implementation. The new World Bank transport project of about US$80 million ready for board presentation in 2009, to follow-up on the TIIP, was dropped.
- The economic slowdown effect of the crisis decreased the level of transport traffic. Annual traffic in the main Port of Tomasina dropped from 3,250,024 Tons in 2008 to 2,374,457 Tons in 2009 and 2,257,372 Tons in 2010.

(b) Factors generally subject to government control

32. **Lack of counterpart funding.** Because of financial constraints and inadequate budget planning, the Government was not able to meet its counterpart funding obligations of the project. As a result of this, the scope of the road rehabilitation works was reduced as the IDA portion of the project financing arrangements had to finance 100 percent of all project costs starting from the January 2006 restructuring.

33. **Uneven commitment to transport sector reforms.** The implementation of the social plan linked to the restructuring of the ministries in charge of transport and the creation of the different autonomous agencies such as the Road Authority and the Land Transport Agency were the only significant sector reforms achieved during the implementation of the TIIP. That's because the Government changed course and did not concession the airports and the reform in the port sector (establishment of the port with autonomous management) did not progress. Furthermore, the strict application the axle load control was not effective and the "concession monitoring committee" for the Northern Railway was not put in place. The limited achievement

in the sector reform agenda supported by the TIIP could be explained by: (i) the overambitious scope of the reform; (ii) strong vested interests; (iii) the lack of continuous ownership of the reforms with frequent changes of government high-level staff; and (iv) most importantly the political crisis. Thus, the sustainability of the project objectives which should have been reinforced by the completion of the sector reform is not totally ensured.

34. **The scope of the project was modified several times during implementation**. This allowed the project to quickly respond to emergencies and to address changes in investment priorities and the emerging needs during works execution.

(c) Factors generally subject to implementing agencies control

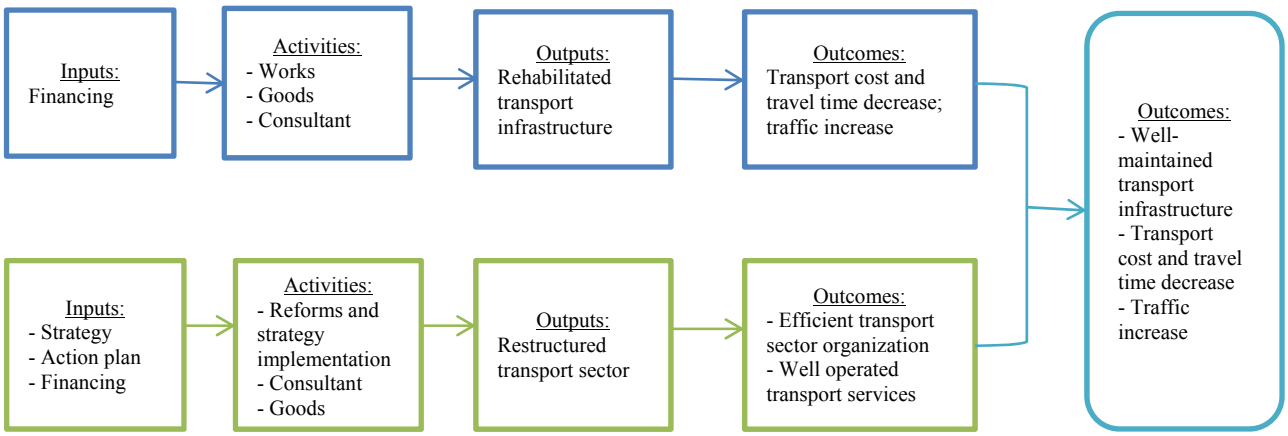
35. **Implementation delays.** The speed and quality of implementation had improved with the new implementation arrangements following the closure of the PES and the restructuring of 2006. Nevertheless, collaboration between the Road Authority and the firm in charge of the fiduciary function was difficult as they often disagreed on procurement rules and procedures.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

(a) Design

36. The results chain can be summarized as follow:

Chart 1: Results chain



37. **The M&E framework did not adequately define the outcomes directly supported by the TIIP.** Whereas transport infrastructure rehabilitation was the main activities of the TIIP, the M&E framework captured the outputs and the outcomes of the entire Government rehabilitation program and the overall sector reforms. The M&E framework was designed to focus on a program but not on a project. It should be noted that this was a common feature of M&E frameworks for legacy projects of that era which had a much wider interpretation on what outcomes could be attributed to the project versus an overall program partly supported by the project.

38. **The PDO indicators were too broad.** The PDO indicators only provided a broad overview of the outcomes to be measured (traffic increase, user cost and time delays decrease) and its value change (between 20 and 60 percent between 30 and 300 percent). An underlying assumption was that the PDO indicators, the baseline and the target values would be refined for each concerned transport infrastructure.

39. The intermediate outcome indicators were the outputs of the entire road rehabilitation program in the country and the transport sector reforms. When the Northern Railway component was added to the project, the operational and the financial performance of the concession were put as intermediate outcome indicators.

(b) Implementation

40. **Data collection during implementation was poor.** Regular annual data on road vehicle traffic was not available since traffic counting was not done periodically for lack of resources. The third PDO indicator (time delays) was never measured. Nevertheless, the intermediate outcomes indicators data was regularly collected because they were either easily measurable or available.

(c) Utilization

41. **The M&E framework could not be utilized as a decision making tool at a project level because of its design**. It could have been useful to refine the indicators and adjust the M&E framework during implementation in order to monitor and evaluate the project activities, outputs and outcomes.

2.4 Safeguard and Fiduciary Compliance

(a) Safeguard

42. The TIIP was a Category A project. Two safeguards policies were triggered: (i) Environmental Assessment (OP/BP4.01), and (ii) Involuntary Resettlement (OP/BP4.12). There was no significant deviation or waiver from the Bank safeguards policies and procedures during preparation and implementation. More details are provided in Annex 11.

(b) Fiduciary

43. The fiduciary situation of the TIIP can be divided into two periods: before the closure of the PES (Program Executive Secretariat) in 2005 and after its closure. Before the closure of the PES, procurement related issues occurred: (i) poor archiving; (ii) unclear share of responsibilities among the procurement staff; (iii) non-compliance with the procurement rules for certain activities. On the financial management side, there were some weaknesses on the internal control: (i) purchase order established after the invoice; (ii) absence of the Bank no-objection for some expenses; (iii) inefficient use of gasoline ticket; (iv) assets not regularly registered; and (v) non-use of the asset management software.

44. However, after the PES's closure in 2005, the situation improved radically. The consortium provided qualified and experienced personnel in charge of the financial management and procurement tasks. For the railway component, the concessionaire managed the financial management and procurement matters as well as the technical implementation.

45. The consortium complied with the Bank procurement rules and guidelines. They put in place adequate financial management arrangements over the course of the implementation period. The quarterly financial reports and annual audit reports were submitted to the Bank on a timely basis and recommendations made, subsequent to implementation support missions, were appropriately implemented. The internal controls were spelt out in a Procedures Manual and amendments to the Manual were made on a periodic basis in order to take into account changes in the project's operations. Despite the absence of the internal audit function, an internal check mechanism was in place to ensure the appropriate use of project resources. However, the external auditors identified the critical need by the GoM to settle VAT arrears which were still outstanding at the time of project closure.

2.5 Post-completion Operation/Next Phase

46. The policy discussion undertaken during the TIIP has been followed up by the preparation and dissemination of policy notes to GoM. The objectives are to inform the transitional government on the context and issues faced by the sector, to propose some recommendations in order to preserve the progress to date in infrastructure rehabilitation and reforms. The policy notes are in line with the transport sector policy and strategy supported by the APL series in general and the TIIP in particular.

47. The construction of nine river jetties for the ferries and the RN44 works under the TIIP have been followed up by the RTP–APL2 which has financed the construction of eighteen river jetties for ferries and the reparation of ten bridges on the RN44. The RTP – APL2 also financed the reparation of some cyclone related damages on the Northern Railway.

48. The Emergency Infrastructure Preservation and Vulnerability Reduction Project was approved in end-November 2012. This multisectoral project in the amount of about US$102 million can be considered as a follow-up to the TIIP in terms of major infrastructure rehabilitation. The TIIP has financed the design study for the rehabilitation of two major bridges in this project (Manakarabe and Maroantsetra). The Road Authority which was in charge of the road component of the TIIP, will implement the road activities of this project such as: (i) the rehabilitation and asset preservation of existing major bridges on key National Roads; (ii) the rehabilitation works on key National Roads; (iii) the reconstruction of bridges that have exceeded their design life; and (iv) the road asset preservation.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

49. The objective of the TIIP which was to rehabilitate major transport infrastructure in order to reduce transport cost and to facilitate trade remains relevant. The Madagascar Interim Strategy Note (ISN) approved by the Board on February 21, 2012 quotes "*transport infrastructure investment is still needed given the fact that connectivity plays an important role for a big island like Madagascar*" and "*Madagascar must improve its internal transportation systems and its connections with the rest of the world." Moreover, "connected infrastructure*" was one of the commitments of the 2006 Madagascar Action Plan.

50. The TIIP was designed using a Sector Wide Approach (SWAP) approach. It is still relevant as the donors' community has aligned their position under one transport policy and strategy defined by the GoM. Moreover, the use of the APLs was relevant because this instrument was designed to support a medium to long term reforms like those implemented in the transport sector.

51. The implementation arrangement of the TIIP responded to the context prevailing in the sector. While a stand-alone Project Implementing Unit was already in place at the beginning of the Project, implementation responsibilities were gradually shifted to the newly created autonomous agencies [Roads Authority of Madagascar (*Autorité Routière de Madagascar - ARM), APMF*, Madagascar Civil Aviation Agency *(Aviation Civile de Madagascar - ACM*)] during implementation depending on their readiness and capacities.

3.2 Achievement of Project Development Objectives

(a) Objectives attributable to the TIIP activities

52. The first level objective which was the rehabilitation of key transport infrastructure has been achieved since most of the planned rehabilitation works were substantially completed to a reasonable quality standard (cf. annex 2). However, the rehabilitation of RN44 South had to be downgraded from a paved riding surface to a gravel one and the rehabilitation works at the port of Mahajanga had to be dropped. This was because of the lack of funding as a result of the higher costs than estimates for the road works and inadequate mobilization of counterpart funding.

53. The second level objectives which were the reduction of transport cost and the facilitation of trade have been substantially achieved after the rehabilitation of key transport infrastructure. That is because without the TIIP funded transport infrastructure works, the state of the key transport infrastructure would have deteriorated further resulting in an increased transport costs and additional barriers to the movement of goods and people in large parts of Madagascar.

54. **Traffic levels.** Vehicle traffic increased up to 48 percent on the RN2 and up to 24 percent on the RN7, between 2006 and 2010. The ferries financed by the TIIP provided a safe, reliable and affordable (free) river crossing whereas the before project ferries were often out of service

for engine or equipment problem. The 27 new ferries[2] operated about 4000 to 8000 river crossings per month between mid-2010 and end-2012. The freight traffic on the Northern Railway increased by at least 35 percent between 2007 and 2012.

55. **Transport costs.** Vehicle Operating Cost on the RN44 South decreased by about 15 percent due to the improvement of the road conditions from bad to good after the project intervention. In the Antananarivo–Toamasina corridor, the transport price of moving fuel products by the Northern Railway is about 35 percent lower than those of the road. The targeted railway infrastructure works financed by the TIIP has greatly contributed to this cheaper transport alternative.

56. **Trade facilitation.** As a result of the project activities: (i) the main rice growing area of Madagascar is easily accessible during the rainy season; (ii) the cyclonic damage to transport infrastructure resulting in the disruption of traffic on the road linking to the main port of Madagascar has been removed; (iii) transit speed on the Northern Railway from Antananarivo to the Port of Tomoasina has doubled; (iv) international vessels continue to serve the ports of Toliary and Mahajanga which handle respectively about 2 and 6 percent of Madagascar's international port traffic; (v) NosyBe airport continues to be served by modern aircraft and is now capable to receive direct flights from Europe.

57. **Sector reform.** The objective of the social plan linked to the restructuring of the ministries in charge of transport has been achieved. About 1400 out of 2400 total staff in transport sector departments has been retrenched thanks to the funding provided by the project which supported both the retrenchment payments and social safety measures. As a result, the ministries have made an annual savings of about MGA 2.4 billion (about US$1.2 million) since 2007.

(b) Objectives of the sector strategy supported by the TIIP

58. The objective supported by the TIIP to rehabilitate as part of a GoM/development partners funded transport sector program, 4045 km of National Roads so that the majority of National Roads would be in good and fair condition was achieved. More specifically, 4751 km of National Roads have been rehabilitated and about 53 percent of National Roads are in good or fair conditions as of end 2012.

59. The financial performance objectives of the Northern Railway have been achieved whereas the operational performance objectives have not been reached. The efficacy and efficiency of the railway operations still have to be improved by the concessionaire.

60. Limited progress has been made in concessionning and to the introduction of the land lord concept in the port sub-sector. While the establishment of the ports with autonomous

[2] Out of the 29 delivered ferries, one ferry cannot be used because it is inadequate for the river for which it was delivered (the river is either too shallow or its current is too strong for the ferry), one ferry is used as a deviation for an old bridge which should have been rehabilitated (the works did not take place because of the 2009 political crisis).

management with 49 percent private participation was underway in 2006–2007, the approach was revised by GoM and since then the process has been put on hold. The only concessioned port so far is the container terminal of the Port of Toamasina which handles about 80 percent of the container traffic in Madagascar.

61. No progress has been made in the airport concessionning. Since 2006, GoM has shown no willingness to concession the airports. It was one of the reasons why the airport component was stopped during the restructuring of 2006.

3.3 Efficiency

62. The efficiency of the TIIP is rated modest for the following two main reasons:

- The unit costs per kilometer for the RN2 and RN7 at works completion are much higher than at contracts signature. These two road works constituted about 39 percent of the total project amount.
- The ex-post economic analysis estimated the Economic Rate of Return (ERR) of the Northern Railway at 11.2 percent whereas the ERR was estimated at 17.5 percent during the introduction of this component at the restructuring of 2006 and at 13.1 percent when an additional financing was awarded in 2007. The Northern Railway component constituted about 29 percent of the total project amount. This decreased value of the ERR was the consequence of the lower than estimated traffic in Tons-Km during the period 2008-2012. Several reasons could explain this lower traffic: (i) domestic political crisis juxtaposed with the international economic crisis which leads to a drop in economic activity and international trade; (ii) absence of axle load control which contributes to a lower than expected freight traffic shift from roads to railways; (iii) lower than expected freight transport capacity of the Northern Railway (weak operational performance, expansion of the passenger transport services); (iv) overoptimistic traffic forecast.

3.4 Justification of Overall Outcome Rating

Rating: Moderately Satisfactory

63. The lack of substantial progress in the sector reform partly undermines the sustainability of the TIIP's achievements. However, the overall rating has to be assessed against the outcomes that are directly attributable to the project activities and the primary objective which was the rehabilitation of transport infrastructure. Furthermore, the TIIP was able to handle in a very flexible and proactive manner the different issues that arose during implementation to complete the rehabilitation activities and the social plan of the ministries. Consequently, on the basis of the high relevance, moderate efficacy, and modest efficiency, the overall project outcome rating is Moderately Satisfactory.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

64. **Creation of work for isolated rural populations living along the Northern Railway.** The Northern Railway concessionaire uses the services of villagers associations to do light maintenance works along the railway line. Performance-based conventions are signed each year

between the concessionaire and these associations. These maintenance works are a complementary livelihood for about 600 villagers. About half of them are women.

65. **Improved rural accessibility.** Population of about 48,000 in the rural remote area along about 120 km of the Northern Railway rail lines[3] has benefitted from the re-launching of a limited passenger train services. The railway is the only existing land access to this area. This subsidized passenger services have improved the accessibility of this isolated population.

66. **Reduction in the price of basic goods along the East Coast.** Thanks to the provision of ferries, freight and passenger traffic by road is now more frequent, easier and more reliable along the 1,000 km East Coast from Maroantsetra to Fort-dauphin which is crossed by several large rivers. Ferries between Maroantsetra and Toamasina were designed to carry a 25 Tons load and those between Toamasina and Fort-dauphin were designed to carry a 15 Tons load. Ferries are available from morning till dusk, 7 days a week. Thus, the price of staple goods in the remote villages along the East Coast has decreased according to the local population since they have become less isolated and more served by transport services.

(b) Institutional Change/Strengthening

67. The TIIP supported the reforms in the transport sector in Madagascar and has built institutional capacity by:

- Creating and/or reinforcing the: (i) Road Authority, (ii) APMF; (iii) Northern Railway concessionaire; and (iv) ACM;
- Providing training and equipment to the ministries in charge of transport and to agencies under their aegis;
- Providing equipment to school of engineers and maritime institute; and
- Undertaking several studies for future operations in the transport sector.

(c) Other Unintended Outcomes and Impacts (positive or negative)

68. The increased freight traffic on the Northern Railway has had positive impacts on the environment, the road safety, and the road conditions on RN2, the most important road in the country connecting Antananarivo with the Port of Toamasina. More specifically, the re-launching of the Northern Railway supported under the TIIP has:

- Reduced the carbon footprint of the transport activities: carbon dioxide emitted per Ton-kilometer is lower on the rail compared to the road;
- Improved road safety on RN2 through the shift of some freight traffic (gasoline, cement, container, and other heavy bulk freight) to the railways which is safer than the road; and
- Decreased road maintenance costs on RN2 since there is less deterioration on it due to the shift of some freight traffic from road to railway

[3] Between Andasibe and Brickaville

69. The tourism sector benefited from the project. NosyBe is a world famous tourist area in Madagascar and most of the tourists travelling to it use air transport. Thanks to the air navigation equipment financed by the TIIP, modern aircrafts transporting tourists from Europe can land and take-off in NosyBe airport. In addition, tourists and inhabitants in the remote area along the East Coast benefited from the improvement in accessibility as a result of the provision of ferries.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

N/A (optional for a core ICR)

4. Assessment of Risk to Development Outcome

Rating[4]: High

70. The overall risk to development outcome has been evaluated on the basis of the table below:

Table 2: Overall Risk to Development Outcome

Risk	Likelihood	Impact
Political instability and uncertainty Since March 2009, Madagascar has undergone a deep political crisis. The latest development is that elections will be organized but there is still a significant risk that the country will not stabilize politically. If that is the case, improvement in the economic and transport situation will not take place	S	H
Lack of ownership and set-back in the transport reform Since the political crisis in March 2009, there has not been any tangible progress in transport sector reform. Moreover, there are vested interests that continue to lobby the GoM to go back to the old institutional framework and not to implement the reform any more.	H	S
Inability to effectively apply the axle load control The application of the axle load control has been discussed for several years now but it is not yet effective so far. Although a new decree has been recently approved, there is a risk it will not be effectively enforced. Without effective axle load control, the impact is that road infrastructure will deteriorate prematurely.	M	H
Worsening operational and financial situation of the Road Maintenance Fund Since the beginning of the 2009 political crisis, the fuel levy dedicated to road maintenance is not fully collected. Even before the crisis, maintenance funding was inadequate. Moreover, the use of the road maintenance funds is not always done in a transparent and efficient manner. The impact is that the rehabilitated infrastructure and the road	H	H

[4] Rating scale: (i) Negligible to Low [L]; (ii) Moderate [M]; (iii) Significant [S]; (iv) High [H]

network will not be maintained correctly and could deteriorate prematurely.		
Unsustainability of the ferry operations At approval, it was agreed that a Public Private Partnership (PPP) scheme would be implemented for the ferry operations. Several PPP schemes were studied by the Road Authority for the management of the ferries but the political will to implement them is lacking. So far, the ferries are entirely managed by the Road Authority and its operating costs are paid by the Road Maintenance Fund. Given the current financial problem of the Road Maintenance Fund, there is a risk that insufficient operating and maintenance costs will be allocated to the ferries, undermining its long-term sustainability.	S	H
Worsening operational capacity of the Road Authority There is so far no sustainable mechanism to ensure the long-term financing of the operating costs of the Road Authority. Moreover, the operational responsibilities over the National Roads network are not given entirely to the Road Authority but shared with other ministerial entities. The impact is that road infrastructure will not be appropriately managed.	H	S
Worsening operational capacity of the Northern Railway concession Following the main shareholder change of the Northern Railway concession in 2010, there is a risk that operational capacity of the concession would deteriorate. The transaction was not done in a transparent manner. It is required in the concession agreement and credit agreement that any change of the main shareholder should receive the no-objection of the financiers of Madarail. But the financiers were informed of this change only when the transaction was completed.	M	S
Deterioration in railway infrastructure The TIIP has mainly financed sleepers and ballasts on the railway track. During field visits, it has been noticed that the rail has started to deteriorate especially on curvatures[5]. The rail head width has become thinner and it increases the risk of derailment. These used rails need urgent replacement.	S	S
Increased passenger services on the Northern Railway leading to an increase financial losses Passenger services on the Northern Railway are loss making. Though the provision of a subsidized limited passenger service to serve the isolated area along the Northern Railway is legitimate from a socio economic point of view, there are substantial risks that: (i) the subsidies are paid neither fully nor timely; and (ii) Madarail is requested to further extend the provision of passenger services. These risks have	H	H

[5] There are thousands of curvatures on the Antananarivo Toamasina railway with a radius between 50 and 120 meters

already materialized.		
Vulnerability to inclement weather The road and railway between Antananarivo and Toamasina are vulnerable to inclement weather for the following reasons: (i) cyclones often hit the area; (ii) the rainfall level in the area is high; and (iii) both the road and railway line go through a mountainous area with steep slopes prone to landslides.	H	H

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry
Rating: Moderately Satisfactory

71. The Bank team was able to prepare the project in a short period of time. The project was fully in line with both the GoM priorities and the CAS and was prepared in full consultation with the other development partners. The project design was coherent by responding to priority investment needs in transport infrastructure rehabilitation, while at the same continuing to support some of the institutional reforms from APL1. The Bank project preparation team had the necessary relevant experience in both the works and institutional reform aspects of the transport sector that the project was supporting.

72. However, the M&E framework was not appropriate to monitor and evaluate the project achievements. For example, baseline values were not defined at approval, which was fairly typical of projects of that era where less emphasis was put on the M&E dimension. Furthermore, the detailed engineering studies for the construction works were not available. The assumptions made at appraisal to estimate the nature, the scope and the costs of the rehabilitation were not valid since the road works were more complex than expected.

(b) Quality of Supervision
Rating: Moderately Satisfactory

73. The project was supervised in a proactive manner. Design was modified to respond to circumstance changes. The impacts of the political crisis in project implementation were handled appropriately. The following actions taken or supported by the Bank team confirmed this: (i) restructuring the project to introduce the railway component when a new relevant priority was noticed; (ii) ensuring the passability of major road corridors through spot improvements rather than focusing on the reconstruction/rehabilitation of more limited sections; (iii) shifting to ISPS ports compliance activities to respond to new international norms on the movement of freight by ship; (iv) building river jetties to ensure a smooth operations of the ferries; (v) convincing the Bank senior management to lift the freeze of disbursement through factual analysis; (vi) undertaking with other development partners a continuous transport policy dialogue with the Borrower, especially on axle load control.

74. In addition, the different Task Team Leaders (TTLs) had been based in the field since the early stage of implementation and were able to: (i) interact closely with the Borrower, the implementing agencies and the partners; and (ii) visit all the project sites scattered all over the country. The team members were constituted of staff having strong experiences in the different subsectors dealt by the TIIP (roads, railways, ports, and airports).

75. However, the shortcomings of the M&E framework could have been corrected. The PDO indicators and targets values were kept unchanged throughout the course of implementation although revision could have been done during the introduction of the railway component. The sector reform indicators and targets values could also have been adjusted when the airport component was stopped and the 2009 political crisis had occurred. In addition, the Bank team could have brought more attention on the operational performance of the Northern Railway as the corresponding indicators did not show any substantial improvement during implementation.

(c) Justification of Rating for Overall Bank Performance
Rating: Moderately Satisfactory

76. Based on the Moderately Satisfactory rating at entry and during supervision, the Overall Bank Performance is rated Moderately Satisfactory.

5.2 Borrower Performance

(a) Government Performance
Rating: Moderately Unsatisfactory

77. During preparation, GoM adopted a comprehensive transport policy and strategy and was able to involve development partners around one major multi-year holistic road transport rehabilitation program. At the early stage of implementation, GoM was also commended for taking difficult but necessary actions: (i) the proactive termination of the road works contract on the RN2/RN44; (ii) the procurement of new contractors to complete the works on RN2/RN44 less than six months after the termination; and (iii) the closure of the PES after its poor performance and the restructuring of the implementation arrangements. As part of the sector reforms, GoM also created the different autonomous agencies such as the Road Authority, the Land Transport Agency (*Agence des transports Terrestres, ATT*), and the APMF.

78. Nevertheless, GoM's ownership of the transport sector institutional reform was inconsistent during the life of the project. Thus, the reform of the transport sector is only partially completed. As a result of this, the sustainability of the transport infrastructure and the performance of the transport services are at risk. For example, GoM failed to gradually increase the operational responsibilities of the Road Authority over the National Roads network, and to make the ATT autonomous from the Ministry and in charge of the vehicle technical control.

79. Furthermore, GoM was not able to (i) establish MADARAIL's rights to fully use its allocated area inside the port of Toamasina as indicated in the concession agreement; (ii) request the no-objection of the financiers of the Northern Railway prior to the main shareholder replacement as required in the concession agreement and the credit agreement.

(b) Implementing Agency or Agencies Performance
Rating: Moderately Satisfactory

80. Except during the early stage of implementation where the PES had a poor performance and was closed afterwards, there is no significant shortcoming on the implementation quality of the implementing agencies. The private firm in charge of the fiduciary aspects was able to ensure appropriately its role. The technical and fiduciary activities of the railway component were ensured adequately by the concessionaire. The Road Authority had the capacity to implement the technical aspects of the road component. The technical assistant financed by the EU provided useful technical expertise to the Road Authority and effectively assisted in reinforcing the capacity of the Road Authority staff. The APMF as well as the ACM had the capacity to implement the technical aspects of their respective activities.

81. Apart the issue discussed in section 2.2(c), MADARAIL was also not able to significantly improve its operational performance as agreed in the Project Agreement.

(c) Justification of Rating for Overall Borrower Performance
Rating: Moderately Satisfactory

82. Given the Moderately Unsatisfactory rating of the Borrower performance, the Moderately Satisfactory rating of the implementing agencies, and the Moderately Satisfactory outcome of the project, the overall Borrower performance is rated as Moderately Satisfactory.

6. Lessons Learned

83. **Selectivity and realism are essential in sector reforms.** Two of the reasons why the transport sector reforms in general and the ports and airports concession in particular were not entirely successful were: (i) the high-level political interference in the sector, and (ii) the overambitious target to concession all the ports and airports in the country.

84. **Adequacy of APL instrument to respond to exogenous political factors.** The planned transport sector reforms have come to a standstill since the beginning of the political crisis in 2009. Moreover, project closing date had to be extended for almost 2 years and a half in order to complete the remaining activities which constituted about 20 percent of the project amount. This instability risk raises the question about the adequacy of the APL instruments which were designed to support a long-term transport sector transformational agenda.

85. **Adequacy of the M&E system is key to proper monitoring of results.** The choice of the PDO indicators should take into account the type of data which can be collected during implementation. Annual traffic on roads was one of the PDO indicators of the TIIP. Nevertheless, this data was not annually available during implementation. In addition, the M&E system of the TIIP did not make clear distinction between the achievements under (i) the stand-alone project, (ii) the APL series, and (iii) the Government long-term program. As a result, it was not easy to assess the achievements, the outcomes and the impacts of the project.

86. **Implementation readiness is critical.** Decision was made at appraisal to do a simple periodic maintenance on the RN2 and RN7 taking into account the normal life cycle of the roads.

However, the periodic maintenance was not entirely appropriate when the works started because the deteriorations were more important than expected. Some sections had to be rehabilitated or reconstructed contributing to a higher cost than anticipated. In addition, the RN2 and RN44 did not have a thorough engineering study and this situation contributed to the different unexpected changes during works implementation.

87. **Proactivity and innovation during project implementation are necessary to adapting to an ever changing environment.** The design of the TIIP was substantially adjusted during implementation to take into account the evolving situation (priority changes, lack of counterpart funding, weaker implementing unit). One example was the use of a renowned international audit firm in a consortium with a local audit firm to ensure the fiduciary function. The experience proved to be successful. The local firm got the capacity to manage alone the project's fiduciary issues in the last two years. All of this contributed to reaching about 80 percent disbursement rate before the 2009 crisis.

88. **While supporting railway concession, ensure enabling environment and fair intermodal competition.** A level playing field will contribute to improving the modal share of the traffic moving by railroad and protect the road from overloading. If the Government obligations under the concession agreement, particularly the axle load control, were effective, the traffic of the Northern Railway would have probably been higher leading to a better ex-post ERR, and the road deterioration would have probably been less important leading to a less expensive works on the RN2 and RN7.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

89. No comment has been received from the Borrower/Implementing Agencies/Partners.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Revised Estimate (2006 Restructure) (USD millions)	Additional Financing 2007 (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal	Percentage of Revised
Roads	110.76	95.40		91.70	82.8	96.1
Ports	22.85	12.20		5.37	23.5	44.0
Airports	7.77	2.20		2.11	27.2	95.9
Institutional support	8.62	8.50	1.50	20.80	241.3	208.0
Northern Railway	0.00	31.70	14.10	49.41		107.9
Total Baseline Cost	**150.00**	150.00	**15.60**	**169.39**	112.9	**102.3**
Physical Contingencies						
Price Contingencies						
Total Project Costs	**150.00**	**150.00**	**15.60**	**169.39**	**112.9**	**102.3**
Front-end fee PPF	0.00			0.00		
Front-end fee IBRD	0.00			0.00		
Total Financing Required	**150.00**	**150.00**	**15.60**	**169.39**	**112.9**	**102.3**

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Revised Estimate (2006 Restructure) (USD millions)	Additional Financing 2007 (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal	Percentage of Revised
International Development Association (IDA)		150.00	150.00	15.60	169.39	112.9	102.3
Borrower		17.42	0.00	0.00	1.11	6.4	0.0

Annex 2. Outputs by Component

Table 2-1: Table of outputs, outcomes, and impacts

Outputs	Direct outcomes	Direct expected outputs and outcomes that have not been realized	Explanation about the unrealized outputs/outcomes
Component A: National Roads upgrading, rehabilitation and maintenance			
Periodic maintenance, rehabilitation, cyclonic damage reparation of the RN2 between PK3+250 and PK 317+800; Construction of one weighing station on the RN2; Spot-improvement of about 112 km of RN44 South; Rehabilitation to gravel standard of about 69 km of RN44 North; Periodic maintenance, rehabilitation of about 144 km of the RN7; Provision of 29 new river ferries; Construction of nine river jetties for the ferries; Drainage and culverts rehabilitation on the RN43 (46 km).	The road linking the main city of Antananarivo and the main port of Toamasina (RN2) is in a fair and good condition. Transport cost related to the quality of infrastructure as well as travel time did not increase. The road connecting to the main rice growing area of Madagascar (RN44) has become an all season road. Transport cost related to the quality of infrastructure as well as travel time has decreased. The road linking the main city of Antananarivo and the industrial city of Antsirabe (RN7) is in a fair and good condition. Transport cost related to the quality of infrastructure as well as travel time did not increase. Safe, regular and affordable means of transportation are available to cross the large rivers along 1000 km of the East Coast of Madagascar. Transport cost related to the quality of infrastructure as well as travel time has decreased. Price of basic goods has decreased in the areas served by the ferries.	Transport cost related to the quality of infrastructure as well as travel time did not decrease on the RN2 and RN7. The surface type of the RN44 was not upgraded to pavement as planned. The length of the realized works on the RN7 is 56 km shorter than planned.	Transport cost and travel time did not decrease on the RN2 and RN7 because the conditions of the road did not drastically change after the rehabilitation works. However, they would have increased without the project as the quality of infrastructure would have deteriorated. Although the surface type of the RN44 was not upgraded to pavement, the transport cost and the travel time have decreased since the conditions of the infrastructure have been substantially improved. However, provided that the existing traffic on the RN44 justifies a paving, a stronger than usual maintenance is required in this road to sustain the achieved level of service. The section of the RN7 on which the works were not realized is still in fair condition. Thus, the non-realization of the works in this section has not had so far any negative impact on transport cost and travel time.
Component B: Ports upgrading, rehabilitation and maintenance			
Design study for the compliance with the International Ship and Port Security (ISPS) at the ports of Antsiranana, Mahajanga, Toliary, Toamasina and Nosy-Be;	The port of Mahajanga and Toliary complies with the ISPS code. International vessels continue to serve the ports of Toliary and Mahajanga which handle respectively about 2 and	The planned rehabilitation in the port of Mahajanga was not realized.	This was due to the decision to reallocate the funds scheduled for the rehabilitation of the port to finance the additional costs in the road component.

Provision of works and equipment for the compliance with ISPS at the ports of Mahajanga and Toliary; Reconstruction of four lighthouses in the four cardinal points of Madagascar: Cape Ambre; Cape Saint-André; Cape East; Cape Sainte-Marie; Simulator equipment and language laboratory for the National Maritime Training School (Ecole Nationale d'Enseignement Maritime - ENEM).	6 percent of Madagascar's international port traffic. Additional navigational reference is available for the maritime traffic. Safety of maritime traffic has been improved. The quality of training in the maritime subsector has been improved.		
Component C: Airports modernization and institutional reinforcement			
Fencing of the NosyBe airport; Safety equipment, Very High Frequency Omnidirectional Range – Distance Measuring Equipment (VOR-DME) for the NosyBe airport.	Safety has improved in the airport of NosyBe. Modern aircraft and international flight can be received at the airport of NosyBe		
Component D: Institutional Support			
Ministries social plan realized: 1,408 staff out of 2,381 redeployed and benefitted support; Construction of the office building of the Road Authority and provision of equipment; Operating costs of the Road Authority; Audit report of the salary policy of the Road Authority; Institutional framework and business plan study for the Road Authority; Provision of bridge management software to the Road Authority; Rehabilitation studies of Maroantsetra and Manakarabe bridges; Design study of the paving of the RN44 South; Design study of the rehabilitation of the port of NosyBe and Taolagnaro;	Redundant staff of the ministries in charge of transport was retrenched and benefitted of a social accompaniment. The ministries in charge of transport have gained in efficiency after the staff retrenchment. The capacity of the ministries in charge of transport has been reinforced. The Road Authority capacity has been reinforced. The quality of training in the road sector has been improved.		

Design study of the RN32; Provision of asset management software to the Ministry of Public Works; Provision of an integrated information system, website to the Ministry of Public Works; Software and communication equipment for the Ministry of Public Works; Geotechnical equipment for the Antananarivo School of Engineers (ESPA); Feasibility study for a safer truck tanker; Organizational study of an urban train in Antananarivo; and Vehicles and training.			
Component E: Northern Railway			
24 km of complete railway rehabilitation; 200 km of railway renewal; 212 km of railway reinforcement; Production of 103,500 concrete sleepers; Production of 104,877 m3 of ballast; Rehabilitation of 13 bridges of which 3 partially achieved (10 percent on PK 350+395; 50 percent on PK353+265; 80percent on PK 356+600); Construction of 12 box culverts; Construction of 5,300 meters of longitudinal drainage; 16 slope stabilization; Partial rehabilitation of the Andasibe station (40 percent achieved); 9 automatic signal of railroad crossing;	The conditions of the railway infrastructure have been improved. The length of slowdown in effect for more than 90 days has decreased The transit speed of the Northern Railway has increased.	The rehabilitation of the Andasibe station and three metallic bridges have not been entirely completed.	The decision to reallocate funds from works to operating costs in order to improve the financial situation of the concessionaire after the 2009 political crisis has reduced the scope of the rehabilitation activities. However, this situation did not have a major impact on the overall conditions of the railway infrastructure and so did not influence the average transit speed and the length of slowdown in effect for more than 90 days.

Provision of optical fiber along the Antananarivo Toamasina and Antananarivo Antsirabe lines; Provision of three locomotives; and Provision of spare parts, tools and equipment.			

Table 2-2: Tables of objectives and indicators

Objectives (as per the PAD)	Indicators (as per the PAD, PP)	Status as of 2012
Project Development Objectives		
To rehabilitate the country's major infrastructure in order to reduce transport cost and to facilitate trade	Increased traffic through improved transport infrastructure (both passengers and freight): average annual traffic increase of 10% after rehabilitation	Vehicle traffic per day has increased more than 10% after the rehabilitation works on the RN2, RN7 and RN44. Freight traffic has increased more than 10% after the rehabilitation works on the Northern Railway. Passengers and freight traffic has increased more than 10% after the provision of new ferries.
	Decreased user cost: between 20 and 60 % depending on road link	Vehicle Operating Costs have decreased by about 16% on the RN44 Vehicle Operating Costs on the RN2 and RN7 did not change drastically but costs increase has been avoided as a result of the works The new ferries have provided safe, reliable and free means of transportation to cross large rivers in the East Coast of Madagascar The revival of the railway has provided a cheaper transport mode 35% lower than road transport.
	Decreased time delays on the nation's main transport infrastructure: between 30 and 300% depending on link	Travel time on the RN44 has been reduced from 24 to 6 hours. Travel time on the RN2 and RN7 did not change drastically but travel time increase has been avoided as a result of the works. Waiting times for ferries has decreased from 1 day to 1 hour. The length of slowdown on railway line in effect for more than 90 days has been reduced from 23 to 1.2 km. Transit speed on the Antananarivo Toamasina railway line has doubled: from 12 km/hour in 2006 to 24km/hour in 2012.
Intermediate Outcomes		
National roads rehabilitated and maintained	4045 km of National Roads rehabilitated by average annual tranches of about 630 km, of which 613 km by IDA so that by end of 2008, the majority of National Roads	A total of 4751 km of National Roads has been rehabilitated. 53% of National Roads are in good and fair condition.

	are in good and fair condition	
Main ports rehabilitated and well operated	Main ports concessioned and smaller ports under global concession arrangements	Only the container terminal of the Port of Toamasina has been concessioned. This concessioned container terminal handles about 80% of the container traffic in Madagascar. The concessionaire has invested about 60 million USD in infrastructure and equipment. The vessel productivity has improved from 29 moves per hour in 2006 to 38 moves per hour in 2011. Its Logistics Performance Index has increased from 2.24 in 2007 to 2.66 in 2010.
Main airports well operated and safety and security enhanced.	Ivato airport concessioned, seven secondary airports franchised, and tertiary airports are under contract management	No progress has been made in this area. 12 main airports are still managed by ADEMA. However, no major deficiency has been identified so far in the airport operations in Madagascar.
VPM (ministries in charge of transport) functions properly	Social plan is executed and remaining staff adequate for the function of the VPM	The social plan which was financed by the project was fully executed and has brought important efficiency to the ministries. The remaining staff was estimated adequate. However, it is difficult to assess whether the ministries are functioning properly or not.

Intermediate Outcome Indicators for the Northern Railway (as per the Project Agreement)		
Indicators	*Target values*	*Status as of 2012*
Number of breakdown for BB locomotives per 100,000 km	not more than 2.5	4.0; target not reached
Locomotive availability rate	at least 87.5%	82% for the AD12 locomotive and 84% for the AD18 locomotive; target not reached
Wagon turnaround time	not more than 4.5 days	6.1 days; target not reached
Cumulative of slowdown for more than 90 days	not more than 4 km	1.2 km; target reached
Personal productivity (ton-km freight plus ¼ passenger-km per permanent staff)	not less than 175,000	172,307; target not reached
Liquidity ratio	not less than 1.1	1.1; target reached
Long term debt / equity ratio	not more than 5	4.8; target reached
Debt coverage ratio	not less than 1.2	1.2; target reached

Table 2-3: Cumulated Monthly Traffic on the ferries

Cumulated monthly traffic on the 27 ferries between August 2010 and November 2012				
	Number of crossing	Number of passengers	Number of total vehicles	Number of trucks
Min	4,288 in February 2012	43,668 in February 2011	8,257 in February 2012	418 in September 2010
Max	8,475 in November 2010	92,305 in September 2012	15,610 in November 2010	1,159 in November 2010

Source: Road Authority

Table 2-4: Vehicle Operating Cost change on the RN44

Type of Vehicle	VOC in MGA per Km on the RN44 before the project (IRI = 15)	VOC in MGA per Km on the RN44 after the project (IRI = 12)
Small Vehicle	406	336
Four Wheel Drive	641	521
Minibus	445	405
Truck	1,700	1,456
Tractor Trailer	2,053	1,806

Table 2-5: Road Network Survey as of end 2012

Category of road	Length in Km	Length observed in Km	Good condition in Km	Fair condition in Km	Bad condition in Km
Primary National Road	2,560	2,560	1,339	912	309
Secondary National Road	4,753	4,523	1,094	1,188	2,241
Tertiary National Road	4,549	3,933	602	753	2,578
Total National Roads	**11,862**	**11,016**	**3,035**	**2,853**	**5,128**
Provincial Road	12,250	6,692	537	1,387	4,768
Municipal Road	7,500	223			223
Total other roads	**19,750**	**6,916**	**537**	**1,387**	**4,235**
Total road network	**31,612**	**17,932**	**4,058**	**5,776**	**7,709**

Source: Ministry of Public Works

Table 2-6: Northern Railway Traffic

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Freight traffic in Ton	62,456	182,489	236,456	284,453	296,539	390,434	355,050	435,662	421,884	407,982
Freight traffic in Million Ton-KM	13.2	61.9	84.3	103.5	108.6	138.9	131.9	158.0	153.0	153.1

Source: Madarail

Table 2-7: Transit Speed on the Northern Railway

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Transit speed on the Antananarivo Toamasina line (KM/hour)	17	15	13	12	20	23	23	25	26	24
Length of slowdown in effect for more than 90 days (meter)	32,390	42,620	32,920	23,100	15,985	9,810	7,680	3,790	1,340	1,190

Table 2-8: Personal Productivity of Northern Railway

Year	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
Freight [Ton-Km]	103,487,269	108,613,656	138,852,675	131,867,484	158,040,912	153,047,343	153,130,661
Passenger [Km]	6,500,324	13,265,510	3,068,273	3,419,810	8,610,195	10,263,216	8,740,000
Number of permanent staff	941	1,046	1,016	974	982	935	909
Personal productivity (ton-km freight + ¼ passenger-km per permanent staff)	112,739	108,910	137,874	136,792	164,445	168,078	172,307

Table 2-9: Fuel transport prices from the port of Toamasina in MGA per liter

	Rail	**Road**	**Difference**	**% difference**
Year 2009				
Toamasina – Moramanga (about 250 km)	31.30	56.10	24.80	44%
Toamasina – Antananarivo (about 360 km)	45.90	71.71	25.81	36%
Toamasina – Antsirabe (about 520 km)	63.70	99.70	36.00	36%
Year 2010				
Toamasina – Moramanga	35.47	56.10	20.63	37%
Toamasina – Antananarivo	50.07	71.71	21.64	30%
Toamasina – Antsirabe	67.87	99.70	31.83	32%
Year 2011				
Toamasina – Moramanga	35.47	46.50	11.03	24%
Toamasina – Antananarivo	50.07	67.00	16.93	25%
Toamasina – Antsirabe	67.87	95.50	27.63	29%
Year 2012				
Toamasina – Moramanga	35.47	46.50	11.03	24%
Toamasina – Antananarivo	50.07	67.00	16.93	25%
Toamasina – Antsirabe	67.87	95.50	27.63	29%

Source: Madarail

Observations on the Monitoring and Evaluation (M&E) framework of the Transport Infrastructure Investment Project (TIIP)

1. The M&E framework of the TIIP had several weaknesses:
   - The Project Development Outcome (PDO) indicators were not fully Specific, Measurable, Attributable, Realistic and Targeted (SMART);
   - The results chain was not clearly reflected. The outputs and outcomes of the TIIP, the APL series, and the government transport program were not clearly distinguished;
   - Some activities of the TIIP did not have any indicator to monitor their progress and impacts;
   - Baseline data was not available at approval for the PDO indicators.

2. At approval, the M&E framework had three PDO indicators and four intermediate outcome indicators. The three PDO indicators were maintained during the course of the project.

3. The three PDO indicators were:
   - Increased traffic through improved transport infrastructure (both passengers and freight): average annual traffic increase of 10 percent after rehabilitation;
   - Decreased user cost: between 20 and 60 percent depending on road link; and
   - Decreased time delays on the nation's main transport infrastructure: between 30 percent and 300 percent depending on link.

4. The PDO "to rehabilitate the country's major transport infrastructure in order to reduce transport cost and to facilitate trade" had three dimensions. The three PDO indicators were designed to reflect them. The first PDO indicator on traffic captured the rehabilitation dimension though the achievement of rehabilitation itself could have been used. The second PDO indicator on user cost captured the reduction in transport cost dimension. The third PDO indicator on time delays captures the trade facilitation dimension.

5. However, there were some limitations in these three PDO indicators:
   - The first PDO indicator contained two sub-indicators: passenger traffic and freight traffic. Moreover, it should have been better to name the "improved transport infrastructure".
   - The user cost in the second PDO indicator was not specific. It might be a transport cost such as the vehicle operating cost or a transport price such as the passenger fare and the freight fare. In addition, it is stipulated that this indicator was for road link.
   - The "time delays" in the third PDO indicator was not specific. It might be the travel time between point A and point B or the delay induced by the poor conditions of the link between point A and point B. Moreover, a 300 percent decrease is not plausible.

6. The four intermediate outcome indicators were:
   - 4,400 kilometer (km) of national roads rehabilitated by average annual tranches of about 750 km, of which 1,274 km by IDA so that by end of 2008, all national roads (RNP & RNS) are in good and fair condition;
   - Main ports concessioned and smaller ports under global concession arrangements;

- Ivato airport concessioned, seven secondary airports franchised, and tertiary airports are under management contracts; and
- Social plan is executed and remaining staff adequate for the functions of the Vice-Prime Minister (*Vice Primature, VPM*).

7. The 4,400 km of national roads in the first intermediate outcome indicator was the objective of the entire GoM roads rehabilitation program. Moreover, this indicator contained four sub-indicators: (i) the total length of National Roads rehabilitated; (ii) the total length of National Roads rehabilitated per year; (iii) the length of National Roads rehabilitated by the Bank Adaptable Program Loan (APL) series; and (iv) the percentage of National Roads in good and fair condition. It could have been useful to monitor the length of National Roads rehabilitated under the TIIP only since the rehabilitation is the first level objective of the project.

8. During the restructuring of 2006, this first intermediate outcome indicator was revised to "4,045 km of national roads rehabilitated by average annual tranches of about 630 km, of which 613 km by IDA so that by end of 2008, the majority of national roads are in good and fair condition".

9. The second intermediate outcome "Main ports concessioned and smaller ports under global concession arrangements", was the expected result of the entire reform (started under APL1) in the port sub-sector in Madagascar. Activities financed by the TIIP were limited to small repair works and technical assistance related to port compliance with international norms. It could have been useful to use some indicators reflecting the direct results of these activities. Moreover, this intermediate outcome indicator could have been more detailed to assess the progress to date of the reform. The location and number of the main and smaller ports are not specified either.

10. The third intermediate outcome "Ivato airport concessioned, seven secondary airports franchised, and tertiary airports are under management contracts", is the expected result of the entire reform (started under APL1) in the airport sub-sector in Madagascar. Activities financed by the TIIP were limited to safety equipment and technical assistance. It could have been useful to use some indicators reflecting the safety improvement. Furthermore, this intermediate outcome indicator should have been more detailed to assess the progress to date of the reform. The location and number of some airports are not specified either.

11. The fourth intermediate outcome "Social plan is executed and remaining staff adequate for the functions of the VPM" captures one of the main expected results of the institutional support component and the Government reforms in the transport sector.

12. **Intermediate outcomes for the railway component.** The following intermediate outcome indicators were used for the railway component which was added later on: (i) wagon turnaround time; (ii) personal productivity which reflect the level of freight and passengers transported versus the number of permanent staff; (iii) liquidity ratio; and (iv) debt coverage ratio. These indicators capture both the operational and the financial performance of the railways. Baseline data were available. These indicators can be used beyond the project life to monitor the situation of the railway concession.

13. Given the complexity of the PDO indicators, proxy indicators have been used instead. However, data on traffic, transport cost and price were not always available in the road sector.

14. For the railway component, data collection and monitoring were regularly implemented and railway data was available from the concessionaire. For the port and airport component, no regular data collection was implemented since no particular indicator related to the TIIP activities was defined for them.

15. **First PDO indicator.** "Increased traffic through improved transport infrastructure (both passengers and freight): Neither the number of passengers nor the volume of freight was measured on the roads infrastructure since it was almost impossible to do so. The number of vehicles per day was used instead to assess the road traffic. Nevertheless, regular annual data on road vehicle traffic is not available. Traffic counting is not done systematically or periodically in the road sector. It is done only on a case by case basis and most of the time under donor funding. On the other hand, passengers and freight traffic data are available on the railway component and the ferries.

16. **Second PDO indicator.** "Decreased user cost: between 20 and 60 percent depending on road link": The VOC (Vehicle Operating Cost) related to the IRI (International Roughness Index) of the road was one of the subsidiary indicators used to assess the decrease in user cost in the road component. Figures were also provided by the Ministry of Transport on the evolution of the passenger fare per kilometer but the accuracy of the data was not sure since the calculation methodology was not provided. On the other hand, the fuel transport prices on the railways and some roads were available.

17. **Third PDO indicator.** "Decreased time delays on the nation's main transport infrastructure: between 30 percent and 300 percent depending on link": This indicator was never monitored during the course of implementation for lack of reliable data. Travel time which was easier to get could have been used as a subsidiary indicator.

18. **Intermediate outcome indicators.** The length of rehabilitated National Roads, the progress (or the lack of progress) in the port and airport reforms, the completion of the social plan for the ministries in charge of transport as well as the intermediate outcome indicators for the railway component were monitored regularly since the necessary information was easier to get or the data (railways) was periodically provided.

Annex 3. Economic and Financial Analysis

(a) Roads:

1. Among the activities having an ex-ante economic analysis in the original Project Appraisal Document, only the National Road (*Route Nationale, RN*) 2, the RN7 and the RN44 were realized during implementation. These activities constituted 67 percent of the Project amount. The table below summarizes the results of economic analysis ex-ante and ex-post.

Table 3-1: Results of Economic Analysis Ex-ante and Ex-post

National Road	Ex-ante Economic Analysis		Ex-post Economic Analysis	
	ERR (%)	NPV (US$ million)	ERR (%)	NPV (US$ million)
RN2	38.78	29.1	24.26	49.7
RN44 South	15.91	6.9	71.59	10.6
RN44 North	15.6	1.4	33.27	3.1
RN7	88.89	35.1	44.03	46.6

2. For the RN2 and RN7, the ex-post Economic Rate of Return (ERR) is lower than anticipated since the cost of the realized works was higher than at approval. For the RN44 South, the ex-post ERR is higher than anticipated since the realized works were an improved gravel road instead of a pavement whereas the reduction in travel time and vehicle operating costs are significant and the forecasted traffic increase was reached.

3. The analysis is based on the comparison between the situation without project and the situation with project. The following were considered as direct advantages of the situation with project: (i) the Vehicle Operating Cost is reduced; (ii) the travel time is reduced; (iii) the maintenance cost is reduced; and (iv) the road has a higher asset value.

4. To be relevant, the method and model used for the ex-ante economic analysis were also used for the ex-post economic analysis. This method and model were developed internally within the Ministry in charge of road infrastructure and benefited technical assistance from external donors. In the ex-post calculation, forecasted data used in the ex-ante calculation were replaced by the real data observed after project.

5. The input data used in the model are: (i) the length of the road; (ii) the works cost; (iii) the conditions of the road; (iii) the level of traffic; (iv) the average traffic increase rate; and (v) the travel time. The calculation was made over a period of 20 years. The discount rate was 12 percent.

6. However, as the type and the length of the road works had substantially changed on the RN2, RN7 and RN44, it is more valuable to compare the unit cost per km at approval, at contract signature, and at completion in order to appreciate the efficiency of the works.

Table 3-2: Unit cost evolution on the road component

Unit cost per kilometer in USD	at approval in 2003	at contract signature	at completion	Comments
RN2	26,868	102,178	135,706	- signature in August 2006 - completion in December 2009
RN7	26,868	68,095	104,706	- signature in May 2007 - completion in November 2008
RN44	327,778	28,690	32,031	- signature in July 2006 - completion in June 2007 - at approval: upgrade from earth to paved road + gravel road rehabilitation - at completion: gravel road spot improvement and rehabilitation

Table 3-3: Cost Table of the Road Works (*all amounts are inclusive of taxes*)

National Road	RN2	RN44 South	RN44 North	RN7
Initial contract				
Month of contract signature	September 2004			Not applicable
Amount - MGA	36,216,467,611 [245.8 km]	73,254,988,982 [113 km]	8,207,180,205 [70 km]	
Cost per km in MGA	147,313,634	648,274,239	117,245,432	
Month of contract termination	February 2006			
Progress at termination	8%	3%	46.5%	
Next lowest responsive bid - MGA	42,780,933,965	74,862,049,442	9,933,284,677	Not applicable
Second contract				**One contract**
Month of contract signature	August 2006	July 2006		May 2007
Amount at signature - MGA	70,707,450,002 [314.5 km]	11,550,688,806 [183 km]		29,916,454,851 [199.7 km]
Cost per km at signature - MGA	224,789,223	63,118,518		149,806,985
Month of contract completion	December 2009	June 2007		November 2008
Amount at completion - MGA	93,909,500,497 [314.5 km]	12,895,683,646 [183 km]		33,143,101,999 [143.9 km]
Cost per km at completion - MGA	298,551,901	70,468,217		230,352,391

Source: Road Authority

7. **RN2.** The unit cost per kilometer was estimated at about US$ 26,868 at approval in 2003. The unit cost per kilometer for the first contract, which was terminated later on, was 2.5 times higher (about US$66,961). The unit cost per kilometer for the second contract was about

US$102,178. At completion, the unit cost per kilometer was about 32.8 percent higher (about US$135,707) than at contract signature.

8. **RN44.** The unit cost per kilometer for the upgrading from earth road to paved road was estimated at about US$327,778 at approval in 2003. The unit cost per kilometer for the upgrading from earth road to paved road in the first contract was about US$294,673 which is 10 percent lower than the estimation at approval. The unit cost per kilometer for the second contract was about US$28,690. The cost per kilometer of this spot-improvement of gravel road in July 2006 was 6.8 percent higher than the estimated cost per kilometer in 2003 of the RN2/RN7 paved road periodic maintenance. At completion, the unit cost per kilometer was about 11.6 percent higher (about US$32,031) than at contract signature,

9. **RN7.** The unit cost per kilometer was about US$68,095 at contract signature in May 2007. This cost is 2.5 times higher than the cost per kilometer estimation at approval in 2003. At completion, the cost per kilometer was about US$104,706 which is about 53.8 percent higher than the cost per kilometer at contract signature.

Table 3-4: Financial Data of the Road Maintenance Fund (in MGA million)

Year	2005	2006	2007	2008	2009	2010	2011	2012
Normal resources	**34,181**	**48,248**	**56,448**	**79,312**	**86,564**	**75,613**	**42,986**	**7,986**
Fuel levy	25,907	33,219	52,428	67,305	75,736	68,023	34,986	-214
Fuel taxes	7,142	3,678	3,095	2,154	2,400	0	0	0
Municipalities	1,132	119	925	1,053	1,527	990	0	0
Others	0	11,232	0	8,800	6,901	6,600	8,000	8,200
Affected resources	**9,400**	**10,000**	**21,654**	**13,551**	**14,059**	**0**	**8,915**	**8,673**
from the ministries	9,400	10,000	21,654	13,551	7,769	0	0	0
subvention from the European Union	0	0	0	0	6,290	0	8,915	5,913
subvention from the French Development Agency	0	0	0	0	0	0	0	2,760
TOTAL	**43,581**	**58,248**	**78,102**	**92,863**	**100,623**	**75,613**	**51,901**	**16,659**

Source: Ministry of Public Works

(b) Railways:

10. The Northern Railway network extends over a length of 732 km and serves (i) the most important transport corridor between the capital Antananarivo, and the main port of Toamasina; (ii) the rice granary region of Alaotra Lake; and (iii) the industrial city of Antsirabe. Starting from the 1990s, rail services on the Northern Railway network had come to a virtual halt because of poorly maintained railway tracks and rolling stock. In line with the transport policy and strategy, an international competitive bidding was launched to concession the Northern Railway. The concession agreement was signed in October 2002, and Madarail, the concession company, was given the task to manage, maintain, renew, and operate the Northern Railway network for 25

years. As part of this agreement, Madarail agreed to implement an investment program including track rehabilitation, rolling stock acquisition and refurbishment. Financing of the investment program was to be provided for the most part by the GoM. The European Investment Bank (EIB) awarded an 11 million Euros loan to Madarail mainly to acquire locomotives and to rehabilitate rolling-stock.

11. The model used to undertake the ex-post economic analysis was the one used during the preparation of the railway component. This model is based on a costs-benefits method. Most benefits are related to the expected freight modal shift from trucks to rails mainly on the Antananarivo-Toamasina corridor. The economic benefits resulted of the following:

- Reduction of the road maintenance costs;
- Additional tax revenues generated by the additional benefits of the railways;
- Reduction of oil consumption as well as reduction of the associated pollutant gas;
- Reduction of transport costs;
- Improvement of the railway transport services through the increase of the transit speed; and
- Reduction in the number of road accident.

12. The input data used when undertaking the comparison are: (i) the volume of traffic; and, (ii) the gasoline price Malagasy Ariary (MGA) 2,000 per liter during the ex-ante analysis and MGA 2,800 per liter during the ex-post analysis). The following parameters were supposedly unchanged during the comparison: (i) the calculation period of 25 years; (ii) the fuel consumption rate of trucks and locomotives; (iii) the 24 tons average capacity of trucks on the Antananarivo Toamasina road; (iv) the composition of the variable costs of the railway operations; (iv) the number of working days per year; and, (v) the cost of carbon emission (US$10 per ton).

Table 3-5: Northern Railway: Comparison between the Forecasted Traffic in the Model and the Realized Traffic

Year	2007	2008	2009	2010	2011	2012
Forecasted traffic in Tons	353,132	514,247	538,309	579,745	604,699	639,118
Realized traffic in Tons	296,539	390,434	355,050	435,662	421,884	407,982
Difference in Tons	56,593	123,813	183,258	144,083	182,815	231,136
Forecasted traffic in Million Ton-Km	137.4	199.9	209.0	224.8	234.0	247.5
Realized traffic in Million Ton-Km	108.6	138.9	131.9	158.0	153.0	153.1
Difference in Ton-Km	28.8	61.0	77.1	66.8	81.0	94.4

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit
Lending		
Supervision/ICR		
Bernard Abeille	Consultant	OPCPR
Nina Chee	Senior Environmental Specialist.	MIGEP
Paul-Jean Feno	Senior Environmental Specialist	AFTEN
Pierre Graftieaux	Lead Transport. Specialist.	AFTTR
Susanne Holste	Lead Transport Specialist	SASDT
Marc H. Juhel	Sector Manager, Transport	TWITR
Alain L. Labeau	Consultant	AFTTR
Sandrika Minah Ateifa	Temporary	AFMMG
Pierre A. Pozzo di Borgo	Program Coordinator	AFTTR
Noroarisoa Rabefaniraka	Senior Transport. Spec.	AFTTR
Francois Marie Maurice Rakotoarimanana	Senior Financial Management Specialist	AFTFM
Tojoarofenitra Ramanankirahina	Transport Specialist	AFTTR
Sylvain Auguste Rambeloson	Senior Procurement Specialist	AFTPC
Lantoharifera Ramiliarisoa	Team Assistant	AFCTZ
Lova Niaina Ravaoarimino	Procurement Specialist	AFTPC
Dieter E. Schelling	Consultant	AFTTR
Gilles Marie Veuillot	Consultant	AFTFW

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY03	5	43.09
FY04	28	122.82
Total:	**33**	**165.91**
Supervision/ICR		
FY03		0.00
FY04		13.10
FY05	32	116.43
FY06	53	113.57
FY07	51	120.35
FY08	27	61.35
FY09	25	0.00
Total:	**188**	**424.80**

Annex 5. Beneficiary Survey Results
(if any)

Not applicable (optional for a core ICR)

Annex 6. Stakeholder Workshop Report and Results
(if any)

Not applicable (optional for a core ICR)

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

Ministry of Public Works and Meteorology / Ministry of Transport
Madagascar Transport Infrastructure and Investment Project (TIIP) – APL3
SUMMARY OF THE COMPLETION REPORT

Preface

1. The preparation of the TIIP was initiated during the implementation of the Adaptable Program Loan (APL) series. The APL series preparation started in 1994. Between 1998 and 2000, the discussion between the World Bank and the Government of Madagascar (GoM) established the following:

- A National Transport Policy which contains the government policies and strategies in the transport sector
- The approval of the first APL (the Transport Sector Reform and Rehabilitation Project)

2. The APL series in the total amount of US$253 million were supposed to be undertaken between 2000 and 2008 and have 4 phases.

1. Description and start of the project

1.1. Context

3. The start of the project occurred after the 2002 post-election crisis. The economic impacts of that crisis were deep. The new government in place elaborated the Poverty Reduction Strategy Document which was adopted in July 2003. At the beginning of the project, the transport infrastructure network of Madagascar was the following:

- 38,000 km of road network of which 12,000 km of National Road and 5,700 Kilometer (km) of paved road
- 895 km of railroad of which 732 km (including the 371 km linking the capital Antananarivo and the main port of Toamasina) belongs to the Northern Railway and 163 km to the Southern railway
- 17 ports of which 5 with autonomous management, 4 on a global concession, and 8 at regional level
- 55 airports of which 12 were receiving regular traffic (2 of them can handle wide-body aircraft) and 43 were small ones
- 400 km of unexploited waterways between Toamasina and Mananjary

4. These infrastructures were globally in poor conditions mainly due to lack of appropriate maintenance. The main issues in the transport sector were:

- Road: lack of funding for infrastructure investment and maintenance;
- Road transport services: overloaded trucks, old vehicle fleet, unreliable transport services
- Railways: poor conditions of the infrastructure and the rolling-stock
- Port: poor performance of the port, low traffic volume

- River transport: lack of equipment and infrastructure
- Air transport: insufficient capacity of the airport infrastructure; subsidies to isolated local destination

5. In 2003, one Vice Prime Minister was in charge of the entire transport sector. Transport reforms committed few years earlier implemented:
- Transferring the operational activities from the Government to the private sector
- Focusing the Government responsibilities to the strategy and planning
- Setting-up autonomous agencies to ensure the management of operational activities and eventually to regulate

6. The World Bank has supported these reforms through the APL series. Three agencies were already operational in 2003:
- The Civil Aviation Authority created in 1989 and restructured in 2004
- The Road Maintenance Funds, created in 1997 and restructured in 2003
- The Port, Maritime and River Agency created in 2003

7. Other agencies were being created:
- The Road Authority
- The Land Transport Agency

1.2. Project objectives, components and arrangements

8. Long term objective: to reduce poverty through the reduction of transport cost and the improvement of rural accessibility

9. Short to medium term objective: to rehabilitate transport infrastructure in order to reduce transport cost and to facilitate trade

10. Components: Roads, Ports, Airport, Institutional support, and Railways

11. Institutional arrangements: The project had two institutional periods:
- From 2003 to 2005: The Vice Prime Minister and the Program Executive Secretariat (PES) were in charge of the project
- From 2005 to 2012: The PES was closed and an international audit firm was hired to ensure the fiduciary function. The Vice Prime Minister was divided into two ministries. MADARAIL was in charge of the railway component
  It was agreed that the international audit firm train some staff from the ministries on the fiduciary function. However, the civil servants nominated to be trained failed to participate correctly in this capacity building activity.

2. Design, implementation, achievement and impacts

2.1. Appraisal and design

12. The design of the TIIP was done within the context of the APL series and the on-going reforms in the transport sector. The PES was primarily in charge of the implementation given the lack of capacity within the ministries. The main risk identified was the lack of capacity from the private sector to undertake the important infrastructure rehabilitation program defined by the Government. Moreover, not all the financing of this vast rehabilitation program was secured. The TIIP was initially scheduled to close in 2008 but extended until 2012 to realize all the planned activities.

2.2. Main achievements

13. Roads:

- The targeted length of road rehabilitation for the entire government program was achieved

14. Ports:

- The main port of Toamasina has acquired the status of port with autonomous management
- The container terminal of the port of Toamasina has been put under private concession
- The reconstruction of the 4 main lighthouses has been completed

15. Airports:

- The promotion of PPP in airports management has been partially realized. The management framework of certain airports has changed.

16. Institutional support:

- The Road Authority and the Land Transport Agency have been put in place
- The autonomy of the Road Maintenance Funds has been reinforced
- The retrenchment plan of the ministries in charge of transport has been achieved

17. Northern Railway:

- The freight traffic has increased by 130 percent
- The wagon turnaround time has decreased by 12 percent
- The personal productivity has increased by 94 percent

2.3. Coordination and management of the project

18. The coordination of the project suffered from the transport ministries structure. The entities in charge of the transport infrastructures are different and independent from the entities in charge of the transport services.

19. The project also suffered from the difficult coordination between the entities in charge of the technical implementation and the entity in charge of the procurement, contract management and financial management.

20. Lessons learned:

- The capacity of the ministries should be reinforced
- The negative impacts of the reforms in the ministries should be mitigated.
- A project coordination unit is necessary
- The type of support should be adapted to the role and capacity of each entity

2.4. Other project impacts

21. The required compliance with the safeguards policies and procedures for all Bank projects has built capacity in terms of environmental and social management. Though that capacity was initially weak, the implementation of the project has reinforced it in a sustainability manner. Tools and skills to manage the safeguards aspects are now available

3. Assessment of the Bank and the Borrower

3.1. World Bank

- The decision to change the financing parameters to 100 percent is a very good decision.
- The type of interaction with the World Bank staff varies depending on the person.
- Initially, the supervision mission took place twice a year but later on it was more frequent and lighter.

22. Lesson learned: Though the project had encountered different issues leading to restrictive measures from the World Bank (freeze of disbursement, ineligible expenses), it should be better to put in place a working relation based on a mutual trust and a shared responsibility in problem solving.

3.2. Borrower

- The Government was able to mobilize other resources to complement the financing from the World Bank.
- High-level staff change impacted negatively on the coordination and the decision-making process.
- The Government was not able to finance the counterpart funding.
- Continuity was not ensured after the change of government after the 2009 political crisis.

23. Lesson learned: Continued ownership is not ensured after a high-level change within the ministries or the government. Reinforcing the structure and the role of a steering committee is recommended.

4. Economic and financial evaluation

24. The disbursement rate for the IDA financing is about 98.86 percent. There is still about 2.2 billion MGA outstanding counterpart funding as of October 2012 although the financing parameter had been modified to 100 percent in 2006.

25. It is difficult to assess the project based on the Project Appraisal Document initial data because of the substantial change in the project scope during implementation. Moreover, baseline data was not always available and some assumptions made at approval did not materialize (quick mobilization of external resources, private sector contribution)

5. Sustainability

26. Though there are still some steps to be undertaken in the institutional reforms, the progress made so far can be considered as immovable.

27. The realized works are generally of a good quality though the duration of the works often encountered slippage.

28. Madagascar does not have enough resources to finance investment in transport and has to rely much of the time on donors and external funding which affects the investment planning of the transport sector.

29. For the road sector, it is imperative to balance the existing resources between investment, maintenance, core network, and rural road.

6. Conclusion

30. The TIIP design is relevant. Intervention was undertaken in all transport sub-sectors and focused on infrastructure investment and institutional support. The important fact and issue affecting the project were:

- The ownership from the government side was lacking at the beginning but improved later on
- Rehabilitation targets were ambitious. Cost overrun was significant. Unfortunately, the available funding was not enough to cover both of them. The project was then restructured to focus on rail and road investment since a Public Private Partnership (PPP) approach can be done to finance investment in ports and airports.
- The institutional reform of the ministries has shaken the staffing structure. The ministries currently do not have enough skilled staff to ensure the strategic planning, oversight and coordination function.
- Working relation between the Bank and the Borrower was not always smooth. The Borrower had the impression that some decisions were not made in a consensual manner.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

No comment has been received.

Annex 9. List of Supporting Documents

Bank Documents

- Madagascar CAS – January 17, 1997
- Madagascar interim CAS – October 23, 2002
- Madagascar Poverty Reduction Strategy Paper – November 2002
- Madagascar CAS – October 20, 2003
- Project Concept Note – April 18, 2003
- Project Appraisal Document – November 12, 2003
- Financing agreements
- Restructuring Papers
- Project Papers
- ISR number 1 to 23
- Aide Memoires
- Final report of the evaluation mission of the Northern Railway concession

Other

- Letter of Sector Policy – November 4, 2003
- Final report of the traffic survey 2010 on the National Roads
- Concession Agreement of Madarail
- Framework for Improving Railway Sector Performance in Sub-Saharan Africa – SSATP Working Paper No 94
- Designing a results framework for achieving results: A how-to guide: IEG

Annex 10. Additional information on key factors that affected the implementation of the physical components of the project

1. **Lack of counterpart funding.** The timely and adequate release of counterpart funds by the Government of Madagascar (GoM) was often delayed. Although the Bank country financing parameters were changed during the restructuring of January 2006, allowing a 100 percent IDA payment for all activities, about Malagasy Ariary (MGA) 1.98 billion (about US$990,000) unpaid counterpart funding remained as of end 2012. Only MGA 787 million (about US$393,000) counterparts funds were paid between 2005 and 2012. Because of this, the Transport Infrastructure Investment Project (TIIP) started financing all expenses related to the project activities in 2006. As a result, the scope of rehabilitation was reduced to cope with the unchanged project amount.

2. **Project restructuring.** The TIIP was restructured in 2006 for the following reasons: (i) change of priorities leading to the introduction of the Northern Railway component; (ii) change of the country's financing parameter to 100 percent IDA; and (iii) modification of the implementation arrangements following the closure of the Program Executive Secretariat (PES). Since the total project amount remained unchanged, some activities under the road and port components were modified and the non-realized activities under the airport component were dropped.

3. **Axle load control.** Despite the discussions, meetings, and workshops taking place for several years now and the strong push from development partners, the enforcement of axle load control is still not effective. This situation contributed to the higher deterioration than expected on the roads because of the overweighed truck traffic. It was planned at appraisal to carry out a periodic maintenance on the National Road (*Route Nationale, RN*) 2 and RN7 given the normal life cycle of these roads. However, during works execution, some sections of these roads needed more than a periodic maintenance because they were more deteriorated. Thus, the costs of the road works were higher than expected.

4. **Termination of the first road works contracts on the RN2, RN44 North and South due to significant delays.** Three road rehabilitation works contracts were awarded in September 2004 to one contractor. The contracts for the RN2, RN44 South, and RN44 North had respectively 24, 36, and 15 month duration. The three contracts were terminated 17 months later (in February 2006) due to significant delays, with progress of 8 percent for the RN2, 3 percent for the RN44 South and 46.5 percent for the RN44 North. The contracts were then awarded to the second lowest responsive bidders. If the contractor was able to complete the works correctly, the important RN44South would have been paved as planned at appraisal.

5. **Scope of works change on the RN44 South.** At approval, it was planned that the RN44 South would be upgraded from gravel road to paved road. The level of traffic especially trucks on the RN44 South justified paving it. The object of the first road works contract on the RN44 South was to undertake this upgrading. Nevertheless, when negotiating the second road works contract, the available budget on the road component was found to be insufficient to pave the

RN44 South[6]. As a result, it was decided to carry out a spot improvement instead of paving on the RN44 South to ensure that the road would be trafficable all year around.

6. **Additional costs on the RN2.** The following factors led to additional costs: (i) two cyclones and an unusual heavy rain created heavy damages on the RN2 in 2007. Repairs had to be undertaken and financed by the contract; (ii) the decision to finance the construction of one weighing station in order to make available the required tool for axle load control; (iii) upward contract price revision due mainly to the substantial gasoline price increase; (iv) the loss in currency exchange due to the depreciation of the United States Dollar (US$) and Special Drawing Rights (SDR) vis-à-vis the Euro. The contract was paid in Euros while the credit is denominated in SDR/US$; (v) additional rehabilitation works were required on certain stretches where periodic maintenance was not appropriate anymore; (vi) additional works were required when works resumed after the lifting of disbursement freeze of 2009. The works were stopped after the World Bank froze disbursements in 2009, and some partially achieved works had to be redone when disbursements resumed.

7. **Additional costs on the RN7.** The works on the RN7 encountered almost the same issues as the RN2 resulting in additional costs: (i) roads degradation higher than anticipated leading to an unexpected additional works; (ii) upwards contract price revision due mainly to the substantial gasoline price increase; (iii) the loss in currency exchange due to the depreciation of the United States Dollar (US$) and SDR vis-à-vis the Euro. The contract was paid in Euros while the credit is denominated in SDR/US$. As a result, the length of works was reduced from 200 km at contract signature to 144.6 km at contract completion.

8. **Provision of river jetties for the new ferries.** It was decided during implementation to construct river jetties to ensure a smooth operation of the ferries and to protect them from avoidable damages when docking. 27 jetties were constructed, of which nine are financed by the TIIP and 18 by the Rural Transport Project (RTP), the second phase of the Adaptable Program Loan series.

9. **Reallocation of the funds from the port of Mahajanga to the road component.** With all the additional costs in the road works described above, decision was taken to cancel the works scheduled for the port of Mahajanga and to reallocate the corresponding fund to the road component.

10. **Change of priority in the port compliance.** It was planned at approval to do some activities in order to make the ports compliant with the International Maritime Organization – International Convention for the Prevention of Pollution from Ship (IMO-MARPOL). However, after September 11, 2001 attack, compliance with the International Ship and Port Facility Security (ISPS) code became a higher priority. Therefore, it was decided to drop the MARPOL related activities and replace them with the ISPS compliance related activities.

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[6] The decision to increase the length of periodic maintenance on the RN2 from 245.8 KM to 314.5 KM during the restructuring of 2006 contributed to this.

11. **Additional financing to the railway component.** An additional financing of about US$15.6 million was processed for the railway component in 2007 to increase the scope of rehabilitation works.

12. **Reallocation from works to operating costs in the railway component.** When the disbursement freeze of 2009 was lifted, remaining funds from the works category in the railway component were reallocated to operating costs. This decision was made in consultation with all the financiers of the Northern Railway to strengthen the financial situation of the concession. As a result of the reallocation of funds from investments to operating costs, some works already started before the crisis could not be entirely completed as planned. This was the case for three metallic bridges and the Andasibe station.

Annex 11. Additional information on safeguards

1. The TIIP initially financed the rehabilitation of existing transport infrastructure including national roads, ports and airports with the environmental category of the project rated as "A". The road components were clearly defined before appraisal and considered as "first year projects". For the ports and airports components, investments were planned as residuals to private sector investments and considered as "second year investments". Before appraisal, full Environmental and Social Impact Assessments (ESIA) were carried-out for all planned road works, disclosed in the Country and at the Infoshop. The remaining subprojects under port and airport components were considered as second year subprojects and the environmental and social studies were to be carried out during project implementation, subject to Environment and Social Safeguards approval. Following the project restructuring, the port and airport components were either reduced or dropped. Only security and safety equipment were financed and implemented for these two components.

2. The environmental and social impacts of road works were mitigated in a satisfactory manner as a result of the guidelines developed and the right implementation of environmental and social management plans. The road components retained within the restructured project were the National Road (*Route Nationale, RN*) 2, RN7 and RN44. The quarry site on the Point Kilometer (PK) 53 of the RN44 was correctly rehabilitated (stabilized slopes and reforestation) once the proposed mitigation measures by the Road Authority were approved by the Bank.

3. When the railway component was added, a separate full Environmental Assessment (EA) was prepared and was cleared by the Bank and the Malagasy National Environmental Agency. The EA was disclosed in the country and at the Infoshop. The Environmental and Social Management Plan (ESMP) were implemented in a satisfactory manner:

- 61 local communities groups operational to contribute to the stabilization of slopes with Jatropha (134 hectare covered with Jatropha), vetivers (22 km of rail line with slopes stabilized), and railway line cleaning;
- Unit treating used oil from engines in place in the main rail station;
- Sufficient mitigation measures were considered and implemented in a satisfactory manner during railway rehabilitation works.

4. The Involuntary Resettlement Policy (OP 4.12) was triggered for the railway component. A Resettlement Action Plan (RAP) was prepared, approved by the Bank, and disclosed in project areas and at Infoshop. The resettlement concerned 110 households living on the railways right of way in Antananarivo. Its cost was about US$892,000. Fences were also built to secure the rail lines crossing habitation zone. All action plans proposed within the approved RAP were settled accordingly based on the monitoring and evaluation plan.

5. The TIIP had contributed to put in place three environmental and social units operational in road sector (Road Authority), railway sector (Madarail) and at the central level within the Ministry of Public Works. These units have an operational environmental and social manual to ensure consideration of safeguard dimensions within the project cycle (design, implementation and monitoring). Their respective technical staff obtained trainings on the safeguard aspects through an international technical assistant financed by the project.

6. In addition to the environmental and social aspects, an HIV-AIDS program was carried out by GoM, with the support of an international firm, to sensitize the contractor's employees, and the local population living along the roads and railways. This program was conducted on all the civil work sites financed by the TIIP, and reached more than 2,000 persons in rural area.

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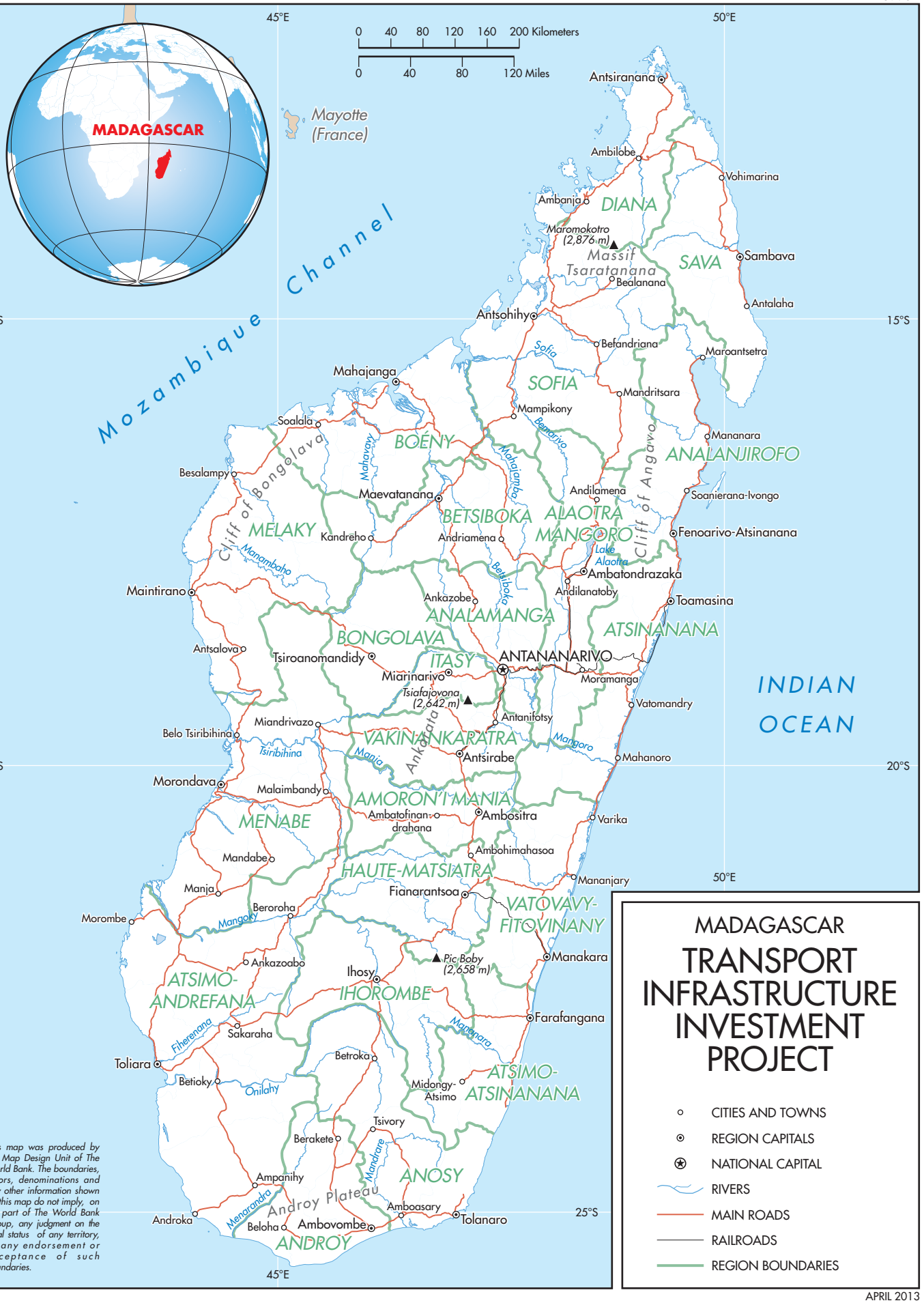

MADAGASCAR

TRANSPORT INFRASTRUCTURE INVESTMENT PROJECT

- CITIES AND TOWNS
- REGION CAPITALS
- NATIONAL CAPITAL
- RIVERS
- MAIN ROADS
- RAILROADS
- REGION BOUNDARIES

APRIL 2013